Converging sources of evidence in the reconstruction of proto-Huave

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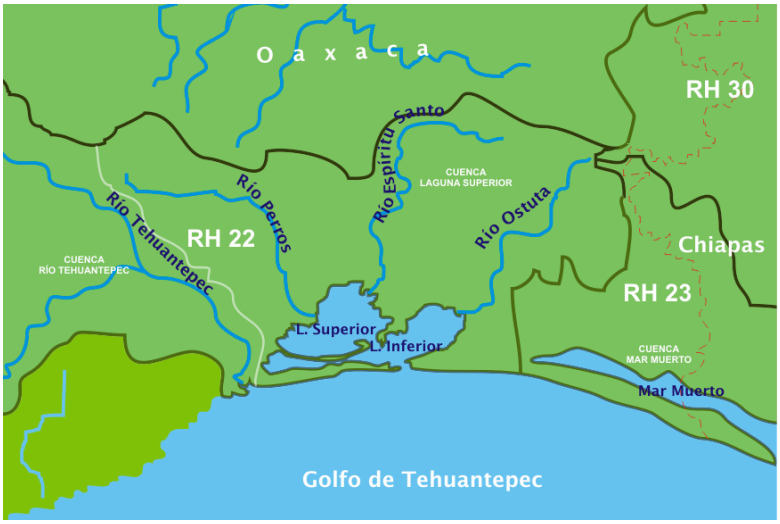
A. Introduction

(1) **pH** proto-Huave

Mo	**San Mateo** Huave	**vigorous**: used by all ages; 3000+ speakers
Ma	**Santa María** Huave	**moribund**: fewer than 60 fluent speakers (all > 40 y.o.)
D	**San Dionísio** Huave	**endangered**: most speakers are adults, use is declining
F	**San Francisco** Huave	**severely endangered**: almost no fluent speakers still living



☞ The groundwork for the 'standard' reconstruction of proto-Huave (pH) appeared in Suárez (1975) [Su.] In this paper we *critically assess the standard reconstruction*, making use of four types of evidence:

(2) (a) comparative, based on more extensive data
- Stairs & Stairs (1981) dictionary; Stairs & Hollenbach (1981) grammar (**Mo**)
- Yuni Kim, dissertation (**F**) and continuing field work
- Mikko Saalminen, dissertation in progress (**D**)
- My own field work (all communities, but especially **M**)

(b) early documentary sources:
- 19th century word lists (Peñafiel [Peñ.] Brasseur de Bourbourg, others);
- grammar (**Ma**) by F. Belmar (1901) [B.]
- unpublished field notes of Paul Radin (1913) (**D**) [R.]

(c) data from Spanish loan words
- dissertation by Richard Diebold (1961) on loan phonology (**Mo**) [Db.]

(d) evidence from pre-conquest language contact
- My own Historical-Comparative dictionary (in progress), see also article in *Amerindia*.

(3) Proto-Huave Segment Inventory

p	**t**	**c**	**k**	**k^{w}**	voicless stops/affricate	**c** = [ts]
mb	**nd**	**nc**	**ng**	**ng^{w}**	prenasalized stops/affricate	**nc** = [nt͡s], **ng** = [ŋ͡g], **ng^{w}** = [ŋ͡g^{w}]
	s				fricative	
	rr				trill	**rr** = [r]
	r				flap	**r** = [ɾ]
m	**n**				nasals	
	l				lateral	
w	**y**	**h**			glides	
i	**ɨ**				vowels	
e	**o**					
	a					

(4) C^{o} 'plain consonant'
C′ 'palatalized consonant' ☞ An abstract phonological property

(5) Phonetic effects of phonological palatalization vary. Only certain consonants are 'palatalizable' in the sense that phonological palatalization is always manifested phonetically:
Coronals: **s′** → [ʃ] **c′** → [t͡ʃ] **nc′** → [nt͡ʃ]

(6) Proto-Huave *… **C'VCV**#
a. open syllables
b. penultimate stress
c. most roots disyllabic, some trisyllabic
d. palatalization merely allophonic before front vowels

(7) Major changes producing the contemporary dialects

*… **C'V$_1$CV$_2$** > **C'V$_{1\cdot2}$C**#

a. *mutation* of stressed vowels by following stressless vowels
b. **apocope** of final (stressless) vowels
c. emergence of phonologically **contrastive palatalization**
d. **diphthongization and breaking** of complex vocalic syllable nuclei
e. **chain shifts** in vowels

(8) **Synopsis**

a. Onsets of stressed syllables: *C → C′ before stressed *i *e or *ɨ

b. Rhymes of stressed syllables:

	proto-form	usual	special developments
I	*iCi	iC′	
II	*eCe	eC′	Mo: aC′
III	*iCa/*eCa	aC	
IV	*iCo/*eCo	oC	F: uC before *h, *s
V	*iCɨ	iC	
VI	*aCa	aC	
VII	*oCo	oC	F: uC before *h, *s
VIII	*aCi, *aCe	ɨC′	F: aC′
			Ma CɨC′ *but* CaK′ (K = velar)
IX	*oCi, *oCe	oC′	D: uC′
X	*ɨCi		Mo: eC′ *but* oR′ (R = rhotic)
			Ma: ʉC′
			D: üC′ *but* iw′
			F: uC′ *but* ip′
XI	*ɨCɨ	same as X	*except* F: up, uk

(9) Uniform outcomes in all dialects

I	***niti**	**n′it′**	‘palm tree’
III	***pita**	(-)**p′at**	‘forest, scrubland, mountains’
IV	***tico**	**-t′oc**	‘think v.
V	***cíkɨ**	**c′ik**	‘mojarra blanca (fish sp.)’
VI	***-ranga**	**-rang**	‘make, do’
VII	***toko**	**tok**	‘fig tree’

(10) Diverse phonological outcomes

II	***-mbese**	Mo **-mb′as′**	else:	**-mb′es′**	‘nail, claw’
VIII	***kati**	F **kat′**	else:	**kɨt′**	‘fish’
	***-laki**	FMa **-lak′**	else:	**-lɨk′**	‘tooth’
IX	***-h-toci**	D **-htuc′**	else:	**-htoc′**	‘stumble’

(11) Identical underlying phonological outcomes may different surface phonetic realizations. Vowel Breaking (often occuring only in stressed syllables) creates compex syllable nuclei:

	Mo	Ma	D	F
c′ik˚	[t͡ʃiik]	[t͡ʃiik]	[t͡ʃiik]	[t͡ʃi̯ok]
-p′at	[pɛ̯ät]	[pʲät]	[pʲät]	[pʲät] (← /p′et/ in Kim’s analysis)

(12) Examples of Vowel Breaking

D	**uC′** →	[u̯oC]	
D	**üC′** →	[ü̯eC]	when C is coronal
F	**iC°** →	[i̯oC]	(i̯ → Ø after alveopalatals < **s′ c′ nc′**)
			(o → u before **h**, **s**)
F	**eC°** →	[i̯aC]	
F	**uk′** →	[ui̯k]	
MoMaD	**iC°** →	[ii̯C]	

(13) X and XI merge everywhere *except* in F before *p and *k.

X	***ncɨpi**	Mo **nc′ep′**	Ma **nc′ʉp′**	D **nc′üp′**	F **nc′ip′**	‘basket’
XI	***o-sɨpɨ**	Mo **os′ep′**	Ma **us′ʉp′**	D **us′üp′**	F **us′up**	‘tomorrow’
X	***ndɨki**	Mo **nd′ek′**	Ma **nd′ʉk′**	D **nd′ük′**	F **nd′uk′**	‘sea, lagoon’
XI	***kɨkɨ**	Mo **k′ek′**	Ma **k′ʉk′**	D **k′ük′**	F **k′uk**	‘bird’

(14) In cases of ambiguity I will write ***CɨCɪ** (= *CɨCi or *CiCi).
- The second C is always subject to palatalization after pH ***ɨ**
- **s c nc** are *always* [ʃ t͡ʃ nt͡ʃ].

X(I)	***-h-mɨlɪ**	Mo **-hm′el′** [a-hmel]	Ma **-hm′ʉl′** [a-hmʉlʲ]	D **-hm′ül′** [a-hmü̯elʲ]	F **-hm′ul′** [a-hmulʲ]	‘enter’
	***-nɨncɪ**	Mo **n′enc′** [nent͡ʃ]	Ma **n′ʉnc′** [nʲʉnt͡ʃ]	D **n′ünc′** [nʲü̯ent͡ʃ]	F **n′unc′** [nʲunt͡ʃ]	‘boy, child’

II. Evaluation and Chronology

(15) **Different sources of evidence for earlier stages of Huave**

a. **Pre-modern or early modern documents**

i. Responses to 19c word list questionnaires authorized by Antonio Peñafiel — partly illegible

ii. A few more mid-late 19c word lists (e.g. Brasseur de Bourbourg) — extremely short

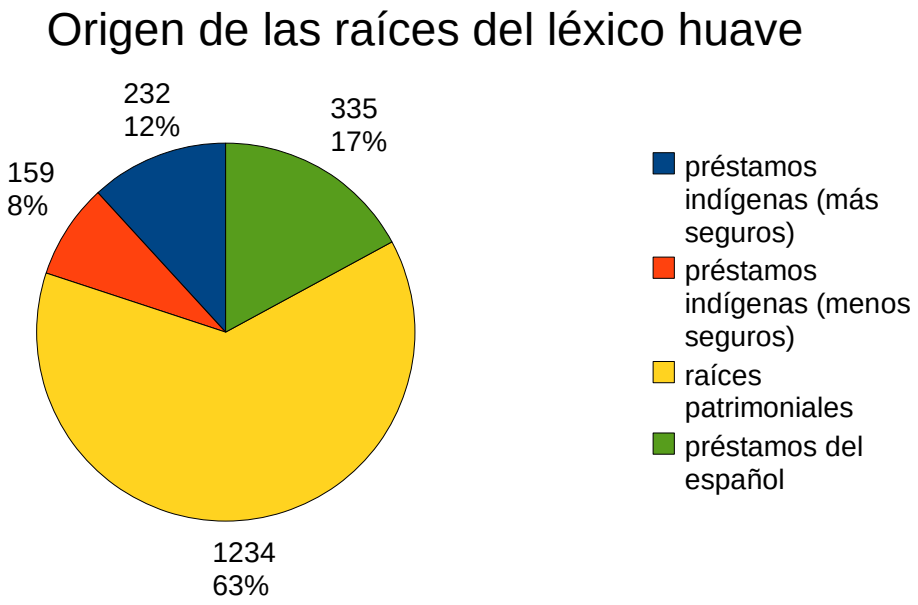
iii. Francisco Belmar (1901): substantial grammar of Santa María — marred by printing errors

iv. Field notes of Paul Radin (1913): San Dionisio

b. **Language contact**

i. Reflexes of Spanish loanwords can establish which changes are post-Conquest

ii. Pre-Columbian language contact evidence (substantial)



A. Data from early word lists

(16) **Attested 19c pre-apocopated forms** (phonological interpretation)

I	***iCi**	abundant	F	-iCi	-iCe						
			Ma	-iCi	-iCe						
			D	-iCi	-iCe	-iCu ?					
			Mo	-iCi	-iCe ?						
II	***eCe**	abundant	F	-eCe	-iCe						
			Ma	-eCe	-eCi						
			D	-eCe							
			Mo	-eCe							
III	***iCa**	**<u>almost none</u>**	F	-C′aCa ?							
			Ma	-Ca(e)Ca	-Ca(e)Ce						
IV	***iCo**	**<u>none</u>**									
V	***iCɨ**	abundant	F	-ie(a)Ca							
			D	-ieCa	-iaCa	-ioCa					
			Ma	-ieCe	-iaCa	-ieCo					
VI	***aCa**	abundant	F	-aCa							
			Ma	-aCa							
			D	-aCa							
			Mo	-aCa							
VII	***oCo**	fair	F	-oCo	-oCu	-oCa					
			Ma	-oCo							
			D	-oCo							
			Mo	-oCə ?							
VIII	***aCi**	abundant	F	-aCi	-aiCi	-aiCe	-aéCi	-iCi ?			
			Ma	-ueCi	-äiCi	-aiCi	-ëiCi	-öiCi	-eeCi	-ueCe	-eiCi
			D	-uCi	-eéCi	-euCa					
			Mo	-aCi	-aCe						
IX	***oCi**	few	F	-oiCi							
			Ma	-oiCi	-ooiCi	-ooCi					
			Mo	-oCi							
X	***ɨCi**	few	F	-uiCi	-uhCi						
			Ma	-iuCi							
			Mo	-uCi							
XI	***ɨCɨ**	few	F	-uCu	-uCo	-uCa ?					
			Ma	-uCu	-uCe						
X(I)	***ɨCɪ**	few	F	-uCi							
			Ma	-u(i)Ci	-u(e)Ce						
			Mo	-uCi							

B. Puzzling Problem of the Sibilants

• A special development observed when C_2 = S (***s, *c, *nc**) and **V_2 is a back vowel**:

(17)

			documented form	current form
III	***CiSa**	F	CáaŠi , CeaŠi	C^{j}a<u>S</u>
		Ma	CaeŠi	C^{j}a<u>S</u>
		D	CaŠi , CéaŠi, CeáhŠi	C^{j}a<u>S</u>
		Mo	CaŠa	C^{j}a<u>S</u>
	***mihca**	F	*-máaxi, -meacsi*	-m^{j}aht͡s
	'heart'	Ma	*-maexi*	-m^{j}ahs
		D	*-máchi, -m(e)ájchi*	-m^{j}aht͡s
		Mo	*-macha*	-m^{j}a:t͡s
	***o-ndica**	F	*u-ndaaxi*	-nd^{j}aht͡s
	'hair'	Ma	*u-ndatxy*	-nd^{j}ahs
		D	*za-ndéachi*	-nd^{j}aht͡s
	***mi-tihca**	F	*mi-táaxi*	-t^{j}aht͡s
	'priest'	D	*mi-teájchi/-tiájchi* ?	-t^{j}aht͡s
		Mo	*mi-tacha*	-t^{j}a:t͡s
IV	***CiSo**	F	CoŠi	C^{j}o<u>S</u>
		D	CoŠi	C^{j}o<u>S</u>
		Ma	CeoŠi	C^{j}o<u>S</u>
	***tico**	F	*-toxi*	-t^{j}ot͡s
	'think'	D	*-tóchi*	-t^{j}ot͡s
		Ma	*-teoxy, -teoxhi*	-t^{j}ot͡s
V	***CiSɨ**	F	CiŠi ?	C<u>i̭</u>o<u>S</u>
		D	CiŠi ?	Cii<u>S</u>
	-ng^{w}ihcɨ	F	*-nguishi*	-ŋg^{w}ʲi̭uht͡s
	'night'	D	*-nguijchi*	-ŋg(^{w})ʲiəht͡s
VI	***CaSa**	F	CaŠi	Ca<u>S</u>
		Ma	CaŠi	Ca<u>S</u>
		D	CaŠi	Ca<u>S</u>
		Mo	CaSə (late)	Ca<u>S</u>
	***kanca**	D	*-cánchi*	-kant͡s
	'red/chili'	Ma	*-canxi*	-kant͡s
		Mo	*-kānsŭ* (late)	-kant͡s
	***-làhca**	D	*-lájchi*	-laht͡s
	'bone'	F	*-lagshi*	-laht͡s / -las
	***cahca-ca**	D	*acáchi*	akat͡s
	'sky'	Ma	*-acacxi*	t͡sahkat͡s

VII	***CoSo**	Ma	ČoŠi ?	CoS
		D	CoŠe	CoS
		Mo	CoŠa	CoS
	***-sohco**	Ma	*mi-xoxi*	sohs
	'beard'	D	*zoójche*	soht͡s
		Mo	*sohocha*	so:t͡s

☞ Judging by the word list data, all the dialects of Huave passed through a stage where **all sibilants after stressed vowels became palatalized.** The exact reasons for this are entirely unclear.

☞ Later, sibilants were apparently **generally depalatalized after stressed back vowels**:

(18) ***kanca** > ***kanči** > **kanc** 'red/chili'

☞ But something must have prevented **originally** palatalized sibilants from being depalatalized in the same positions. Presumably the preceding syllable nucleus had become a diphthong:

(19) ***masi** > ***maši** > ***maə̯ši** > **maš** (> **miš**) 'canoe'

☞ Depalatalization of sibilants must have occured when **maš** was still ***maə̯ši**.

(20) **Summary of early word list data**

a. The match between pH *CVCV sequences and attested 19c pre-acopated forms is **quite uneven**.

☞ Certain sequences are abundantly attested with good phonological matching

☞ The *front-back* vowel transitions are most problematic:

☞ *iCo, *iCa have no matching pre-apocopated attestations

☞ *iCi is abundantly represented
but *i appears as /a/ in attested early forms*: -ieCa, -ieaCa, -iaCa*

b. The reflexes of *iCi and *iCi have merged everywhere except before *p/*k in San Francisco.

☞ Nevertheless the distinction does correlate with differences in pre-apocopated forms:

☞ *iCi V_2 always appears as a back vowel in F: *-uCu, -uCo, -uCa*
V_1 is never diphthongal in Ma: *-uCu, -uCe*

☞ *iCi /*iCɪ V_1 is sometimes diphthongal in Ma*: -u(e)Ci, -u(e)Ce*
V_2 is always a front vowel in Ma, F, Mo

c. The behavior of the sibilants *S = *s *c *nc is **extremely puzzling**

☞ When C_2 = *S, in the stage prior to Apocope, *S is *always palatalized*

☞ The palatalization of *S occurs *regardless of the quality of the adjacent vowels*

☞ In all contemporary dialects *S is then *depalatalized* unless it *S was adjacent to a back vowel.

D. Evidence from Spanish loans

☞ Loans from Spanish entered Huave at various time depths that can be gagued (approximately) by
(a) whether the form has or has not undergone further sound changes in Huave after being borrowed
(b) the degree of nativization (changes in the source form to conform to Huave phonology) in
(i) non-native segments [f v b d g]
(ii) non-final closed syllables
(iii) violations of general phonotactics, e.g. unpalatalized [s] before or after front vowels

(21) **Late or indirect borrowings give no evidence for pH form**
☞ Huave word cannot have been borrowed early because it did not undergo the post-pH vowel shifts
☞ Numerous borrowings from Spanish show this pattern.

II. Sp *cohete* > Mo **k^{w}et**, *not* ****k^{w}at′** (< pH ****k^{w}ete**)
cf. Mo **-k^{w}′at′** 'arrive' < pH ***k^{w}ete**

III. Sp *escopeta* > Mo **eskopet**, not ****eskop′at** (< pH ****...peta**),
cf. Mo **p′at** 'monte, selva' < pH ***pita**
Sp *mesa* > MoD **mes**, not ****m′as** (< pH ****mesa**)
Sp *misa* > Mo **mis**, not ****m′as** (< PH ****misa**)
Sp *esquina* > Ma **n-eskin-kin** 'oblong, rectangular', not ****n-esk′an-k′an** (< pH ***eskina**)

IV. Sp *vino* > Mo **bin**, *not* ****b′on** (< pH ***(m)bino**)
Sp *domingo* > Mo **doming**, not ****dom′ong** (< pH ****(n)domingo**)
Sp *racimo* > Mo **rosim**, not ****ros′om** (< pH ****** ... **simo**)

(22) **Chain shifting and Breaking of vowels does affect early Spanish loanwords.**
☞ These vowel shifts are therefore clearly post-conquest or the very least were already in progress by the time of European contact.
☞ But some loans arrived via Zapotec or Nahuatl and were altered already by the phonologies of those languages. Loan data must always be used cautiously.

(23) Vowel Shifts and Breaking

***ɨC > eC′**	i-Fronting/Lowering	Mo
eC′ > aC′	e-Lowering	Mo
aC′ > ɨC′	a-Raising	D, Mo
		Ma except before velars
iC^{o} → iɨC	i-Breaking	Ma D Mo
iC^{o} → i̯oC	i-Breaking	F
oC′ → uo̯C′	o-Breaking	D

(24) **a. a-Raising**

rancho	MoMa **rr**ɨ**nc′**	cf. F ⟨rranchi⟩ Peñ.
cucaracha	MoMaD **kar**ɨ**c′**	cf. F **karac′**
naranja	MoD **nar**ɨ**s′,** D ⟨narüoš⟩ Rad.	cf. F **naras′**
caja	MoMa **k**ɨ**s′**	
hacha	Mo **ɨc′**	cf.F **ahc′**
vacas > Náh *huacax*		
>	MoMaD **wak**ɨ**s′,** Ma ⟨wakesh⟩ Bel.	cf. F **wakas′**

b. e-Lowering

machete	Mo **mac′at′**	cf. DMaF **mac′et′**
sartén	Mo **s′ort′an′**, ⟨xàrtéàn⟩ Db.	
mecha	Mo **m′ac′**	
candela	Mo **kand′al′**	cf. F **kand′el′**
panela	Mo **pan′al′**	cf. DF **pan′el′**
chechén	Mo **c′ec′an′**	
saraguelles	Mo **sarral′**	cf. Ma **sarwel′**

c. i-Breaking

tomín	MoD **tomi**ɨ**n**, Ma **tumi**ɨ**n,** F **tomi̯on**
lima	Mo **l′i**ɨ**m**
cocina	Mo **kosi**ɨ**n,** F **kosi̯ond**
pinto	Mo **pi:**ɨ**nd**
cinto	Mo **si**ɨ**nd** ‘belt’

d. o-Breaking

Sp *coyote*	D **koyu̯ot**, ⟨cuyuéét⟩ Peñ.

(25)

*ɨ >	ʉ	i-Rounding:	F D Ma
	ʉ > ü	ʉ-Fronting:	D
	ʉ > u	ʉ-Backing:	F

☞ Since Spanish words do not have [i] it is difficult to time these shifts.

When did palatalization become contrastive?

(26) Treatment of [s̲ ʃ t͡ʃ] in Spanish loans varies considerably according to time depth.

a. Sp [s] retained even before or after front vowels

aceite	Mo ⟨àsét⟩ D.
asierra	Mo (**a**)**siir, asier**
cementerio	Mo **sementer**
cer	Mo **ser**
cinturón	Mo **sintirong**
confesión	Mo ⟨cònfèsyón⟩ Db.

b. Sp [s] ≫ [s ~ ʃ]

hasta	Mo ⟨ástà, íxtà, ístà, ást⟩ Db.
juicio	Mo **fis**, **fis′**, F **fis**
eslabón	Mo ⟨lìslìbón, lìxlèabón⟩ Db.
mistu	Mo **mista, mis′ta**
queso	MoD **kes**, F **kes′**
mista 'kitty'	Mo **mista, mis′ta**

Sp [nt͡ʃ] ≫ [nt͡s ~ nt͡ʃ]

malinche	Mo **malíanc, molíanc, maliánc′**

c. Sp [s] ≫ [ʃ]

camisa	MoDF **kamis′**	[ʃ]	
castilla	Mo **kast′il′e**	[s]	'Spanish'
	Mo **kast′il′ mbah**	[s]	'basil', lit. 'Spanish flower'
	F **kast′il′**	[s]	'Spanish'
	F **p′ac kas′t′il′**	[ʃ]	'bread', lit. 'Spanish tortilla'
cascalote ?	Mo **kis′kalot**	[ʃ]	
anís	Mo **mbah in′is′**	[ʃ]	
sandía	Mo **s′ind′iy, s′end′iy**		
	F **s′ind′i**		
	D **s′andiy**		
sartén	Mo **s′ort′an**, ⟨xàrtèán⟩ Db.		

d. Early modern Spanish *j* = [ʃ] → **s′**

tijeras	MoD **tis′er,** Mo ⟨tìhér⟩ Db.	
jabón	Mo **s′abon, s′ebon**, ⟨sàbón⟩ Db.	
jarro	Mo **s′ar, s′or**	
judío	D **s′odɨy**	‘Jews (as a people)’
	Mo **s′odiy**	
	D **s′ut′**	‘El Judío’ (character in a Holy Week procession)
	F **s′ut′i**	
caja	MaMo **kɨs′**	
cojo	MaMo **kos′**	

e. Early modern Spanish *j* = [ʃ] → **s** ?

Sp *taja* ≫ *?* Mo **atasah**

Sp *teja* ≫ Mo **t′as**

E. Evidence from pre-conquest language contact

- At least 200 proto-Huave etyma are likely or very likely borrowings from other Mesoamerican languages, chiefly Mixe-Zoquean and Mayan.
  ☞ In a few cases (words for sea life) it is possible that Huave is the source of borrowing.

- Comparing the proto-Huave borrowed etyma with their putative sources provides:
  (i) strong support for some reconstructed CVCV sequences
  (ii) but *virtually none* for other CVCV sequences

Three patterns (*with selected examples*):

(27) **Pattern A: Early Borrowing or Contact, proto-Huave form corroborated.**
Source (or goal) form is (at least) disyllabic with good match to pH etymon.

source	C_1	V_1	C_2	V_2
	|	|	|	|
pH	C_1	V_1	C_2	V_2

I ***CiCi**

(a) pH ***cíli** 'black mojarra' ≫ OaxChont **-astili** 'mojarra'
(b) pH ***hímbi** 'sweep': Oluteco **tɨn-hi:m-pe** 'be scouring, be rubbing'
(c) pH ***kihci** 'pinch': IsthZap **gui'chi'** 'pressed upon, too tight'
(d) pH ***kíti** 'chicken': pZap ***gidi** (☞ no IsthZap reflex)
(e) pH ***ma-ngisi** 'comal': IsthZap **guiiche** 'metate' (?)
(f) pH ***mbiti-ki** 'carry a load': Chrt **p'iti** 'carry on head or shoulder'
Chlt **p'iti** 'carry on shoulders'
(g) pH ***mili** 'lisa (fish)' ≫ IsthZap **mili**
(h) pH ***pihti** 'epazote' ≪ IsthZap **bitiaa**

X, XI: ***CɨCi** / ***CɨCɨ** / ***CɨCɪ**

(a) pH ***ncɨpi** 'basket': OaxCont **-antsubíh** 'basket'
(b) pH ***pɨwi** 'daughter-in-law; mother-in-law': TtnS **pu:wi'ti't** 'daughter-in-law'
TtnX **puwiti'** 'father-in-law'
(c) pH ***sìhpi, *sɨmbi** 'bathe': Chol **sujp'-el** 'submerge', Chrt **sub-i** 'dip up and down, rinse'
(d) pH ***sɨlɪ** 'turkey vulture': Chol Tzo Tzel **xulem**
(e) pH ***tɨ́ki** 'petate': pMx ***to?k-i**
(f) pH ***tɨ̀nɪ** 'mombin': pMZ ***tu:ni**
(g) pH ***tɨ́lɪ** 'turkey' ChontOax **-amo-dulu** 'wild turkey'
Tzo Tze **tuluk'** 'turkey' ≪ pZoq ***tu?nuk** id.
(h) pH ***lɨcɨ** 'sharp point, bullfighter' Chol **lujch-in** 'gore with a horn', Toj **luchu** id.

V. ***CiCiɨ**

(a) pH ***na-wirrɨ** 'day after tomorrow': pZp ***wɨʔɨč-ɨ/aʔ,** IsthZap **widxe**
(b) pH ***wicɨ** 'orange oriole': zoCop **witsɨ**, zoFL **vistø** 'Mexican hawthorn — a plant with an orange fruit'
(c) pH ***wihtɨ** 'sour red mombin': OaxChont **widuʔ**, pl. **wiłdúʔ** 'fruit of the black sloe'

III. ***CiCa, *CeCa** (few examples):

(a) pH ***pahtima** 'calabash tree' : mOlu **čima-kuyɨ** 'gourd tree'
pMa (≪ pMZ) ***cima(ʔ)** 'bowl made out of a gourd'
pMa ***paːt** 'back; bark'
(b) pH ***ceka/*caka** 'woodpecker': (areally diffused word): Chol **x-ch'ejku** id.
pMZ ***cehe** 'carpenter' >mOlu **ceh-oʔk** 'woodpecker'
(c) pH ***cika** 'armpit': ? Itzá **sik'** id., Mop **xik'** id., Yuc **xiik'** 'wing, armpit'
(d) pH ***peca** 'tortilla': Chlt ⟨pech⟩ 'squeeze with hands; make tortillas'
(e) pH ***wehka** 'llamanorte (bird)' pOaxMixe ***mak-wehkš-n** 'type of turkey vulture'
(f) pH ***weka** 'horn' ZoChMg **wekaʔ**, pMa ***ʔuːk'aːʔ**

(28) **Pattern B: Early borrowing; pH form is consistent with evidence, but V_2 unattested**
Source form is monosyllabic (typical for Mayan or pMZ roots)
Adaptation into pH would have required V_2 because all σs were open
If C_2 in the source is palatalized, pH V_2 is a front or high vowel

source	C_1	V_1	C_2	
	|	|	|	
pH	C_1	V_1	C_2	V_2

I: ***CiCi** :

(a) pH ***cihki** 'younger brother': pZoq ***ciks** 'little'
mOlu **makcɨʔk** 'younger brother', mSay **máhcɨk**
(b) pH ***cini** 'underdeveloped': pMa ***tʸiːn** 'little' > Tzo **ch'ín**, TzelTojQat **ch'in**, etc.
(c) pH ***cipini** 'tomato': mSay **ˈčipin** 'tomato', mOlu **čipiʔn** 'tomato, smallpox'
(d) pH ***tinci** 'spill out': Yuc **tits'** 'jump (drops of spilled liquid)'
☞ Mayan ejectives are frequently borrowed as prenasalized stops in Huave
(e) pH ***piwi** 'remove seeds, card': pMZ ***piw** 'rummage, scavenge, go through'
mCtn **pi(·)w** 'gather with the fingers, e.g. corn' etc.
mSJP **pi(·)w** 'pick up small objects, e.g. coffee beans'
(f) pH ***kici** 'child' pMxOax ***kihšʸ** 'little girl', mSay **kiʔč** 'boy'
(g) pH ***sìhci** 'root' Lac **'u-ši:č'-eːr** 'vein, root', Chrt **noh chich** 'vein', Yuc **xiich'** 'tendon'

X, XI: *C$_1$iC$_2$i, *C$_1$iC$_2$ɨ

(a)	pH ***kɨ́li** ‘chest made of palm’:	Chlt **kuhl, ku’uhl** ‘type of palm’
		Mop **kuul** ‘id.; heart of palm’
(b)	pH ***pɨki** ‘feather’:	pMZ ***pɨk** ‘skin, feather’
(c)	pH ***cɨhki** ‘mirror’:	pChol ***č’uk** ‘spy, watch over’
		Chrt **ch’uhku** ‘watch, find out about, gape’
		Chol adv. **ch’uj-ch’uj** ‘with insistent gaze’
(d)	pH ***rrɨ́wɪ** ‘catfish’	Lac **ru’** ‘small bobo (fish)’, Lac **lu’** ‘fish sp. without scales’
		Chol Itzá **aj-lu’** ‘catfish’
(e)	pH ***cɨ̀(h)ti** ‘untie, let loose’:	pMZ ***ko-ciʔt** ‘slip away’
(f)	pH ***o-sípɨ** ‘tomorrow’:	mOlu **ʔušɨʔp** ‘in the evening’
(g)	pH ***pɨ(h)cɨ** ‘back, behind, loins’:	MaEp ⟨pu-chi⟩ **puuch** ‘intestines’
(h)	pH ***pɨlɨ** ‘burn, sting, bite’:	Chol **pul(-el)** burn vt. (vi.)
(i)	pH ***mɨhkɨ** ‘brood; cover’:	pMa ***muq** ‘bury, hide’: Chrt **muk** id., **muhk** ‘buried item’

IX: *CoCi

(a)	pH ***ngosi** ‘partridge’:	Yuc ⟨cox⟩ ‘pheasant’, Chol **kox** ‘crested guan’
(b)	pH ***koci** ‘scratch’	Chol **koch’** ‘pierce with a splinter of glass to draw blood’
		Huas **kotz’iyal** ‘scratch’

(29) **Pattern C: A late or indirect borrowing (or no borrowing); no evidence for pH form**
Here the source form corresponds more directly to a *later* (post-proto-Huave) pattern, in which the stressed root vowel in Huave has *changed* from its proto-Huave quality.

source						C_1	V_1	C_2	(V_2)
						|	|	|	
pH	*C_1	V_1	C_2	V_2	>	C	$V_{1\cdot2}$	C	

(30) ☞ Pattern C is in principle distinguishable from Patterns A and B only where there is such a change in vowel quality.

II	*C	e	C	e	>	C′	**a**	C′	Mo
III	*C	i	C	a	>	C′	**a**	C	(all dialects)
IV	*C	i	C	o	>	C′	**o**	C	(all dialects)
V	*C	i	C	i	>	C′	(**i̯**)**o**	C	F
						C′	(**i̯**)**u**	C	F (before *h, *s)
VIII	*C	a	C	i	>	C	**ɨ**	C′	MoD; Ma (except before velars)
IX	*C	o	C	i	>	C	**u̯o**	C′	D
X, XI, X(I)	*C	i	C	i/i	>	C′	**e**	C′	Mo

(31) • Only *CɪCa and *CɪCo have examples of Pattern C
• *CɪCo has only pattern C.

III (a) pZap ***šana** 'señor' > MoMa **s′an** [ʃan] id. (? pH ***sina**)
(b) pChol ***č'ab'** 'silent' > ? D ⟨ahčamb⟩ Rad. 'fade, become less intense' (? pH ***cimba**)
Mo **-c′iɨmb** 'still, quiet' Su. (? pH ***cimbɨ**)
(c) FMaDMo **c′aw** 'atole' (in general);
F **hi-c′aw**, Ma **he-c′aw**, Mo **ha-c′aw** 'atole made with ground corn':
cf. TtnS **chuj, chau** 'tortilla', TtnXn **čauh** id.; mSay **-tsaw-** 'echar tortillas'
(+ ChrtChol **ja'** 'water'?)

IV (a) pMxOax ***cukn,**
pZoq **hah-cuku** 'ant' ≫ MoDMa **c′ok** id. (? pH ***ciko**)
(b) pYuc ***č'oHp** 'blind; missing an ear or eye' ≫ Ma **-t′ohp**, D **-t′op** 'tuerto' (? pH ***tihpo**)
Mo **-toob** id.
☞ note vacillation in palatalization of onset **t**
(c) Tzo **loch'-ol** 'encircling object, perched', Chlt **loch'o** 'encompass, embrace':
F **lonc** 'hanging mesh basket for fruit or eggs'
D **lonc** 'net made of palm or vine to keep totopos in'
Ma **lonc** 'cradle'
MoMa **l′onc** 'padded ring for carrying load on head', MaDF **lonc** id.
F **lunc′** 'girdle, band, strip'
☞ note vacillation in palatalization of onset **l** and in coda **nc** (≪ Mayan ejective)

☞ I know of **no** examples where a PH root of form IV (*CɪCo) is a likely borrowing.
☞ The *CɪCo root pattern has **no** explicit supporting evidence:

		19c word lists	Spanish loans	pre-conquest loans
I	***iCi**	very good	none	very good
II	***eCe**	very good	good	good
III	***iCa**	**almost none**	**none**	**fair**
IV	***iCo**	**none**	**none**	**none**
V	***iCɨ**	**good but only as *iəCa**	**none**	**good**
VI	***aCa**	very good	very good	good
VII	***oCo**	fair	good	good
VIII	***aCi**	very good	very good	good
IX	***oCi**	little	good	fair
X	***ɨCɨ**	little	none	good
XI	***ɨCi**	little	none	good