

HOKAN FAMILY AND LEXICOSTATISTICS

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March 20, 2013

Sceptical views on Hokan

- “Many of the languages have been in contact with other Hokan languages, and it is hard to distinguish loans and contact phenomena from possible inheritances... All in all this set of languages seems to reflect neither shared descent nor notable areality, but simply very long residence in situ and as neighbors.”
Johanna Nichols “Macrofamilies, Macroareas, and Contact” // The Handbook of Language Contact. Wiley-Blackwell, 2010

Sceptical views on Hokan

- “there has never been any good evidence for Hokan. Hokan was cobbled together with tiny bits of evidence, almost all of it nothing but words that vaguely resemble each other. The sets of putative cognates were mostly tiny, regular sound correspondances non-existent. Hokan is to a large extent a relic of a period of unfettered speculation.” William Poser
(<http://www.languagehat.com/archives/002102.php>)

languages are genetically related, if

- a) we have a system of recurrent sound correspondences between them,
- b) these correspondences work on a sizable portion of the basic lexicon, including its most stable part.

- A system of sound correspondences between Hokan languages was proposed by Terrence Kaufman (“A research program for reconstructing Proto-Hokan: first groupings” // Scott DeLancey (ed.), Papers from the Hokan-Penutian Languages Workshop, 1988. Eugene, OR: Department of Linguistics, University of Oregon).

The main problem:

- [Kaufman 1988] includes a set of sound correspondences between Hokan branches and circa 1000 protoforms, but the reflexes of these protoforms in the daughter languages are not listed.
- How do we know that these sound correspondences work?

- Using Proto-Hokan reconstructions from [Kaufman 1988] and all available sources on Hokan inter-branch comparison, we have compiled an etymological database of circa 900 entries satisfying Kaufman's correspondences. Some particular correspondences (especially vocalic ones) eventually will be refined or revised, but the overall system can be confirmed by a large amount of data.

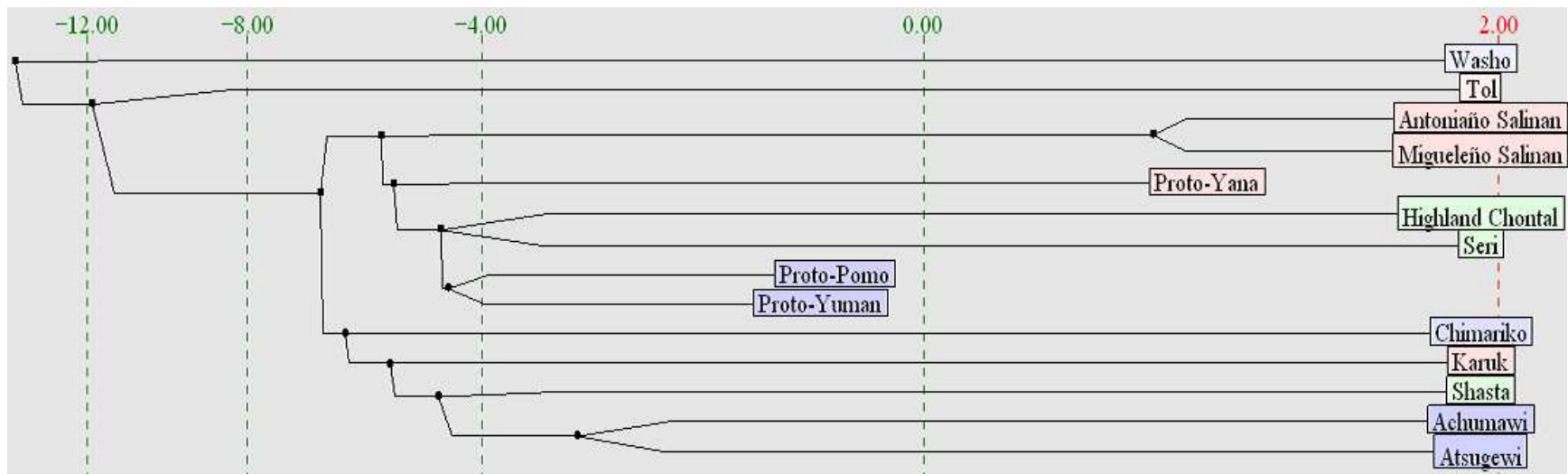
What about basic lexicon?

- Working within the framework of the Global Lexicostatistical Database project, we have compiled 110-item wordlists for the following languages: Karuk, Chimariko, Shasta, Northern Yana, Central Yana, Yahi, Washo, Eastern Pomo, Mojave, Cocopa, Yavapai, Jamul Tiipai, Seri, Highland Chontal, and Tol (Eastern Jicaque).

What about basic lexicon?

- In addition, 50-item wordlists were compiled for Achumawi, Atsugewi, Antoniaño Salinan, Migueleño Salinan, as well as for the following proto-languages: Proto-Yana, Proto-Pomo, and Proto-Yuman. In all cases the data were morphologically analysed, and special attention was paid to the choice of basic synonyms.

- We are now in a position to assess the Hokan hypothesis from the lexicostatistical point of view.
- The following tree is based on 50-item wordlists for Hokan languages. Cognations were assigned according to phonological correspondences in [Kaufman 1988].



Our result:

- The existence of the Hokan family is confirmed by lexicostatistics, but Washo and Tol (Jicaque) cannot be included in this family (although they may be distantly related to it).

- If we look closer at the lexicostatistical matrix, we will see an anomalously high percentage of matches between 1) Tol and Highland Chontal; 2) Washo and Karok. While Washo and especially Tol may be distantly related to Hokan, they clearly cannot be included in this family, much less form a specific subgroups with its branches.
- The anomalously high percentage of matches can only be explained by borrowing.

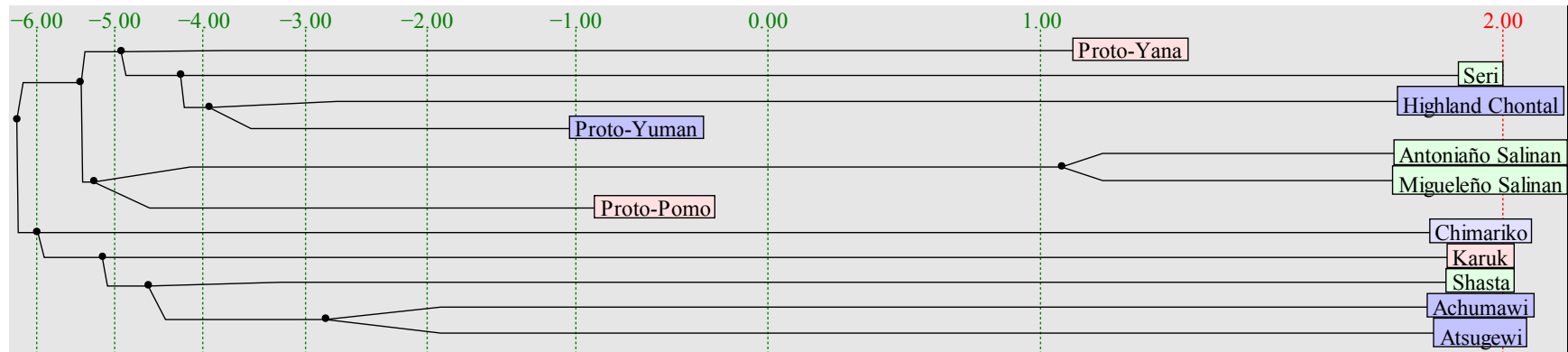
Exclusive Tol – Chontal matches

- ‘ashes’: Tol ?ip^hi - Chontal †='abi
- ‘bone’: Tol n=k^hele – Chontal l='ega†
- ‘egg’: Tol peh'ey – Chontal †=ab'i?e
- ‘leaf’: Tol lo – Chontal l=ib='ela
- ‘stone’: Tol pe – Chontal †=ab'ik

Exclusive Washo – Karuk matches

- ‘bone’: Washo =’i:biʔ - Karuk ípih
- ‘nail’: Washo tul=’ipiʔ - Karuk axpih

- If we mark these items as loanwords and exclude them from calculations, we'll get the following tree (without Washo and Tol):



Thank you!

50-item wordlist for Hokan languages

ashes₃₈ Karuk : *ám̄ta:p* 1, Shasta : *máhawa* 2, Chimariko : *m'ac̄x̄ipa* 3, Proto-Yana : **t̄ap̄la:wi-?au-* # 4, Achumawi : *mank̄a:p'o* 5, Atsugewi : *tayhóq* # 6, Washo : *c'='apu?* 7, Proto-Pomo : **hino* 8, Antoniaño Salinan : *ʔaʔai* 9, Migueleño Salinan : *ʔapa'i ~ ʔop'ai?* 9, Proto-Yuman : **xmʔulʷ* 10, Seri : *ʔant'imak* 11, Highland Chontal : *ʔ='abi* 12, Tol : *ʔip^hi* 12. Notes: Highland Chontal < Tol.

bird₃₃ Karuk : *ač̄βi:β* 1, Shasta : *č'i:č'a:x* 2, Chimariko : *t'iʔira* 3, Proto-Yana : **cutʔawi* # 4, Achumawi : *ʔena:ʔiqa* # 5, Atsugewi : *ʔené:stiká ~ ʔnecka ~ ʔnecika ~ ʔnezka* 5, Washo : *s'i:su* 6, Proto-Pomo : **c'ihta* 7, Antoniaño Salinan : *ša:xwe* 8, Migueleño Salinan : *sa:xe* 8, Proto-Yuman : **ša* 9, Seri : *ši:k* 10, Highland Chontal : *ʔ='aga* 11, Tol : *cipy'aya* 12. Notes: ? PHok **ša* (Salinan - Yuman).

black₄₈ Karuk : *ikxáram-kuniš* 1, Shasta : *ʔe:pxú-táraxi?* 2, Chimariko : *č^hele-ʔi* 3, Proto-Yana : **ta=p^hal-sa-* 4, Achumawi : *hagu:ci* 5, Atsugewi : *ʔoʔʔi-táʔwi ~ ʔoʔʔi-ta:ʔwi ~ ʔoʔʔi-tawi* 6, Washo : *=layaw* # 7, Proto-Pomo : **q'ili* 8, Antoniaño Salinan : *š'owut* 9, Migueleño Salinan : *šauwat* 9, Proto-Yuman : **n^ha:* 10, Seri : *k=o:poʔ* 4, Highland Chontal : *ʔ'umi* 11, Tol : *te* 12. Notes: PHok **p^hal ~ *p^hul* 4.

blood₂₀ Karuk : *á:x* 1, Shasta : *ʔáxta* 2, Chimariko : *s'icq'i* 3, Proto-Yana : **watʔ-tu-wi* 2, Achumawi : *ahti* 2, Atsugewi : *isrí ~ isrí: ~ isuri* 4, Washo : *=ašaj* 5, Proto-Pomo : **balay* 6, Antoniaño Salinan : *'a:kat* 7, Migueleño Salinan : *p'a:kata* 7, Proto-Yuman : **x^wat* 2, Seri : *ʔ'ait* 2, Highland Chontal : *l=a=m'ac'* 2, Tol : *na=ʔas* 8. Notes: PHok **x^wat* 2.

bone₃₄ Karuk : *ípih* 1, Shasta : *ʔa:k'* 2, Chimariko : *c^hy'a=t^hχun* 3, Proto-Yana : **ʔVxtalʔ-* 4, Achumawi : *alat:i* 5, Atsugewi : *ʔuqʔi ~ ʔuʔʔi* 6, Washo : *=i:bi?* 1, Proto-Pomo : **ʔihya:* 7, Antoniaño Salinan : *ax'a:k* 2, Migueleño Salinan : *pax'ak* 2, Proto-Yuman : **ak* 2, Seri : *'i=tak* 2, Highland Chontal : *l='egaʔ* 8, Tol : *n=k^hele* 8. Notes: PHok **hak* 2; Karuk < Washo, Highland Chontal < Tol.

claw(nail)₁₉ Karuk : *axpih* 1, Shasta : *ʔé:raxa* 2, Chimariko : *p'olaχot* 3, Proto-Yana : **suk'uʔlim-tal-* 4, Achumawi : *ali:cʔah* 5, Atsugewi : *miʔar* # 6, Washo : *tul='ipi?* 1, Proto-Pomo : **ʔVhe:k'* 7, Antoniaño Salinan : *išel'e?* 8, Migueleño Salinan : *išilip* 8, Proto-Yuman : **x^wa:w* 9, Seri : *i=n'o:s-x* 10, Highland Chontal : *ʔ'a=ʔn'aʔuk* 11, Tol : *m=pep^h* 12. Notes: ? PHok **laχ* (Shasta - Chimariko); Karuk < Washo.

die₁₃ Karuk : *=im-* 1, Shasta : *kw=írik-ik* # 2, Chimariko : *q^he-* 3, Proto-Yana : **ti-...-lau-* 4, Achumawi : *=ium:-* # 5, Atsugewi : *=weʔiniú-* 5, Washo : *y'uli* 6, Proto-Pomo : *---* -1, Antoniaño Salinan : *š'etep* 7, Migueleño Salinan : *č'itip* 7, Proto-Yuman : **puy* 8, Seri : *ʔakχ k=m=i:?* 9, Highland Chontal : *di=m'a-ʔma* 10, Tol : *ni piʔi* 8.

dog₁₆ Karuk : *čiši:h* 1, Shasta : *ʔápsu* 2, Chimariko : *s'ič'-ela* 3, Proto-Yana : **su:su* 4, Achumawi : *a:l'amgi* 5, Atsugewi : *hóʔma* 6, Washo : *s'uku?* -1, Proto-Pomo : *---* -1, Antoniaño Salinan : *xuč* -1, Migueleño Salinan : *xučai* -1, Proto-Yuman : **xat* 7, Seri : *ʔa=χš* 8, Highland Chontal : *gal=c'iki* 9, Tol : *c^hiy'o* 10. Notes: Washo < Wintu, Salinan < Chumash.

drink₁₅ Karuk : =iš 1, Shasta : kw=íc:i-k 1, Chimariko : luʔ-i 2, Proto-Yana : *si:- 1, Achumawi : =is:- # 1, Atsugewi : =iʔ- 1, Washo : =imeʔ 3, Proto-Pomo : *hoʔq'ok- 4, Antoniaño Salinan : išim 1, Migueleño Salinan : -- -1, Proto-Yuman : *si:- 1, Seri : k=i=si 1, Highland Chontal : di=šn'a-ʔma 5, Tol : miʔi-s 3. Notes: PHok *isi 1. Affricate in Shasta & Atsugewi due to contamination with 'water'.

dry₂₄ Karuk : iβ=áxrah 1, Shasta : k=ic:úr 2, Chimariko : 'ačxunmi 3, Proto-Yana : *k^hul-si- 4, Achumawi : wisuwč'i ~ winasuwč'i 5, Atsugewi : mé:qwé 6, Washo : =ihuk' 7, Proto-Pomo : --- -1, Antoniaño Salinan : =e:l 8, Migueleño Salinan : --- -1, Proto-Yuman : *sʔa:y # 9, Seri : k^w=k=ʔ:tix 10, Highland Chontal : ʔih'uʔ 2, Tol : p^ha 11. Notes: PHok *ix^yul 2.

ear₃₂ Karuk : tí:β 1, Shasta : ʔisak' 2, Chimariko : h='isama 2, Proto-Yana : *malʔku 2, Achumawi : isat 3, Atsugewi : asmaʔ 2, Washo : p^hisew 4, Proto-Pomo : *šima 2, Antoniaño Salinan : =išk'oʔol 5, Migueleño Salinan : 'entat 6, Proto-Yuman : *šmal^yk 2, Seri : 'i=sʔa 7, Highland Chontal : l='a=šʔmas 2, Tol : m=p^hac' 8. Notes: PHok *šma(l^yk) 2.

eat₂₅ Karuk : =am- 1, Shasta : kw=ičku-k 2, Chimariko : h='ama: 1, Proto-Yana : *ma- 1, Achumawi : =am:- # 1, Atsugewi : =am- 1, Washo : =emlu 1, Proto-Pomo : *ku=hu:- # 3, Antoniaño Salinan : =išx # 4, Migueleño Salinan : =išx # 4, Proto-Yuman : *ma: 1, Seri : k=i=ʔit 5, Highland Chontal : di=d'e-ʔma 6, Tol : ll[ya] 7. Notes: PHok *ama 1.

egg₄₇ Karuk : úruh 1, Shasta : sumpit'irir 2, Chimariko : 'anuuq^ha 3, Proto-Yana : --- -1, Achumawi : esa # 4, Atsugewi : é:hʔa 4, Washo : y'a:gil 5, Proto-Pomo : *hik'o(:) 6, Antoniaño Salinan : tit=ak'al 7, Migueleño Salinan : te:t=ekenel 7, Proto-Yuman : *qaw # 6, Seri : i=pχ 8, Highland Chontal : ʔ=ab'iʔe 9, Tol : peh'ey 9. Notes: PHok *q'aw ~ *k'aw 6; ? PHok *i/ux^ya (Chimariko + Achumawi-Atsugewi); Highland Chontal < Tol.

eye₄ Karuk : yú:p 1, Shasta : ʔúy 2, Chimariko : h='usot ~ h='usu 1, Proto-Yana : *c^hu- 3, Achumawi : asa 4, Atsugewi : úyi 2, Washo : w=i:gi 5, Proto-Pomo : *huʔuy 2, Antoniaño Salinan : šuk'e:neʔ 6, Migueleño Salinan : šok'eneʔ 6, Proto-Yuman : *yuw 1, Seri : 'i=to 1, Highland Chontal : l='a=ʔu 1, Tol : na=n 7. Notes: PHok *θuw 1; PHok *ʔuy 2.

fire₇ Karuk : á:h 1, Shasta : ʔim:á 2, Chimariko : 'apu 3, Proto-Yana : *ʔau- 4, Achumawi : mal:is 5, Atsugewi : páhyiʔi # 6, Washo : d'iʔyu 7, Proto-Pomo : *ʔoho 4, Antoniaño Salinan : ʔ=aʔ'au 4, Migueleño Salinan : ʔ=aʔ'au 4, Proto-Yuman : *ʔaw 4, Seri : ʔam'ak 8, Highland Chontal : ʔ=ʔuŋa 9, Tol : ʔawa 4. Notes: PHok *ʔaw 4; Tol ʔawa goes back to Proto-Jicaque *k'awa, so the resemblance is probably accidental.

foot₄₃ Karuk : fiθih 1, Shasta : ʔák:us 2, Chimariko : h='up^h:o 3, Proto-Yana : *lal- 4, Achumawi : c'ik:oh 5, Atsugewi : ʔuʔki 6, Washo : m'ayab 7, Proto-Pomo : *q^haman^y 8, Antoniaño Salinan : išx'e:u 9, Migueleño Salinan : išx'e:p 9, Proto-Yuman : *miy 10, Seri : i=t'oa: 11, Highland Chontal : l='a=ʔmis 10, Tol : n=c^ham 12. Notes: PHok *miy 10; Chontal form has the same fossilized suffix -s as in 'ear'.

hair₂₇ Karuk : íf-unih 1, Shasta : ʔi:nax 2, Chimariko : h='im:i 3, Proto-Yana : *k^huyul- 4, Achumawi : ti:yi 5, Atsugewi : wuráyʔnikas ~ wiraynikás 6, Washo : =ayuʔ 7, Proto-Pomo : *heʔe:y 5, Antoniaño Salinan : k'uwoke:t 8, Migueleño Salinan : k'onakit 8, Proto-Yuman : *ʔiy 5, Seri : i=ʔit 9, Highland Chontal : ʔ='a=mak 10, Tol : n=c'il 11. Notes: PHok *ʔiy 5.

hand₁₁ Karuk : *tík* 1, Shasta : *ʔáпка* 2, Chimariko : *h=iʔa ~ h=icʔa* 3, Proto-Yana : **tal-* 3, Achumawi : *il'* 4, Atsugewi : *ehutí ~ éyʔti* 5, Washo : *=adu* 6, Proto-Pomo : **tʰana ~ *ʔVtʰan* # 7, Antoniaño Salinan : *m'e:n* 8, Migueleño Salinan : *m'enen* 8, Proto-Yuman : **šalʷ* 9, Seri : *'i=noʔ* 10, Highland Chontal : *l=a=m'ane* 8, Tol : *na=m'as* 11. Notes: PHok **ʔa(l)* 3; PHok **man ~ *min* 4.

head₄₉ Karuk : *axβâ:h* 1, Shasta : *čaráw* 2, Chimariko : *h=imaʔ* 3, Proto-Yana : **t'alʔai-* 4, Achumawi : *lah* 5, Atsugewi : *náha* 5, Washo : *=iheb* 6, Proto-Pomo : **kinalʷ* 7, Antoniaño Salinan : *'a:zak* 8, Migueleño Salinan : *'o:pak* 8, Proto-Yuman : **ʔiy* 9, Seri : *i=ʔit* 10, Highland Chontal : *ʔ=a=nak* 11, Tol : *n=ay pʰikʰ* 12.

hear₄₅ Karuk : *=θitim-* 1, Shasta : *kw=iʔkyaw-ik* 2, Chimariko : *χ=ʔukey-at* 2, Proto-Yana : **ka-* 3, Achumawi : *=iʔtew-* # 4, Atsugewi : *=kuka-* 5, Washo : *d'amal* 6, Proto-Pomo : **ʔVšo:k-* 7, Antoniaño Salinan : *pesn'oxo* 8, Migueleño Salinan : *pesn'oxoʔ* 8, Proto-Yuman : **ʔap ~ *ʔip* # 9, Seri : *k=i:* 10, Highland Chontal : *di=gy'eh-ʔma* 2, Tol : *pʰok-'as* 11. Notes: PHok **kiy* 2.

heart₁₄ Karuk : *iθβa:y* # 1, Shasta : *ʔiwa:súrʔ* 2, Chimariko : *husaʔanče:i* # 3, Proto-Yana : **cuk'unc'i* 4, Achumawi : *hadaci* 5, Atsugewi : *yopoʔáyti* 6, Washo : *=emle* 7, Proto-Pomo : **c'uhqul/t* 4, Antoniaño Salinan : *exiwaiʔ* 1, Migueleño Salinan : *---* -1, Proto-Yuman : **wa:y* 1, Seri : *'i=moš* 8, Highland Chontal : *ʔ=onš'a-hmaʔ* 9, Tol : *na=h'as* 10. Notes: PHok **wa:y* 1; PHok **c'uq'ul* 4.

horn₄₄ Karuk : *βê:h-šur ~ βê:šur* 1, Shasta : *wá:paʔ* 2, Chimariko : *h=uwesʷ* 3, Proto-Yana : **we:yu-* 4, Achumawi : *puwa* # 5, Atsugewi : *wipaki* 6, Washo : *m'esuʔ* 7, Proto-Pomo : **haʔa* 8, Antoniaño Salinan : *etalak* 9, Migueleño Salinan : *---* -1, Proto-Yuman : **kʷa* 10, Seri : *i=t'a:maʔka* 11, Highland Chontal : *l=egaʔ* 12, Tol : *cʰ[í]eme* 13. Notes: Atsugewi = Shasta?; Highland Chontal *l=egaʔ* = 'bone' < Tol.

I₃ [*stem 1*] Karuk : *ná:* 1, Shasta : *ya:ʔa* 2, Chimariko : *n'oʔ-ot* 1, Proto-Yana : **ai=ʔnica* 2, Achumawi : *it* # 2, Atsugewi : *akʰ ~ ak* 2, Washo : *l'e:* 3, Proto-Pomo : **ha=ʔa:* 2, Antoniaño Salinan : *he:ʔk* 2, Migueleño Salinan : *keʔ* 2, Proto-Yuman : **ʔnʷa* 2, Seri : *ʔε* 2, Highland Chontal : *ʔiy'aʔ* 2, Tol : *napʰ* 1. Notes: PHok **na* 1; **ʔi* 2 (> **ʔa* under the influence of **ʔa* 'we').

I₃ [*stem 2*] Karuk : *---* 0, Shasta : *---* 0, Chimariko : *---* 0, Proto-Yana : *---* 0, Achumawi : *---* 0, Atsugewi : *---* 0, Washo : *---* 0, Proto-Pomo : **ʔa=wi:-* 4, Antoniaño Salinan : *---* 0, Migueleño Salinan : *---* 0, Proto-Yuman : *---* 0, Seri : *---* 0, Highland Chontal : *---* 0, Tol : *---* 0.

kill₄₂ Karuk : *=iykar* 1, Shasta : *k'w=ička=xáw-i:k* 2, Chimariko : *h=akʰo* 3, Proto-Yana : **ʔamʔci-* 4, Achumawi : *=atw-* # 5, Atsugewi : *=pwəhn(é)-* # 6, Washo : *=atg* # 7, Proto-Pomo : *---* -1, Antoniaño Salinan : *p=ʔeka* # 8, Migueleño Salinan : *=ok'oʔ'oʔ* 3, Proto-Yuman : *---* -1, Seri : *k=i=kʷ* 3, Highland Chontal : *di=m'a-ʔa-ʔma* 9, Tol : *ʔ[y]in'an* 10. Notes: PHok **akʰu* 3 (underlying form of the Seri root is *-ako-*).

leaf₄₁ Karuk : *sá:n* # 1, Shasta : *xan:ár* 1, Chimariko : *hitaxai* # 2, Proto-Yana : **t'a:pʰal-* # 3, Achumawi : *a:t'a:p'a* 4, Atsugewi : *ráʔtəp* # 4, Washo : *day'ayʔ* 5, Proto-Pomo : **šVhpʰa* # 6, Antoniaño Salinan : *štan'* 7, Migueleño Salinan : *---* -1, Proto-Yuman : **xʔmalʷ* # 8, Seri : *i=stx* 7, Highland Chontal : *l=ib=ela* 9, Tol : *lo* 9. Notes: PHok **χan ~ *χʷan* 1; PHok **stal ~ *stan* 7 (Seri plural is *'i=stat-ka*); Highland Chontal < Tol.

louse₁₇ Karuk : *áči:č* 1, Shasta : *č'i:ták* 1, Chimariko : --- -1, Proto-Yana : **ci-* 2, Achumawi : *a:m'ic* 3, Atsugewi : *áʔzi?* 1, Washo : *c'i:bel* 1, Proto-Pomo : **ʔahkin^y* 4, Antoniaño Salinan : *t=ik^e?* 5, Migueleño Salinan : *'ike* 5, Proto-Yuman : **ʔi:l^y* 6, Seri : *i:* 7, Highland Chontal : *ʔ=ʔaygwi* 8, Tol : *tít'* 9. Notes: PHok **ači* 1.

meat₄₆ Karuk : *íš* 1, Shasta : *ʔaráw?* 2, Chimariko : *'aʔa* # 3, Proto-Yana : **pa=si* 1, Achumawi : *mi:suc'* 4, Atsugewi : *əssup* # 1, Washo : *=a:daš* 5, Proto-Pomo : **biše* 1, Antoniaño Salinan : *mat* 6, Migueleño Salinan : *maʔt* 6, Proto-Yuman : **si* 1, Seri : *i=pχ'asi* 1, Highland Chontal : *l=iš'ik'* 1, Tol : *pis* 1. Notes: PHok **isi* 1 (Yana form is a compound with the word for 'deer'); Tol word is related to *hi=p'is* 'to eat (meat, candy, juicy fruit)', resemblance to Hokan may be a coincidence.

moon₁₈ Karuk : *kú:srah* 1, Shasta : *č'ú:war* 2, Chimariko : *'ala ~ alla* 3, Proto-Yana : **wak'a:ra* 4, Achumawi : *c'ul'* 2, Atsugewi : *apénʔa=ʔnehu:* 5, Washo : *d'i:be* 6, Proto-Pomo : **ʔala:* 3, Antoniaño Salinan : *ʔac^o:opi?* 7, Migueleño Salinan : *ʔac^o:pe?* 7, Proto-Yuman : **xl^yʔa* 3, Seri : *'i:ša-χ* 8, Highland Chontal : *gal=m'uʔa* 3, Tol : *mim'iy* 9. Notes: PHok **al^yʔa* 3 (Chontal *ʔ'* is morphologically *ʔ + ʔ*); post-PHok **č'u:wal* 2.

mouth₃₁ Karuk : *apma:n* 1, Shasta : *ʔáw* 1, Chimariko : *h^h=awa* -1, Proto-Yana : **pal-* 2, Achumawi : *ap* 1, Atsugewi : *á:p:u* 1, Washo : *h'aŋa* 3, Proto-Pomo : **ʔaha* 4, Antoniaño Salinan : *'e:lek* 5, Migueleño Salinan : *elik* 5, Proto-Yuman : **a* 4, Seri : *i=t'ε:n* 6, Highland Chontal : *l=a=go* 7, Tol : *n=l'ala* 8. Notes: PHok **ap^hu* 1 (Shasta *ʔáw* has an allomorph *ʔahú-* in compounds; Chimariko *=awa* is probably a borrowing from Shasta); PHok **ha* 4.

name₁₀ Karuk : *iθβuy* 1, Shasta : *k^e=kwáy-ik* 2, Chimariko : --- -1, Proto-Yana : **ce:-yau-* 3, Achumawi : *shi* # 4, Atsugewi : *ráksehí:* 4, Washo : *gumt'i:ye* 5, Proto-Pomo : **ʔahši* 6, Antoniaño Salinan : *ʔ=as* 6, Migueleño Salinan : *ʔ=as* 6, Proto-Yuman : **mul^y* 7, Seri : *i=t'a:si* 6, Highland Chontal : *l=a=ft'ine* 8, Tol : *n=la* 9. Notes: PHok **asi ~ *aši* 6.

new₂₃ Karuk : *pít* 1, Shasta : --- -1, Chimariko : *'amani ~ 'amani-t* 2, Proto-Yana : --- -1, Achumawi : *palawi* # 3, Atsugewi : *nikéy* 4, Washo : *t'ešlut'i?* # 5, Proto-Pomo : **šiwey* 6, Antoniaño Salinan : *k=t'ek'a* 7, Migueleño Salinan : *stikwau* 7, Proto-Yuman : **xay* # 8, Seri : *kma:ki?* 9, Highland Chontal : *ʔa=c^e* 10, Tol : *sy'asa* 11.

night₅₀ Karuk : *ikxáram* 1, Shasta : *ʔapxá:* 2, Chimariko : *h'im:i ~ h'im:e* 3, Proto-Yana : **pasi:-yau-* 4, Achumawi : *man-ekca* 5, Atsugewi : *ape:na ~ apé:nə* 6, Washo : *l'elm* 7, Proto-Pomo : **duwe* 8, Antoniaño Salinan : *sm'akai* 9, Migueleño Salinan : *šmak'a:i* 9, Proto-Yuman : **ti:y* 10, Seri : *i=ʔ'amok* 11, Highland Chontal : *l=ib'ugi?* 12, Tol : *p'iste* 13. Notes: ? PHok **mak ~ *muk* (Salinan - Seri).

nose₂₉ Karuk : *yúfiβ* 1, Shasta : *ʔér* 2, Chimariko : *h^h=oχu* 3, Proto-Yana : **li:li-mau-* 4, Achumawi : *yam:i* 5, Atsugewi : *iw?ti ~ iw?ri* 6, Washo : *š'uyeb* 7, Proto-Pomo : **hila* 2, Antoniaño Salinan : *'e:nef'* 8, Migueleño Salinan : *'enenat* 8, Proto-Yuman : **xu* 3, Seri : *i=φ* 9, Highland Chontal : *ʔ=a=ʔnat* 10, Tol : *ne=m'ik^h* 11. Notes: PHok **ila* 2; PHok **χu* 3.

not₃₀ Karuk : *pu-* 1, Shasta : *má:* 2, Chimariko : *x=...na* 3, Proto-Yana : **k^hu:-* 3, Achumawi : *ʔe* # 4, Atsugewi : --- -1, Washo : *'es* 5, Proto-Pomo : **ʔak^how-* 3, Antoniaño Salinan : *ko=* 3, Migueleño Salinan : *ko=* 3, Proto-Yuman : **mV* 2, Seri : *m-* 2, Highland Chontal : *ʔay-* 6, Tol : *ma* 2. Notes: PHok **ma* 2; PHok **k^huw* 3 (negative verb).

one₂₁ Karuk : *yíθa* 1, Shasta : *č'é:ʔaʔ* 2, Chimariko : *p'un* 3, Proto-Yana : **pai-...-ku* 4, Achumawi : *ham'is* 5, Atsugewi : *zíw* 6, Washo : *lak'a-* 7, Proto-Pomo : **k'a-* 8, Antoniaño Salinan : *t'ol* 9, Migueleño Salinan : *t'oixyu* 9, Proto-Yuman : **šin* 10, Seri : *t=ašo* 11, Highland Chontal : *ʔa=n'uli* 12, Tol : *p^han'i* 13.

rain₃₉ Karuk : *paθrih* 1, Shasta : *ʔistúk* # 2, Chimariko : *h=itak^h-ta* # 3, Proto-Yana : **pa-ri-k'u* 4, Achumawi : *asci* 5, Atsugewi : *kwayit-i* 6, Washo : *da=h'a=ʔaš* 7, Proto-Pomo : **ʔihk^he* 6, Antoniaño Salinan : *lišxai* 8, Migueleño Salinan : *lešxai?* 8, Proto-Yuman : **k^wiy* 6, Seri : *i=pka* 9, Highland Chontal : *t=a=gwi* 6, Tol : *hiwⁱ* 10. Notes: PHok **k^{hw}iy* 6.

smoke₃₆ Karuk : *ámku:f* 1, Shasta : *k'u:cá* 2, Chimariko : *q^he* 3, Proto-Yana : **c^he:k'au-* 4, Achumawi : *ma:qic'* 5, Atsugewi : *ʔupwímiz?* 6, Washo : *da=w=y'ac'im* 7, Proto-Pomo : **saha* 8, Antoniaño Salinan : *ʔatet* 9, Migueleño Salinan : *ʔatet* 9, Proto-Yuman : **x^way* 10, Seri : *ʔamk=a:χat* 11, Highland Chontal : *l=iguš'is* 12, Tol : *mus* 13.

star₄₀ Karuk : *atáyra:m* 1, Shasta : *xak:wé:sur* 2, Chimariko : *m'un:e* 3, Proto-Yana : *---* -1, Achumawi : *c'a:mik'* 4, Atsugewi : *náywiʔənó:qa* 5, Washo : *da=w=maʔlosan* 6, Proto-Pomo : *---* -1, Antoniaño Salinan : *ʔačw'a:nil* 7, Migueleño Salinan : *ʔacuwan* 7, Proto-Yuman : **msi* 8, Seri : *ašox* 9, Highland Chontal : *gal=š'amna* 10, Tol : *p^hul* 11.

stone₉ Karuk : *as* 1, Shasta : *ʔica?* 1, Chimariko : *q^haʔa* 1, Proto-Yana : **k'ai-* 2, Achumawi : *alisti* 3, Atsugewi : *nú:yehe* 4, Washo : *d'eʔeg* 5, Proto-Pomo : **q^haʔbe* 1, Antoniaño Salinan : *t=šxa?* 6, Migueleño Salinan : *šxap* 6, Proto-Yuman : **wi:y* 7, Seri : *ʔast* 8, Highland Chontal : *t=ab'ik* 9, Tol : *pe* 9. Notes: PHok **x^ya?* 1 (Pomo word goes back to PHok **x^yaʔpi* 'metate', a compound with PHok 'stone' as a first part); Highland Chontal < Tol.

sun₃₅ Karuk : *kú:srah* 1, Shasta : *č'ú:war* 2, Chimariko : *'as:a* 3, Proto-Yana : **t'ui-* 4, Achumawi : *c'ul'* 2, Atsugewi : *zineʔwó:* 5, Washo : *d'i:be* 6, Proto-Pomo : **haʔda* 7, Antoniaño Salinan : *na?* # 7, Migueleño Salinan : *na?* 7, Proto-Yuman : **n^ya:* 7, Seri : *ša:?* 8, Highland Chontal : *gal=ʔora* - -1, Tol : *loc^hak^h* 9. Notes: PHok **an^ya* 7 (Chimariko *'as:a* may be < **an^ya* if **n^y* gives *s* in that language, cf. PHok **n^ya* 'road' > Proto-Yuman **un^ya* 'road', Proto-Pomo **hiʔda* 'road' and Chimariko *h'is:a* 'road'); post-PHok **č'ú:wal* 2 (= 'moon'); Highland Chontal < Spanish *hora*.

tail₂₆ Karuk : *ápβu:y* 1, Shasta : *ʔihíwa* 1, Chimariko : *'aq^huye* 2, Proto-Yana : **p'ulsu* # 3, Achumawi : *ipi* 1, Atsugewi : *tépwere* 1, Washo : *=ap'il* 3, Proto-Pomo : **hiba:* 1, Antoniaño Salinan : *ec'eʔu* 1, Migueleño Salinan : *ic'eʔp* 1, Proto-Yuman : *---* -1, Seri : *i=p* 1, Highland Chontal : *l=a=bo* 1, Tol : *sok'* 4. Notes: PHok **ipwa* 1; Yana < Washo.

thou₅ [stem 1] Karuk : *i:m* 1, Shasta : *ma:ʔi* 1, Chimariko : *m'am-ot* 1, Proto-Yana : **ai=?numa* 1, Achumawi : *mi:* # 1, Atsugewi : *mi?* 1, Washo : *m'i:* 1, Proto-Pomo : **ʔa=ma* 1, Antoniaño Salinan : *mo?* 1, Migueleño Salinan : *mo?* 1, Proto-Yuman : **ma* 1, Seri : *mε* 1, Highland Chontal : *ʔim'a?* 1, Tol : *hip^h* 2. Notes: PHok **ma?* 1.

thou₅ [stem 2] Karuk : *---* 0, Shasta : *---* 0, Chimariko : *---* 0, Proto-Yana : *---* 0, Achumawi : *---* 0, Atsugewi : *--* -0, Washo : *---* 0, Proto-Pomo : *---* 0, Antoniaño Salinan : *---* 0, Migueleño Salinan : *---* 0, Proto-Yuman : *---* 0, Seri : *---* 0, Highland Chontal : *---* 0, Tol : *ʔe* 3.

tongue₈ Karuk : *ápri:h* 1, Shasta : *ʔéhena* 2, Chimariko : *h=ip^hen* 2, Proto-Yana : **pawaʔla* 1, Achumawi : *ipl'i* 1,

Atsugewi : *ap^hli* 1, Washo : *m'a:dud* 3, Proto-Pomo : **hV(?)bal^y* 1, Antoniaño Salinan : *ep'a:l* 1, Migueleño Salinan : *'ipal* 1, Proto-Yuman : **pal^y* 1, Seri : *i=p^t* 1, Highland Chontal : *t=a=b'a^t* 1, Tol : *m=pe'l'am* 1. Notes: PHok **pal^y* 1 (Yana has a reduplicated form); Shasta and Chimariko words for 'tongue' are derived from the verb 'to lick'. Tol form may reflect a distant relationship with Hokan.

tooth₂₂ Karuk : *βuh* 1, Shasta : *ʔič:aw* 2, Chimariko : *h=uc^yu* 2, Proto-Yana : **k^{hi}=c'au-* 2, Achumawi : *i:c'a* 2, Atsugewi : *īʔaw* 2, Washo : *=iyeg* 3, Proto-Pomo : **hoʔo* 4, Antoniaño Salinan : *ul'et* 5, Migueleño Salinan : *o'ilit* # 5, Proto-Yuman : **ya:w* 6, Seri : *i=t'a:st* 7, Highland Chontal : *l=a=ʔay* 8, Tol : *m=βis* 9. Notes: PHok **c'aw* 1 (Shasta form is also attested with glottalized affricate: *ʔič'aw*); the relationship of this word to Proto-Pomo **hoʔo* < **ʔaw* and Proto-Yuman **ya:w* is unclear.

tree₃₇ Karuk : *ípaha ~ ípa* 1, Shasta : *ʔáka:ha:* 2, Chimariko : *'at^ya ~ 'ac^ya ~ ac^y:a* 3, Proto-Yana : **ʔi-* 4, Achumawi : *asw'u* # 5, Atsugewi : *aʔwí* 5, Washo : *de=wd=iʔiš* 6, Proto-Pomo : **q^hale* 7, Antoniaño Salinan : *ʔ'a:kaʔaʔ* 8, Migueleño Salinan : *ʔ'a:kaʔa* 8, Proto-Yuman : **ʔi:y* 4, Seri : *ʔ'εʔε* 4, Highland Chontal : *ʔ'al=ʔek* 4, Tol : *yo* 9. Notes: PHok **ʔi:y* 4.

two₂ Karuk : *áxak* 1, Shasta : *xúk:a* 1, Chimariko : *χ'oqxu* 1, Proto-Yana : **ux-* 2, Achumawi : *hak'-can* 1, Atsugewi : *hoqe ~ hoqo* 1, Washo : *h'esge-* 3, Proto-Pomo : **ʔaq^hoc* 1, Antoniaño Salinan : *k'akšu* 1, Migueleño Salinan : *x'akiš* 1, Proto-Yuman : **xwak* 1, Seri : *k=o:kx* 1, Highland Chontal : *ʔog'e?* 1, Tol : *m'a-t'e* 4. Notes: PHok **(χu)aqxu* 1.

water₂₈ Karuk : *ás* 1, Shasta : *ʔác:a* 1, Chimariko : *aq^ha* 1, Proto-Yana : **xa-* 1, Achumawi : *as* 1, Atsugewi : *ázi* 1, Washo : *=ime?* 2, Proto-Pomo : **ʔahq^ha* 1, Antoniaño Salinan : *ša?* 1, Migueleño Salinan : *ša?* 1, Proto-Yuman : **xa* 1, Seri : *ʔa=χ* 1, Highland Chontal : *l=a=ha?* 1, Tol : *ʔis'í* 3. Notes: PHok **ax^ya* 1.

we₁ [stem 1] Karuk : *nú:* 1, Shasta : *ča:k'á* 2, Chimariko : *n'a:-č^hitas* 1, Proto-Yana : **ai-(k^{hi})=ʔniki* 3, Achumawi : *it:u* # 3, Atsugewi : *akwír ~ akwiri* 3, Washo : *l'e-w* 4, Proto-Pomo : **ʔa=wi:-ya* 5, Antoniaño Salinan : *ha:ʔk* 3, Migueleño Salinan : *ka?* 3, Proto-Yuman : **ʔn^ya* 3, Seri : *ʔε* 3, Highland Chontal : *ʔiy'a-ŋk'* 3, Tol : *kup^h* 6. Notes: PHok **na* 1; PHok **ʔa* 3 (> **ʔi* under the influence of **ʔi* 'I').

we₁ [stem 2] Karuk : --- 0, Shasta : --- 0, Chimariko : --- 0, Proto-Yana : --- 0, Achumawi : --- 0, Atsugewi : --- 0, Washo : --- 0, Proto-Pomo : --- 0, Antoniaño Salinan : --- 0, Migueleño Salinan : --- 0, Proto-Yuman : --- 0, Seri : --- 0, Highland Chontal : --- 0, Tol : *k^hes'e* 7.

what₁₂ Karuk : *fât* 1, Shasta : *ku:č'á* 2, Chimariko : *p'ac^hyi ~ p^hac^hyi* # 3, Proto-Yana : **ac^hi:(ma)-* # 4, Achumawi : *taq* # 5, Atsugewi : *waʔapyú* 6, Washo : *h'unja ~ ʔ'unja* 7, Proto-Pomo : **baq'o* # 8, Antoniaño Salinan : *tas-* 9, Migueleño Salinan : *ʔaltom'* 9, Proto-Yuman : --- -1, Seri : *aš* 10, Highland Chontal : *de* 11, Tol : *c^han* # 12.

who₆ Karuk : *akâ:y* 1, Shasta : *táka:* 2, Chimariko : *q^ho-mas^y* # 3, Proto-Yana : **ʔampi(ma)-* 4, Achumawi : *kí:* # 1, Atsugewi : *hupyú ~ wapyú* 5, Washo : *g'u:diŋa* 6, Proto-Pomo : **ki- ~ *ka-* 1, Antoniaño Salinan : *ta-* 7, Migueleño Salinan : *teka?* 7, Proto-Yuman : **ka* # 1, Seri : *ki:?* 1, Highland Chontal : *n'ayci* 8, Tol : *p^hak^h* 9. Notes: PHok **ki ~ *ka* 1.