# Stress-based truncation of loanwords in the Yuman languages

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**Introduction:** We analyze patterns of loanword adaptation among the Yuman languages (Figure 1). Previous studies have observed that specific Yuman languages often omit the "vowels of unstressed word-final syllables" (Cocopa: Crawford 1979), or "post-stress vowels" (Tiipay: Miller 2001). Except Kiliwa (which has borrowed few words; Mixco 1977) and the Upland Pai languages (Havasupai, Hualapai, and Yavapai), Yuman languages truncate post-stress vowels but preserve post-stress consonants in Spanish and English loanwords, though truncation applies less consistently to English loans, which are more recent. We argue that functional pressures to maintain word-final stress as a cue to word boundaries drives loanword truncation.

**Data:** We surveyed dictionaries and linguistic analyses of 10 Yuman languages for Spanish and English loanwords ('Iipay: Couro and Hutcheson 1973; Tiipay: Miller 2001; Cocopa: Crawford 1989; Mojave: Munro et al. 1992; Piipaash: Langdon et al. 1991; Quechan: Quechan Language Program 2017; Paipai: Joël 1998; Havasupai: Hinton 1984; Hualapai: Watahomigie et al. 2003, Winter 1990; Yavapai: Munro and Fasthorse 1991). Aside from Upland Pai, Yuman languages typically omit post-stress unstressed vowels from Spanish loans (e.g. 1–8). Post-stress consonants are usually preserved, even where they introduce non-native consonant clusters (e.g. 4–8):

(1) Spanish *hílo* 'thread' > Cocopa *ʔíːl*, Mojave *ʔíːl*, Paipai *ʔíːl*, Hualapai *aʔíːl*, Havasupai *aʔíːla*, Yavapai *ʔíːla*

(2) Spanish *la mésa* 'table' > 'Iipay *lamésː*, Tiipay *laːmésːs*, Cocopa *lamísːs*, Mojave *lamés ~ ʔalamés*, Piipaash *laméːs*, Quechan *laːmésːs*

(3) Spanish *vaqúero* 'cowboy' > 'Iipay *vakéːr*, Cocopa *vakéːr ~ vakíːr*, Mojave *waːkyér*, Piipaash *pakyéːr*, Paipai *vakéːr*, Yavapai *maːkéːra*

(4) Spanish *puéblo* 'town' > 'Iipay *pwéːbl*, Tiipay *pwéːl*

(5) Spanish *úvas* 'grapes' > Cocopa *ʔúːvs*, Piipaash *ʔúːvs*

(6) Spanish *católico* 'Catholic' > Tiipay *katóːlk*

(7) Spanish *máquina* 'car, machine' > 'Iipay *máːkin*, Cocopa *máːkn*

(8) Spanish *(el) sábado* 'Saturday' > Cocopa *(nʸa)sáːwð*, Piipaash *elsáːv*, Quechan *sáːvθ*

English loanwords are fewer, but post-stress vowels may again be omitted (e.g. 9–10). However, post-stress vowels are more often retained in English loanwords, which are more recent, even in languages that consistently truncated Spanish loanwords (e.g. Cocopa, Mojave, Piipaash; 11–14).

(9) English *alfálfa* > Cocopa *ʔalfálf ~ ʔalfáːls*, Mojave *ʔalfáːlf*, Havasupai *alfʔalfa*

(10) English *spaghétti* > Piipaash *spkyáːt*

(11) English *cábbage* > Mojave *kyáːpiʧ*

(12) English *Mórmon* > Cocopa *múːman*, Piipaash *móːmon*

(13) English *Návajo* > Mojave *naːvahó ~ náːvaho*

(14) English *áutomobile* > Cocopa *ʔaruvíːl*, Hualapai *ʔanóbil*, Havasupai *anbíl*

**Analysis:** Yuman languages regularly place stress on the root of native words (Langdon 1977a). Because of the predominance of derivational prefixes, uninflected words tend to have
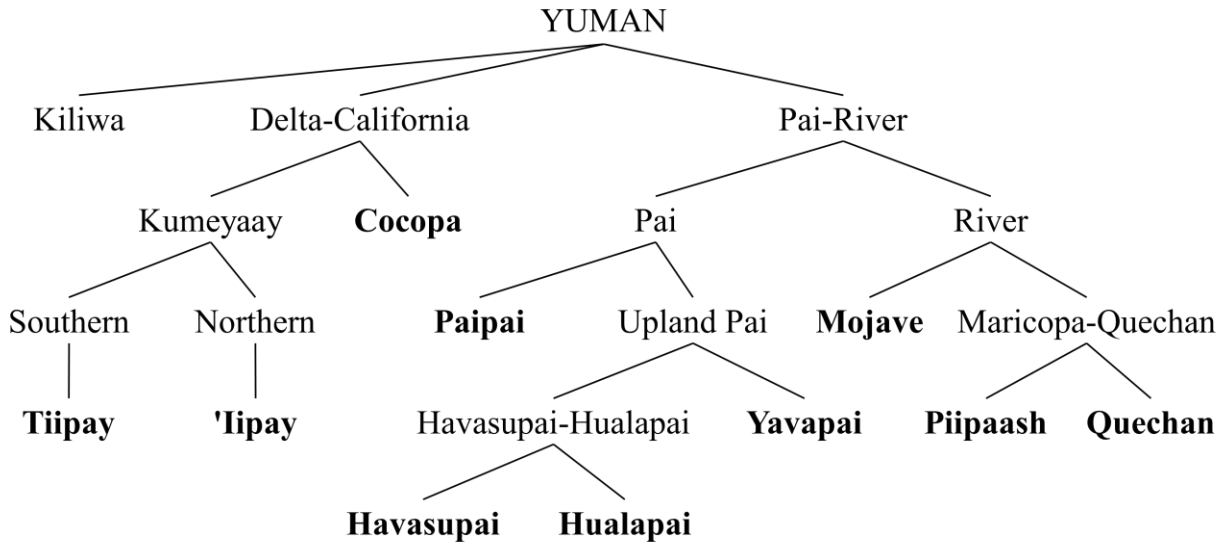
**Figure 1.** Yuman language family tree, simplified from Miller (2018).

word-final stress in Yuman (Kroeber 1943, Langdon 1977a, Wares 1968). Stress does not typically occur on a word's final syllable in Spanish (Harris 1983) or English (Cutler and Carter 1987), and so truncation adapts loanwords to the native Yuman stress pattern. We find a parallel in historical morphological changes in Yuman, where unstressed syllable-adding suffixes have been reanalyzed as prefixes on the following word to maintain word-final stress (Langdon 1977b).

**Discussion:** No language is obligated to adapt loanwords to native phonological patterns. In fact, Yuman languages often retain non-native sounds and clusters in Spanish and English loans (e.g. Crawford 1979, Langdon 1966, Miller 2001; cf. examples 4–10). We propose that Yuman languages truncate loanwords to preserve word-final stress as indicators of word boundaries and so facilitate spoken language processing: Speech consists of a continuous series of words without clear word boundaries, and listeners must segment speech into discrete word-sized units (Cutler 2012). Psycholinguistic research has shown that, in languages with consistent stress placement, listeners use stress to identify word boundaries and segment speech into words (e.g. Banel and Bacri 1994; Cutler and Butterfield 1990). Loanword truncation (and suffix reanalysis; Langdon 1977b) makes stress word-final, thus preserving the reliability of stress as a cue to word endings.

**Word count:** 500 words (excluding title, examples, and references)

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