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Proto Bora-Muinane*

ABSTRACT: Bora and Muinane are two neighboring, relatively closely related languages spoken in the North-West Amazon. Whether these two languages can be shown to be genealogically related to other languages is still debated. In this paper, we provide a reconstruction of 415 proto Bora-Muinane word forms and of the proto Bora-Muinane phonological system. Our reconstruction confirms an earlier reconstruction by Aschmann (1993), but also differs from it in some important respects. We firmly establish sound changes in Bora and Muinane based on extensive data and first-hand knowledge of the languages involved. The reconstructed proto Bora-Muinane forms presented here provide a sound basis for re-evaluating the genealogical relationship of Bora-Muinane with Witoto and Ocaina, which was proposed by Aschmann (1993), and opens the possibility to search for genealogical relations with other languages.

KEYWORDS: Historical linguistics; Bora; Muinane; Boran family; Northwest Amazonia.

RESUMEN: Bora y Muinane son dos lenguas vecinas, relativa y estrechamente relacionadas que se hablan en la Amazonia noroccidental. Si se puede demostrar que estos dos idiomas están genealógicamente relacionados es una cuestión aún en debate. En este trabajo, ofrecemos una reconstrucción de 415 palabras del proto-Bora Muinane y del proto sistema fonológico Bora-Muinane. Nuestra reconstrucción se confirma con aquélla presentada anteriormente por Aschmann (1993), pero también difiere en algunos aspectos importantes. Firmemente establecemos cambios de sonido en Bora y Muinane, basados en datos extensos y con conocimientos de primera mano de las lenguas involucradas. Las proto formas reconstruidas del Bora-Muinane, presentados aquí, proporcionan una base sólida para la re-evaluación de la relación genealógica del Bora-Muinane con las lenguas Witoto y Ocaina, propuestos inicialmente por Aschmann (1993). Ábrese, de esta forma, la posibilidad de buscar posibles relaciones genealógicas con otros idiomas.

PALABRAS CLAVES: Lingüística histórica; Bora; Muinane; Familia Bora; Amazonía Noroccidental.

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1. Introduction

Bora (ISO 639-3 *boa*, which includes *Miraña*, a dialect of Bora) and Muinane (ISO 639-3 *bmr*) are two neighboring languages spoken in the North-West Amazon region, in the watershed of the middle Caquetá and Putumayo Rivers in Colombia, with some Bora communities also on the Ampiyacu and Yaguasyacu Rivers in Peru since the 1930s. Population figures were estimated in the early 20th century at around 2,000 (Muinane) and 15,000 (Bora) (Whiffen 1915: 59, 247). As a result of brutal exploitation by rubber tappers, the current numbers of speakers are now less than 100 (Muinane) and less than 1,000 (Bora).

The genealogical relationship between these two languages is clear, given about 75% cognate vocabulary, on the one hand, and wide-reaching, but highly regular sound correspondences, on the other hand, which rule out the possibility of borrowing. However, whether or not these two languages can be shown to be genealogically related to other languages is still debated. Aschmann (1993) attempted to prove the existence of a genealogical relationship between the Witotoan and Boran languages, based on a 375-word comparative list from four languages: Bora and Muinane (Boran) and Ocaina and Witoto (Witotoan). He carried out a reconstruction of proto-Bora-Muinane and proto-Witoto-Ocaina, and arrived at the reconstruction of what he called Proto Witotoan. In another paper (Echeverri & Seifart 2015) we carried out a new reconstruction of the Witotoan family, including data from Nonuya, another Witotoan language, which Aschmann did not have access to, and assessing his claim of a genealogical relationship between Witotoan and Boran, for which we did not find enough support. All of these languages (Bora, Muinane, Witoto, Ocaina, and Nonunya) are spoken in close vicinity and are in close contact.

In the current paper, we revise Aschmann's reconstruction of proto Bora-Muinane. For this purpose, we added 185 items to Aschmann's comparative wordlist, and carried out morphological analysis and evaluation of culture-specific semantics of the lexical items. Besides the data that Aschmann (1993) compiled, we took additional data from Thiesen and Thiesen (1998) for Bora; and Walton et al. (1997) for Muinane.

Our analysis largely confirms Aschmann's reconstruction of proto-Bora-Muinane, which is not surprising due to the proximity of the two languages. However, our reconstruction differs from Aschmann's in that we argue that vowel rotation occurred in Bora rather than in Muinane, as we explain below.

In §2 we present the phonological inventories of Bora and Muinane, and of the reconstructed proto-Bora-Muinane (pBoM). In §3, we give the sound correspondences; in §4 we compare our reconstruction to Aschmann's; in §5 we provide the list of 415 cognate sets, and in §6 we conclude.

2. Phonological system of languages of the Bora-Muinane family

Phoneme inventories are given in Figure 1 (Bora), Figure 2 (Muinane) and Figure 3 (proto-Bora-Muinane), with frequencies calculated from our comparative wordlist. As discussed in §3, sound correspondences between Bora and Muinane are relatively regular and straightforward, but far-reaching and thus lead to superficially drastic differences

between the two daughter languages. Note that both Bora and Muinane have phonological tone (high vs. low), although tone appears to have a relatively low functional load in both languages, at least with respect to distinguishing lexical items. Tones are for the most part associated with suffixes, which often bear floating tones that dock on the ultimate or penultimate syllable of their host, and grammatical processes like nominalization (Thiesen & Weber 2012). In the current paper, we do not attempt to reconstruct tone, but we annotate tone values (acute accent for high tone, low tone unmarked) as given in the sources for the daughter languages.

Figure 1: Bora phonological inventory (29 consonants, 6 vowels)

	Labial	Alveolar	Palatal	Velar	Glottal
Plosives	p ^h 5.0% p 6.5% p ^{hj} * p ^j 0.5%	t ^h 4.0% t 2.9%	t ^{sh} 5.2% t ^s 0.2%	k ^h 8.5% k 0.1%	ʔ onset 6.1% coda 2.8%
Fricatives	β 4.6% β ^j 0.4%	t ^{hj} 2.0% t ^j *	t ^ʃ 1.4% t ^ʃ 3.8%	k ^{hj} 1.3% k ^j * k ^w 5.2%	ʔ ^j 0.6%
Trills		r 1.4%	j ⁱ 1.0%		h onset 5.1% coda 7.8%
Nasals	m 9.9% m ^j 0.4%	n 8.3% ɲ 2.1%			h ^j 1.2%

* Not attested in our wordlist, but in Bora dictionaries.

i 13.9%	ï 11.0%	u 19.3%
e 14.3%		o 11.8%
	a 29.7%	

Figure 2: Muinane phonological inventory (19 consonants, 7 vowels)

	Labial	Alveolar	Palatal	Velar	Glottal
Plosive	p 0.2% b 7.8%	t 5.2% d 3.4%	t ^ʃ 0.4% d ^ʒ 1.1%	k 8.3% g 11.2%	ʔ 6.6%
Fricative	ɸ 5.3% β 3.3%	t ^j 0.7% tt 0.9%	t ^ʃ 0.3%	kk 2.3%	
Resonant		s 6.4%	j 1.2%		h 10.5%
Nasal	m 11.4%	r 2.0% r ^j 0.2%			
		n 10.1%	ɲ 1.5%		

i 15.2%	ï 19.0%	u 12.6%
e 14.6%		o 9.1%
	a 24.4%	
	ai 5.0%	

Figure 3: Proto Bora-Muinane phonological inventory (20 consonants, 7 vowels)

	Labial		Alveolar		Palatal	Velar		Glottal
Plosive	p ^{4,2%}	b ^{7,8%}	t ^{4,9%}	d ^{3,1%}		k ^{6,8%}	g ^{11,0%}	ʔ coda 3,1%, onset 7,8%
Affricate	pp ^{1,3%}		tt ^{1,5%}		tʃ ^{0,2%}	ɟ ^{0,9%}	kk ^{2,9%}	
Fricative		β ^{3,1%}	ts ^{4,0%}		tʃ ^{0,4%}			h ^{10,3%}
Resonant			tts ^{2,4%}	r ^{2,1%}				
Nasal		m ^{11,3%}		n ^{11,3%}				

i 15%	ĩ 19%	u 12%
e 10%		o 14%
	a 23%	
	ai 7%	

Bora has palatalized counterparts of every one of its consonants (*j* being the palatalized counterpart of *r*, *f* of *ʃ*, and *f* of *ʃ*) as a result of palatalization after *i and *ai. Palatalization is still an active process in the language synchronically, but enough examples of palatalized consonants without the conditioning context exist to pose that these consonants have been phonemesized. The Bora vowel system is noteworthy for having three high unrounded vowels (Parker 2001). Muinane has a set of geminate plosives, which correspond to Bora plosives preceded by *h*. These were noted by Aschmann (1993), who consistently noted gemination in the Muinane data, but it is not noted in other published sources on Muinane.

3. Proto Bora-Muinane sound correspondences

In this section we present the sound correspondences and reconstructed phonemes, based on our own comparative wordlist (see section §5), as a basis for a comparison of our reconstruction to that of Aschmann's.

Table 1: Regular consonant correspondences

PBoM	Bo	Mu	Context	Supporting sets
*p	p ^h	ϕ		68, 87, 99, 116, 116, 117, 118, 120, 128, 136, 146, 147, 148, 228, 249, 261, 284, 285, 297, 312, 321, 334, 351, 354, 375, 386, 387, 403, 403, 406, 407, 414, 444, 445, 447, 447, 461, 471, 495, 496, 498
*pp	hp ^h	ϕ		14, 15, 38, 39, 48, 198, 294, 307, 319, 319, 408, 527, 543
*β	β ^j	β	ai, i_	199, 407, 445, 484
*β	β	β	other contexts	35, 35, 102, 129, 227, 281, 282, 295, 310, 322, 328, 338, 339, 340, 340, 342, 343, 361, 394, 417, 437, 448, 514, 547, 553, 556

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*b	<i>p^j</i>	<i>b</i>	ai,i_	80, 116, 202, 210, 216, 374
*b	<i>p</i>	<i>b</i>	other contexts	3, 16, 18, 32, 34, 43, 57, 62, 64, 65, 91, 94, 95, 105, 111, 111, 121, 123, 126, 126, 128, 149, 151, 158, 159, 165, 170, 170, 172, 173, 180, 194, 198, 199, 214, 215, 216, 217, 218, 219, 244, 245, 267, 272, 278, 291, 293, 298, 314, 336, 340, 365, 365, 369, 373, 375, 380, 384, 402, 410, 431, 440, 456, 465, 467, 479, 482, 489, 503, 508, 519, 520, 551, 560
*d	<i>t</i>	<i>d</i>		111, 166, 167, 171, 202, 203, 207, 209, 210, 215, 216, 219, 228, 229, 231, 231, 265, 267, 274, 276, 355, 356, 390, 394, 412, 469, 479, 491, 497, 498, 500, 535
*dʒ	<i>tʃ</i>	<i>dʒ</i>		6, 82, 105, 352, 402, 412, 509, 511, 562
*t	<i>t^{jh}</i>	<i>t</i>	i_	207, 215, 219, 225, 414, 497, 498
*t	<i>t^{jh}</i>	<i>t^j</i>	ai_	214, 354 (220, 262 exceptions)
*t	<i>t^h</i>	<i>t</i>	other contexts	5, 33, 42, 43, 49, 71, 94, 95, 99, 109, 110, 124, 167, 198, 208, 214, 216, 217, 218, 219, 242, 250, 260, 266, 294, 338, 341, 343, 386, 395, 401, 402, 427, 429, 450, 462, 465, 512, 514, 518, 549, 547
*tt	<i>ht^{jh}</i>	<i>tt</i>	i_	139, 313, 117, 150, 269
*tt	<i>ht^{jh}</i>	<i>t</i>	i_	assuming undected gemination in Muinane: 482, 508
*tt	<i>ht^{jh}</i>	<i>tt^j</i>	ai_	277, 295
*tt	<i>ht^h</i>	<i>t^j</i>	ai_	450 (exception)
*tt	<i>t^h</i>	<i>t</i>	V:_ (Bora)	277, 313; assuming undected gemination in Muinane: 462
*tt	<i>ht^h</i>	<i>tt</i>	other contexts	117, 150, 269
*tt	<i>ht^h</i>	<i>t</i>	other context	331, 482, 508 (assuming undected gemination in Muinane)
*ts	<i>ts^h</i>	<i>s</i>		45, 46, 69, 86, 89, 104, 150, 161, 181, 185, 222, 226, 226, 229, 282, 286, 307, 327, 338, 339, 343, 347, 355, 356, 365, 367, 383, 418, 435, 435, 437, 458, 474, 495, 496, 497, 510, 510, 518, 529, 544
*tts	<i>hts^h</i>	<i>s</i>		96, 159, 185, 208, 209, 211, 212, 213, 271, 283, 309, 335, 356, 360, 361, 362, 365, 413, 475, 478
*tts	<i>ts^h</i>	<i>s</i>	_hC	241
*tʃ	<i>tʃ^h</i>	<i>tʃ</i>		125, 260, 562
*tʃʃ	<i>htʃ^h</i>	<i>tʃʃ</i>		230, 275, 323
*tʃʃ	<i>htʃ^h</i>	<i>tʃ</i>		assuming undected gemination in Muinane: 494

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*r	<i>j</i>	<i>r</i>	ai,i_	44, 82, 125, 220, 426, 468, 556
*r	<i>r</i>	<i>r</i>	other contexts	66, 126, 145, 267, 305, 330, 336, 353, 359, 435, 479, 509, 553
*k	<i>k^h</i>	<i>k</i>	ai,i_	351, 375, 406, 525, 527, 556
*k	<i>k^h</i>	<i>k</i>	other contexts	9, 44, 52, 56, 58, 60, 66, 67, 79, 81, 84, 86, 103, 103, 105, 107, 124, 134, 136, 137, 142, 168, 194, 222, 227, 232, 246, 258, 263, 265, 280, 328, 330, 341, 342, 347, 347, 349, 354, 358, 370, 387, 388, 388, 390, 394, 418, 463, 464, 469, 477, 477, 492, 502, 507, 512, 520, 526, 529, 543, 557, 126, 417, 435, 435
*kk	<i>hk^h</i>	<i>kk</i>	ai,i_	139, 249, 362, 368
*kk	<i>hk^h</i>	<i>k</i>	ai,i_	assuming undetected Mu gemination: 158, 394
*kk	<i>hh</i>	<i>kk</i>	_k,k ^w (Bo)	19, 240
*kk	<i>h^wh</i>	<i>kk</i>	i:_k ^w (Bo)	87
*kk	<i>k^h</i>	<i>kk</i>	V:_	126, 223, 354
*kk	<i>hk^h</i>	<i>kk</i>	other contexts	12, 32, 61, 68, 83, 104, 110, 150, 161, 242, 290, 343
*kk	<i>hk^h</i>	<i>k</i>	other contexts	assuming undetected Mu gemination: 451, 474, 476, 506, 532, 535, 539, 541, 550; exceptions: 173, 191, 235, 241
*g	<i>ts</i>	<i>g</i>	_i	281, 282 (items 281 and 282 have the same stem, but this rule is confirmed by the fact that ts in Bora occurs overwhelmingly before i, others being mostly onomatopoeia)
*g	<i>tʃ</i>	<i>g</i>	_i,e	40, 44, 57, 77, 82, 96, 100, 118, 120, 130, 203, 220, 223, 246, 249, 278, 285, 291, 296, 349, 362, 366, 369, 372, 417, 448, 468, 475, 519, 534, 542, 543, 551, 556
*g	<i>k</i>	<i>g</i>	_u	477
*g	<i>k^w</i>	<i>g</i>	_a	4, 8, 19, 23, 24, 30, 35, 39, 40, 45, 56, 58, 66, 74, 77, 78, 79, 80, 81, 83, 87, 88, 89, 91, 92, 94, 102, 123, 125, 126, 134, 139, 142, 143, 144, 147, 151, 196, 214, 215, 216, 217, 218, 219, 232, 234, 236, 249, 251, 255, 271, 273, 279, 280, 284, 293, 297, 353, 374, 378, 382, 383, 386, 391, 394, 402, 417, 427, 429, 435, 471, 478, 491, 507, 509, 541, 544
*m	<i>m^j</i>	<i>m</i>	ai,i_	122, 146, 203, 386, 489
*m	<i>m</i>	<i>m</i>	other contexts	7, 9, 15, 24, 27, 27, 31, 38, 38, 41, 41, 46, 47, 49, 66, 84, 90, 93, 107, 111, 112, 115, 119, 126, 126, 145, 150, 150, 152, 153, 154, 160, 161, 163, 175, 175, 179, 180, 180, 182, 194, 197, 198, 205, 206, 211, 217, 220, 221, 224, 225, 230, 246, 258, 262, 263, 264, 271, 275, 277, 301, 301, 302, 311, 312, 319, 320, 327, 334, 342,

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				344, 346, 347, 360, 361, 367, 370, 371, 379, 389, 395, 398, 403, 406, 417, 441, 446, 450, 451, 454, 463, 464, 474, 491, 492, 492, 495, 495, 496, 496, 504, 510, 513, 513, 523, 525, 536, 539, 557, 558
*n	<i>n</i>	<i>n</i>	i_	72, 122, 129, 192, 221, 305, 336, 340, 369, 385, 392, 530
*n	<i>n</i>	<i>n</i>	ai_i	143, 335, 391
*n	<i>n</i>	<i>n</i>	ai_	15, 112, 133, 165, 234, 294, 312, 319, 321, 444, 521, 554
*n	<i>n</i>	<i>n</i>	other contexts	1, 3, 7, 8, 19, 38, 41, 44, 46, 48, 61, 62, 64, 65, 74, 86, 89, 90, 102, 111, 115, 126, 130, 139, 148, 150, 168, 170, 181, 191, 192, 196, 197, 198, 202, 204, 211, 212, 213, 220, 225, 235, 235, 236, 240, 243, 251, 255, 261, 270, 273, 291, 298, 306, 310, 313, 327, 328, 338, 341, 342, 344, 345, 345, 356, 371, 371, 383, 398, 408, 410, 413, 441, 461, 462, 467, 477, 482, 501, 502, 508, 522, 523, 525, 534, 536, 539, 543, 558, 562
*h	\emptyset	<i>h</i>	#_	3, 12, 18, 34, 72, 88, 109, 122, 126, 126, 129, 142, 166, 172, 204, 235, 256, 257, 291, 305, 318, 340, 359, 362, 382, 384, 402, 456, 458, 462, 476, 489, 503, 511, 515, 519, 533, 551
*h	<i>hⁱ</i>	<i>h</i>	ai,i_	2, 57, 62, 103, 126, 144, 323, 372, 417, 431, 442, 541
*h	<i>h</i>	<i>h</i>	other contexts	1, 5, 10, 14, 18, 42, 45, 52, 56, 58, 61, 67, 72, 75, 85, 88, 96, 109, 109, 136, 139, 148, 149, 150, 150, 151, 161, 174, 196, 199, 235, 241, 243, 253, 255, 270, 279, 281, 282, 293, 316, 331, 338, 339, 356, 380, 382, 434, 441, 469, 502, 504, 507, 521, 522, 526, 533
*ʔ	<i>ʔ</i>	\emptyset	#_	22, 23, 24, 101, 154, 241, 265, 323, 454, 494
*ʔ	<i>ʔⁱ</i>	<i>j</i>		268 (exception)
*ʔ	<i>ʔⁱ</i>	<i>ʔ</i>	ai,i_	92, 99, 143, 209, 514, 518
*ʔ	<i>ʔ</i>	\emptyset	_V: (Mu)	2, 4, 16, 109, 111, 120, 126, 197, 234, 243, 244, 245, 272, 273, 276, 316, 336, 338, 355, 356, 390, 402, 435, 458, 477, 502, 544
*ʔ	\emptyset	<i>ʔ</i>	_V: (Bo), Mu VʔV	314
*ʔ	<i>ʔ</i>	<i>ʔ</i>	other contexts	5, 7, 24, 29, 31, 44, 45, 49, 64, 65, 71, 74, 77, 82, 83, 86, 91, 111, 112, 118, 124, 126, 129, 145, 152, 160, 163, 166, 171, 185, 205, 206, 208, 211, 212, 213, 249, 250, 251, 257, 260, 264, 271, 271, 284, 297, 298, 373, 385, 391, 471, 475, 491, 515, 530, 532
*\emptyset	\emptyset	<i>j</i>	i_	38, 47, 344, 346, 349 (exception: 14)
*\emptyset	<i>j</i>	<i>j</i>	ai_	74, 251, 352, 378

A total of only 18 consonant tokens are unexplainable exceptions to these rules (a few partially regular exceptions are mentioned in the table): There are two instances of a correspondence $p:p$ (342, 562). The retention of $*p$ as p in these Muinane forms might be sporadic, exceptional or explainable as the result of some development other than regular sound change. That the form for ‘smooth’ (342) is also exceptional in displaying an isolated correspondence in the vowel of the first syllable makes it even more suspicious. This could this be a case of dialect borrowing. Further exceptions, for which we do not have an explanation, are $ʔ:Ø$ before short vowel, not word-initial (105, 126, 302, 388, 435), $\beta:Ø$ (456), $\beta:b$ (126, 388, 394), $t:dʒ$ (302), $f^h:dʒ$ (353), $k^v:g$ ($_u$) (378), $i:j$ (388), $n:m$; $m:n$ (21 (*nemi* vs. *meni*)), $f^h:f$ (119: ‘cat’ loan from Spanish), $t^h:tt$ (358), $Ø:ʔ$ (380), $k^h:ʔ$ (48), $k^h:ʔ$ (319), $\beta:ʔ$ (253, 562), $k^h:\beta$ (137), $r:\beta$ (458).

Table 2: Regular vowel correspondences

PBoM	Bo	Mu	Context	Supporting sets
*a	a	a		3, 6, 8, 16, 18, 23, 32, 35, 35, 35, 38, 38, 41, 41, 42, 43, 43, 44, 45, 45, 47, 47, 52, 52, 62, 62, 64, 65, 75, 77, 78, 78, 79, 80, 81, 88, 89, 91, 93, 94, 105, 110, 111, 111, 112, 112, 116, 116, 117, 123, 124, 124, 125, 126, 126, 126, 126, 126, 126, 126, 129, 133, 134, 136, 137, 137, 137, 139, 142, 145, 145, 147, 147, 148, 149, 151, 151, 153, 154, 159, 163, 166, 170, 170, 173, 180, 181, 185, 194, 196, 197, 198, 198, 202, 203, 204, 206, 208, 214, 214, 215, 216, 217, 218, 219, 220, 220, 229, 230, 231, 232, 234, 236, 242, 244, 245, 249, 255, 258, 260, 260, 261, 262, 263, 267, 272, 273, 274, 275, 277, 279, 279, 280, 284, 286, 290, 293, 293, 295, 295, 297, 310, 312, 314, 319, 320, 323, 336, 338, 339, 340, 340, 342, 343, 344, 345, 346, 352, 353, 354, 358, 360, 361, 361, 365, 367, 368, 369, 370, 371, 374, 375, 375, 380, 380, 382, 383, 387, 388, 388, 394, 394, 401, 402, 402, 402, 403, 414, 417, 417, 418, 427, 429, 431, 434, 435, 437, 440, 447, 448, 456, 458, 462, 463, 465, 468, 471, 474, 474, 474, 475, 477, 478, 479, 482, 491, 491, 494, 496, 496, 504, 507, 508, 509, 509, 511, 511, 512, 514, 515, 519, 520, 527, 529, 532, 533, 536, 539, 539, 544, 547, 547, 556, 558, 562, 562
*ai	a	ai	_ $\#$,V,p,g, h, β ,k,kk	4, 19, 24, 29, 30, 39, 40, 48, 49, 56, 57, 58, 66, 74, 74, 80, 83, 87, 92, 99, 102, 116, 123, 125, 128, 129, 139, 144, 199, 205, 206, 223, 249, 249, 251, 251, 253, 271, 294, 311, 319, 374, 379, 384, 385, 386, 394, 403, 406, 408, 417, 445, 484, 489, 506, 527, 541
*ai	a	a +palatalization	other contexts	15, 143, 158, 165, 312, 321, 335, 354, 389, 391, 391, 431, 444, 447, 450, 521, 554

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*e	<i>i</i>	<i>e</i>		1, 1, 7, 9, 10, 14, 14, 18, 22, 23, 24, 24, 27, 31, 34, 42, 45, 46, 61, 66, 67, 72, 88, 90, 109, 109, 128, 129, 136, 136, 139, 148, 153, 154, 161, 171, 174, 185, 208, 209, 211, 212, 213, 221, 226, 226, 235, 235, 241, 241, 243, 264, 270, 271, 271, 276, 277, 281, 282, 312, 316, 327, 330, 331, 334, 334, 338, 339, 340, 356, 360, 365, 373, 382, 387, 389, 403, 434, 441, 441, 450, 454, 461, 464, 476, 478, 491, 492, 492, 495, 496, 498, 502, 502, 510, 510, 522, 522, 533, 543, 544, 126, 150, 150, 150, 435
*i	<i>i</i>	<i>i</i>		2, 3, 4, 8, 16, 21, 38, 39, 44, 44, 44, 47, 49, 57, 61, 62, 69, 69, 71, 72, 78, 82, 82, 84, 87, 96, 101, 102, 103, 103, 105, 111, 115, 118, 119, 119, 120, 122, 122, 123, 125, 126, 126, 126, 129, 139, 143, 146, 148, 160, 166, 168, 172, 172, 182, 192, 197, 198, 202, 203, 207, 209, 210, 215, 216, 219, 220, 220, 224, 224, 225, 225, 228, 229, 234, 236, 242, 244, 245, 249, 250, 256, 262, 268, 272, 273, 283, 283, 296, 305, 305, 307, 307, 310, 313, 323, 335, 335, 340, 345, 349, 351, 352, 355, 356, 359, 360, 361, 362, 366, 366, 368, 369, 372, 375, 384, 385, 392, 394, 407, 408, 412, 414, 417, 426, 442, 446, 456, 468, 482, 494, 495, 496, 497, 497, 498, 499, 508, 509, 514, 518, 523, 525, 530, 535, 542, 542, 556, 556, 562
*i	<i>i</i>	<i>i</i>	<u>i</u>	86, 235, 243, 270, 281, 282, 316, 331
*i	<i>u</i>	<i>i</i>	other contexts	2, 3, 5, 5, 6, 7, 8, 9, 12, 14, 15, 18, 19, 29, 30, 32, 33, 34, 38, 45, 48, 56, 56, 57, 58, 58, 64, 65, 66, 66, 71, 72, 74, 79, 81, 85, 86, 87, 88, 92, 93, 94, 95, 96, 96, 99, 100, 102, 105, 107, 107, 109, 110, 117, 126, 126, 126, 130, 133, 134, 142, 144, 145, 149, 150, 151, 151, 152, 160, 168, 171, 174, 179, 191, 191, 194, 194, 196, 196, 198, 199, 201, 202, 205, 206, 214, 215, 216, 217, 218, 219, 222, 225, 227, 232, 240, 251, 253, 255, 258, 260, 266, 267, 267, 268, 277, 280, 285, 290, 291, 293, 293, 294, 295, 302, 302, 313, 314, 318, 319, 322, 323, 328, 335, 338, 338, 339, 340, 341, 342, 342, 343, 347, 349, 349, 354, 354, 356, 356, 362, 367, 372, 374, 378, 382, 386, 389, 390, 390, 391, 391, 398, 402, 406, 413, 417, 427, 441, 442, 450, 450, 451, 454, 456, 458, 469, 476, 477, 477, 479, 479, 482, 489, 492, 495, 495, 496, 496, 501, 503, 504, 507, 507, 508, 510, 512, 518, 519, 521, 521, 523, 526, 532, 535, 539, 549, 550, 550, 551, 553, 553, 554, 557, 557, 562, 562

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*o	e	e	_e	61, 241, 327, 353, 395, 534
*o	e	e	_i	21, 49=250, 115, 160, 284, 285, 285, 291, 291, 305, 355, 358, 392, 395, 407, 417, 445, 484, 506, 535, 543, 556
*o	e	e	e_	31, 46, 46, 90, 211, 212, 213, 241, 243=270, 281, 282, 327, 327, 336, 353, 461, 534, 543, 551
*o	e	u	_u	68, 77, 179, 211, 265, 278, 410, 462
*o	e	o	other contexts	15, 19, 40, 100, 118, 120, 122, 124, 130, 146, 152, 152, 158, 165, 170, 173, 175, 175, 180, 180, 181, 191, 192, 199, 199, 202, 203, 203, 204, 207, 210, 216, 217, 219, 220, 225, 227, 228, 234, 240, 246, 246, 246, 257, 261, 263, 273, 294, 297, 298, 298, 301, 301, 306, 306, 312, 319, 321, 328, 328, 338, 341, 342, 342, 343, 343, 344, 347, 347, 369, 370, 371, 371, 380, 386, 394, 398, 426, 444, 448, 463, 469, 471, 489, 513, 513, 514, 515, 518, 519, 525, 530, 530, 536, 558, 560
*u	o	u		5, 7, 9, 22, 23, 24, 24, 27, 44, 48, 49, 60, 67, 68, 77, 82, 83, 84, 86, 86, 91, 91, 92, 94, 95, 99, 101, 104, 104, 109, 111, 112, 121, 123, 126, 139, 142, 143, 150, 150, 159, 161, 161, 163, 167, 167, 171, 185, 198, 200, 208, 209, 211, 212, 213, 214, 215, 216, 217, 218, 219, 221, 222, 223, 223, 230, 231, 241, 249, 264, 265, 265, 269, 271, 271, 274, 275, 276, 278, 282, 309, 311, 319, 341, 351, 352, 356, 359, 362, 362, 365, 365, 367, 373, 379, 388, 394, 402, 406, 410, 412, 413, 418, 429, 435, 435, 435, 435, 451, 462, 464, 465, 467, 469, 477, 491, 500, 502, 503, 520, 526, 527, 529, 541, 541, 543, 562
*V?	V?	V?V		166, 284, 297, 471, 82, 111, 118, 64=65, 314, 257, 298

A total of only 38 vowel correspondences do not follow these rules: *i:Ø* (344), *e:a* (360, 467), *i:a* (342), *o:a* (150=441, 330), *u:a* (378), *Ø:e* (235, with other exceptions), *a:e* (235, 291=551, 431, 458), *i:e* (336, 358, 417), *w:e* (150=161, 255), *e:i* (525), *i:i* (not *_i*) (38=344=346, 89=383, 475), *w:i* (99, maybe not even cognate), *a:i* (347), *e:i* (no rule discernable: 74, 251, 497, 498, 504), *i:i* (437), *a:o* (no rule discernable: 12, 129=385, 386, 475), *w:u* (no rule discernable: 89=383, 362, 365, 388, 543).

4. Comparison to Aschmann's (1993) reconstruction

Our reconstruction of proto Bora-Muinane confirms most aspects of Aschmann's (1993) analysis. Therefore, discussion in this section is limited to those aspects where our reconstruction differs from his. For details of Bora-Muinane sound correspondences that are not discussed here, the reader is referred to Aschmann (1993, pp. 17–56), in particular 288

for a full description of palatalization (1993: 18–20), which affected many consonants, especially in Bora, as can be seen in Table 1.

In some respects, our reconstruction is more conservative than Aschmann's, by considering valid only those cognates that are reasonably certain. More detailed information of synchronic (morpho)phonology, especially regarding Bora, was taken into account. We recognized that hk^h becomes hh before k^h and k^w in Bora, as in $ih^h/ha-k^w/a$ (be-cl:plank) 'seat' from ihk^h/a 'to be'. We also recognized that i becomes i before i in Bora, as in $í-i/hi$ (this-cl:disc) 'this (disc-shaped one)' from $i-$ 'this'. For some of Aschmann's rules that were attested in only one or two cognate sets we did not find further evidence and treat them as exceptions, thus simplifying the rule system considerably. As Tables 1-2 demonstrate, our reconstruction accounts for the great majority of sound correspondences, leaving a relatively small portion of exceptions, which may be due to borrowings or idiosyncratic sound changes.

Our reconstruction differs from Aschmann's mainly in that we argue that vowel rotation, which affected all vowels except i and a , occurred in Bora rather than in Muinane. According to Aschmann, vowel rotation happened in Muinane and had the following effect: $*u > i$; $*i > e$; $*e > o$; $*o > u$. We believe that Muinane retains the vowel system before the rotation and that rotation took place in Bora and was thus in the opposite direction: $*e > i$; $*i > u$; $*u > o$; and $*o > e$. We agree with Aschmann that in Muinane o underwent massive vowel harmony to the effect that o became e before and after e and before i , and u before u (see Table 2).

Our main reason for favoring a scenario with rotated vowels in Bora is that it is unlikely that two major waves of sound changes (massive vowel rotation and subsequent massive vowel harmony) occurred in Muinane alone, within the relatively short time since the split from Bora, while Bora remained largely unchanged. In our reconstruction, Muinane vowel harmony, affecting especially (our) pBoM $*o$, essentially applied to the proto Bora-Muinane vowel system. This analysis makes rule ordering in Muinane unnecessary, but requires two ordered rules for Bora: Firstly, after vowel rotation Bora underwent regressive assimilation of i to i (which is a synchronically still active phonological rule of Bora, see above). Secondly, also after vowel rotation did the split of g occur in Bora.

Another reason to believe that Bora changed at least as quickly as Muinane is that it has been the majority (and prestige) language when compared to Muinane, as far as we can tell from the ethnohistorical record. Aschmann's (1993: 22) main argument for proposing that vowel rotation took place in Muinane rather than in Bora is that his reconstructed vowels fit better with his reconstruction of Proto Witotoan, i.e. the assumed mother language of proto Bora-Muinane and proto Witoto-Ocaina (Aschmann 1993: 22). We do not consider this a valid argument: every intermediate proto language should be reconstructed in its own right, without further considerations.

In both Bora and Muinane, and probably also in proto Bora-Muinane, syllable weight plays an important role, but remains not entirely understood—somewhat similarly to Ocaina (see Echeverri & Seifart 2015). Across and within languages, different types of heavy syllables alternate, i.e. long vowels often correspond to h or $ʔ$ in coda position (see Thiesen & Weber 2012: 47-53 for Bora). In this context, we reconstruct, unlike Aschmann, $ʔ$ in coda position, since it overwhelmingly occurs before voiced, rather than unvoiced consonants, suggesting that it may be derived from preglottalized consonants (possibly at

an earlier stage than pBoM), in parallel to *h* in coda position, which overwhelmingly occurs before unvoiced consonants, suggesting that it may be derived from preaspirated voiceless consonants. Muinane does not allow glottal stops in coda position, but has *VʔV* sequences (with identical vowels) instead, which one might interpret as another reflex of preglottalized consonants, since these *VʔV* sequences also occur only before voiced consonants. While *ʔ* and *h* before consonants are phonologically syllable codas in the daughter languages, a number of morphological processes indicate that they are associated with the following consonant, rather than with the preceding vowel. The following Bora examples illustrate that in terms of morpheme breaks, *ʔ* and *h* are associated with the following consonant: *mé-hʔuʔaá* (our-foot) ‘our foot’ vs. *mé-tʰápa* (our-wife) ‘our wife’; *mé-ʔpáu* (our-belly) ‘our belly’ vs. *mé-páákʰo* (our-uvilla) ‘our uvilla (fruit)’. In fact, morpheme breaks never occur between aspiration or glottal stops and the following consonant in Bora.

5. Bora-Muinane cognate sets and reconstructed words

In this section we present the 415 comparative sets found for words from Bora and Muinane. Each set is identified by a number, which corresponds to its identification in a 562-item database we compiled for the comparative analysis of Bora, Muinane, as well as Witoto, Nonuya and Ocaina (see Echeverri & Seifart 2015). To facilitate the comparison with Aschmann’s (1993) analysis we have retained his item numbers (1-377) and have numbered the new items from 378 onwards. The numbering of the comparative sets is not continuous because not all of Aschmann’s Bora-Muinane sets are cognate sets, neither are all of those we gathered to complement his wordlist.

For each set we provide a proto-Bora-Muinane (pBoM) reconstruction, based on the correspondences identified and on the reconstructed phonological inventory, and its English gloss (the † symbol after the English gloss indicates items in the Swadesh’s basic vocabulary, and the symbol ‡ indicates items in the Leipzig-Jakarta basic vocabulary). Following the reconstruction, are the corresponding reflexes in Bora (Bo) and Muinane (Mu), along with their translations; morphological analysis was added to Bora and Muinane forms where necessary and useful. Only the parts of the reflexes given in **bold-face type** have been fed into the proto-Bora-Muinane reconstructions. Segments that are not reconstructed are marked by “()” in the pBoM forms. Aschmann’s reconstructions (indicated as “APBM”) are included within brackets in the cognate sets.

Bora and Muinane data in items 1-377 are based on the comparative list compiled by Aschmann (1993); these items were carefully checked and corrected where necessary, based on Thiesen & Thiesen (1998), with additional analysis by Seifart, for Bora, and Walton et al. (1997), for Muinane. Bora and Muinane data in items 378-562 also come from these sources. In some cases, Miraña (a dialect of Bora) forms from Seifart’s field notes are added.

Aschmann (1993) represents geminate consonants in Muinane that he noted while working with Muinane speakers, but Muinane geminate consonants are not, or not consistently, represented in published sources on Muinane (Walton, Hensarling, & Maxwell 2000; Walton et al. 1997). Where Aschmann (1993) noted geminate consonants in Muinane, we used his forms, but there may be unnoticed gemination in some of the other Muinane data used here.

Bora-Muinane Correspondence Sets

1. PBoM ***nehe** TONGUE †‡ | Bo *níhi-k^wa* ‘lick-cl:plank’; Mu *néhe-ba* [APBM *(mé) - ?níxi(-)]
2. PBoM ***i-hi** MOUTH †‡ | Bo *i?-h^wuú* ‘3-cl:tube’; Mu *í-hi* [APBM *ii?-xu {?-mouth}]
3. PBoM ***hini-ba** LIP | Bo *úni-pa* ‘spit-cl’; Mu *híniba* [APBM *(mé)-xú-niba {mouth-?}]
4. PBoM ***i?gai** TOOTH †‡ | Bo *i-?k^wáhií* ‘3-?cl:plank?’; Mu *ígai* [APBM *ii?-gái-neé {tooth-finger-?,23}, *(mé)-íi?gá(xií)]
5. PBoM ***tíhi-?u** NOSE †‡ | Bo *h^wú-hu-?o* ‘smell-?cl:tube?-cl:oblong’; Mu *tíhi-?u* [APBM *túxuu-?(exuu)]
6. PBoM ***adzi-i** EYE †‡ | Bo *?áfu-u* ‘above-cl:round’; Mu *áádzi-i* [APBM *(me)-?áájtuu]
7. PBoM ***ni(-)mee?u** EAR †‡ | Bo *núú-mi?o* ‘hear?-cl:skin’; Mu *ní-hi-mee?u* ‘hear?-?-cl:tube?-cl:skin’ [APBM *núxuu-mii?o]
8. PBoM ***niga-i** HEAD † | Bo *níik^wa-u* ‘head-cl:round’; Mu *níga-i* [APBM *nígau]
9. PBoM ***ime-ku** FOREHEAD | Bo *?úmi-k^ho* ‘face-cl’; Mu *íme-ku* [APBM *úmico]
10. PBoM ***-hee** HAIR †‡ | Bo *i?-hine* ‘3.sg-hair-pl’; Mu *nígai-hee-ne* ‘head-hair-pl’ (see 243,270,316) [APBM *nígau-xíne {head-hair, 8,243}, *nígau-(ko)]
12. PBoM ***hikk()** BEARD | Bo *úhk^ha?e*; Mu *híkko?ai* [APBM *xúkk(e) ?(ai)]
14. PBoM ***ppee-i-he** CHEST | Bo *hp^húu-hi* ‘?-cl:flat’; Mu *fééji-he* [APBM *(mé)-ppíuu-xi {chest-flat,61}, *(xííbuuuga, kúúduuu) mii(kko)?o, (...)]
15. PBoM ***mippaino** WOMAN’S BREAST †‡ | Bo *muhp^hápe*; Mu *mí?ano* [APBM *(mé)-múppaine]
16. PBoM ***ii?ba** ABDOMEN | Bo *i?pá-u* ‘belly-cl:round’; Mu *úba* (Note =244,245,272) [APBM *(áá)-mii?o {14}, *(mé)-ii?bá(ú) {244,245,272}]
18. PBoM ***hihe-ba** SHOULDER | Bo *úhi-pa* ‘?-cl’; Mu *hihe-bai* [APBM *(mé)-xúxi-ba(ú)]
19. PBoM ***nokki-gai** ARM † | Bo *néhh^wu-k^wa* ‘side-cl:plank’; Mu *nókki-gai* [APBM *(mé)-nékkuu-gai]
21. PBoM ***(o)i** ELBOW | Bo *némi-u* ‘?-cl:round’; Mu *méni-ku* ‘?-cl:pointed’ [APBM (méniko), (me-némiu)]
22. PBoM ***?uttse** HAND † | Bo *?óht^híí*; Mu *úse* [APBM *(mé)-?ótsií]
23. PBoM ***?uttse-gai** FINGER | Bo *?óht^hí-k^wa* ‘hand-cl:plank’; Mu *úse-gai* [APBM *(mé)-?ótsi-gai {hand-finger,4,(11?),19,24,30,50,87}]
24. PBoM ***?uttse-gai-mee?u** FINGERNAIL | Bo *?óht^hí-k^wa-mii?o* ‘hand-cl:plank-cl:skin’; Mu *úse-gai-mée?u* [APBM *(mé)-?ótsi-gai-mii?o]

27. PBoM ***memu** KNEE †‡ | Bo *mímo-k^ho* ‘knee-cl:pointed’; Mu *mému-ba* ‘knee-cl’ [APBM *(mé)-mímo(-)]
29. PBoM ***tti?aaí** FOOT † | Bo *ht^hú-?aá*; Mu *tí-?ai* [APBM *(mé)-ttú-?aái]
30. PBoM ***tti-gaai** TOE | Bo *ht^hú-k^waá* ‘foot-cl:plank’; Mu *tí-gai* [APBM *(mé)-ttú-gaái {foot-finger,23}]
31. PBoM ***mee?o** SKIN †‡ | Bo *míú?eé*; Mu *mée?e* [APBM *(iáábe) (mé)-?mí?e(é)]
32. PBoM ***bakki** BONE †‡ | Bo *páhk^huuú*; Mu *bákki* [APBM *bákkuuú]
33. PBoM ***tii** BLOOD †‡ | Bo *t^hú-hp^hak^hio* ‘red-cl:liquid’; Mu *tíí-hó?o* ‘red-cl?’ [APBM *túúú-(xé?e), *túúú-(ppaiko)]
34. PBoM ***heebi-i** HEART † | Bo *úpu-u* ‘interior-cl:round’; Mu *héebi-i* [APBM *(kúúduuu), *(mé)-xíbuuu]
35. PBoM ***βaβa-ga** LUNGS | Bo *βa?βá-k^wa* ‘?-cl:plank’; Mu *βáaβa-ga* [APBM *βáá?βága, (xú-gítsu-ba), (mará?-ba), (maráá?-o)]
38. PBoM ***m(a)-minaa-ppi** MAN † | Bo *mía-múúnaa-hp^hi* ‘real-people-masc.sg’; Mu *mijá-minaa-phi* [APBM *gai-ppi, *míámúúnaa-ppi {41}]
39. PBoM ***gai-ppi** MAN | Bo *k^wa-hp^hi* ‘?-masc.sg’; Mu *gái-phi* [APBM *gai-ppi, *tsaa-ppi {one-male}]
40. PBoM ***gai-go** WOMAN † | Bo *k^wa-?fe* ‘?-fem.sg’; Mu *gái-go* [APBM *gai-ge, (míámúúna-ge) {41}]
41. PBoM ***m(a)-minaa** PEOPLE | Bo *mía-múúnaa* ‘real-people’; Mu *mijá-minaa* [APBM *míámúúnaa {38,40}]
42. PBoM ***tahe** HUSBAND | Bo *t^hahí*; Mu *táhe* [APBM *taxi, *ái-táxí {my-husband}, *áixuuú]
43. PBoM ***taaba** WIFE | Bo *t^haápa*; Mu *táaba* [APBM *taába, *ái-táabaá {my wife}, (mega)]
44. PBoM ***gi?iru, kaani** FATHER | Bo *fi?ijo, k^waani*; Mu *gi?irubi, kááni* [APBM *gi?i-ro(bi), (kááni)]
45. PBoM ***ga?a-ro, tsechi** MOTHER | Bo *k^wa?áro, ts^húihu*; Mu *gá?árubi, sééhi* [APBM *ga?á-ro(bi)]
46. PBoM ***tseemono** BABY, INFANT | Bo *ts^húmene*; Mu *séemene* [APBM *tsíimene {327}]
47. PBoM ***amia** OLD MAN | Bo *amíaa-be* ‘elder-masc.sg’; Mu *ámijaa-bo* [APBM (ámia-te), (kíja?ote), (kéeme) {246,347}]
48. PBoM ***ni-ppai(Ou)** WATER †‡ | Bo *nú-hp^hak^hio* ‘water-cl:liquid’; Mu *ní-phiú?u* [APBM *nú-ppaiko {water-liquid}]

49. PBoM ***too-ʔi**, ***muuai** RIVER | Bo *tʰeé-ʔi* ‘river-cl’, *moóa*; Mu *téé-ʔi*, *múúai* (Note: see 71,250,311,379) [APBM *moóai {311}, *teé-ʔi {river-line,250,71}]
52. PBoM ***kaaha** SWAMP | Bo *kʰááhá-nepa*; Mu *íφά-káaha* [APBM *(ipá)-káa-xa-(neba), *káa-(mi)]
56. PBoM ***kíihi-gai**, FIRE †‡ | Bo *kʰúúhuu-kʷa* ‘fire?-cl’; Mu *kíihi-gai* [APBM *kúúuxu-gai, (kotsíbai)]
57. PBoM ***bai-gíihi** ASH †‡ | Bo *pá-ǧíihʷu* ‘?-powder’; Mu *bai-gíihi* (Note: see 372) [APBM *bái-gíixu {?-powder,372}]
58. PBoM ***kíihigai-** CHARCOAL | Bo *kʰúúhúkʷa-ju* ‘fire-cl:round’; Mu *kíihigai-kku* ‘fire-cl:pointed’ (Note = 56) [APBM *kúúuxú-gai-(kko) {56}]
60. PBoM ***kuu** FIREWOOD | Bo *kʰoo*; Mu *kúúhoʔo* [APBM *koó-]
61. PBoM ***nikko-he** SKY | Bo *níhkʷe-hi* ‘sky-cl:disc’; Mu *nikke-he* [APBM *nikke-xi {sky-flat,14} (iéβeʔóóga)]
62. PBoM ***niíha-ba** RAIN †‡ | Bo *nííha-pa* ‘rain-cl’; Mu *nííha-ba* [APBM *nííxa-ba {water-?,48}]
64. PBoM ***niʔba** SUN † | Bo *nuʔpa*; Mu *níʔiba* (Note =65) [APBM *kóoxí-e(ppi) nuʔu-ba {day-? sun-?, 67,65}]
65. PBoM ***niʔba** MOON † | Bo *nuʔpa*; Mu *níʔiba* (Note =64) [APBM *pékkó-e(ppi) nuʔu-ba {night-? sun-?, 68,64}]
66. PBoM ***meekiri-gai** STAR †‡ | Bo *mííkʰúru-kʷa* ‘star-cl:plank’; Mu *méékiri-gai* [APBM *mííkúru-gai]
67. PBoM ***kuuhe** DAY | Bo *kʰóóhíí* ‘today’; Mu *kúuhe* ‘today’ [APBM *kóoxíí]
68. PBoM ***pokku** NIGHT †‡ | Bo *pʰehkʰo*; Mu *φúkku* [APBM *pekko]
69. PBoM ***tsitsi** THUNDER | Bo *ǧʰihǧʰi*; Mu *sisi* [APBM *(tsitsi, (daʔnáʔo)]
71. PBoM ***tíi-ʔi** RAINBOW | Bo *tʰuu-ʔi* ‘red-cl:line’; Mu *tíi-ʔi* [APBM *tuú-ʔi {red-line,294,49,250}]
72. PBoM ***hiini-he** EARTH † | Bo *íípuhi* ‘earth-cl:flat’; Mu *hiini-he* [APBM *xíinu-xi]
74. PBoM ***n(ogai-jiʔai)** SAND †‡ | Bo *nékʷa-juúúʔa* ‘stone-grains’; Mu *hiinigai-jiʔai* (Note = 251) [APBM *(xíí)né-gai-yú-ʔai {73,251,252}]
75. PBoM ***ha** HOUSE ‡ | Bo *háá*; Mu *íi-ha* ‘3-house’ [APBM *iiʔ-xa, *káamée-xa, *(bááe)-xa]
77. PBoM ***gooʔu-ga**, DOORWAY | Bo *ǧééʔo-kʷa* ‘?-cl:plank’; Mu *gúʔú-ga* [APBM *gééʔo-ga, (bágígaʔéxu)]
78. PBoM ***ikka-ga** SEAT, STOOL | Bo *íhʷa-kʷa* ‘be-cl:plank’; Mu *ikka-ga* [APBM *ikka-ga, (akúúúβe-ga)]

79. PBoM ***kiga-** MAT | Bo *kʰukʷá-íʔkʰiu* ‘sleep-cl:frame’; Mu *kíga-tahe* ‘sleep-?’ (Note = 81,232,280) [APBM *kugá-(taxi), *kugá-(íʔku), (ínébaxi), (ííkaxi)]
80. PBoM ***gaaba** HAMMOCK | Bo *kʷaápʷa*; Mu *gááiba* [APBM *gaái-ba]
81. PBoM ***kiga-** BED | Bo *kʰukʷá-íʔkʰiu* ‘sleep-cl:frame’; Mu *kíga-tahe* (Note =79,232,280) [APBM *kugá-íixi, *kugá-(taxi), *kugá-(íʔku)]
82. PBoM ***giri-ʔɖu** COOKING POT | Bo *ʔʃi-ʔʃo* ‘?-cl:pot’; Mu *gíri-ʔúɖu* [APBM *gíri-ʔijo]
83. PBoM ***gaikkuʔai** CULTIVATED CLEARING | Bo *kʷáhkʰoʔa*; Mu *gáikkuʔai* [APBM *gáikko-ʔai]
84. PBoM ***kuumii** VILLAGE | Bo *kʰóómíi*; Mu *kúumi* [APBM *kóomii]
85. PBoM ***hii-** PATH, TRAIL † | Bo *huúʔa*; Mu *híʔai* [APBM *xuú(-)]
86. PBoM ***ts(ɨ)nikuʔu** FISH NET | Bo *tsʰnuukʰóóʔo*; Mu *sínikuʔu* [APBM *ts(ɨ)nuukóʔo {atarraya}, *(pó)-kóʔo]
87. PBoM ***piikki-gai** FISH HOOK | Bo *pʰíhʰu-kʷa* ‘fishing-cl:plank’; Mu *ʔíikí-gai* [APBM *piíkku-gai]
88. PBoM ***higaa-he** STEEL AXE | Bo *úkʷaá-hi* ‘stone-cl:flat’; Mu *hígáa-he* (Note =382) [APBM *xúiga-xi]
89. PBoM ***n(ɨ)ts(-)ga-** KNIFE | Bo *niʔtsʰú-kʷa* ‘?-cl:plank’; Mu *níʔsú-ga* (Note =383) [APBM *(mí(y)oʔo), *n(ɨ)ts(ú)ga-(gayu)]
90. PBoM ***meeno** CANOE | Bo *miine*; Mu *méene-ga* ‘canoe-cl:plank’ [APBM *miine-(ga)]
91. PBoM ***buʔdu-ga** PADDLE | Bo *poʔtó-kʷa* ‘row-cl:plank’; Mu *búʔúdu-ga* ‘row-cl:plank’ [APBM *boʔódó-ga]
92. PBoM ***gai-ʔui** CLUB | Bo *kʷá-ʔoóu* ‘?-cl’; Mu *gái-ʔuidaaʔe* ‘?-cl’ [APBM *gáiʔoóu(daaʔi)]
93. PBoM ***aami-** SPEAR | Bo *aamú-pa* ‘hit-cl’; Mu *áami-ga* ‘hit-cl:plank’ [APBM *aámu-(ba), (káʔaákkko)]
94. PBoM ***tiibu-ga** BOW | Bo *tʰupóó-kʷa* ‘shoot-cl:plank’; Mu *tíibú-ga* (Note =95) [APBM *tuubó-ga {214}]
95. PBoM ***tiibu-** ARROW | Bo *tʰupóó-kʰo* ‘shoot-cl:pointed’; Mu *tíibú-ga* ‘shoot-cl:plank’ (Note =94) [APBM *gáinuú-ga, *tuubó-(ga), (pígau)]
96. PBoM ***gitsi-hi** BLOWGUN | Bo *ʔihʃʰú-hu* ‘blow-cl:tube’; Mu *gisi-hi* [APBM *gittsú-xu, *(togii)-xu, *(tojii)-xu]
99. PBoM ***típai-ʔuu()** PUMA | Bo *tʰúúʔpʰá-ʔoóu* ‘red-jaguar?’; Mu *tíʔai-ʔui* ‘red-jaguar’ [APBM (xúikko), *túpaíʔoó(u)]

100. PBoM ***gooi** ARMADILLO | Bo *ʃeéu*; Mu *góoi* [APBM *geéu, (dóotóúʔaamíne), (káápinau)]
101. PBoM ***ʔuuʔi** DOG †‡ | Bo *ooʔí-píe* ‘jaguar-masc.sg’; Mu *-ʔui* [APBM (xútkko), (ooʔíibe)]
102. PBoM ***niíʔi-gai** RED DEER | Bo *níʔu-kʷa* ‘deer-cl’; Mu *niíʔi-gai* [APBM *niíʔi-gai, *xiíʔibai]
103. PBoM ***kikiih()** BAT | Bo *kʰíkʰíihʷe*; Mu *kíkihe* [APBM *kikiíxe]
104. PBoM ***tsukku** OTTER | Bo *tsʰohkʰo*; Mu *súkku* [APBM *tsokko]
105. PBoM ***kiʔʒiba** CEBUS, MONKEY | Bo *kʰuuʔʃípa*; Mu *kidʒiba* [APBM *(çoyíyi), *kuʔʒiba]
107. PBoM ***kiimi** SPIDER MONKEY | Bo *kʰuiúmu*; Mu *kíimi* [APBM *(xúbíʔíjaxi), *kuúmu]
109. PBoM ***heehi**, ***tuuʔhe** ANTEATER | Bo *íihu*, *tʰoʔhi*; Mu *héehi*, *túuhe* [APBM *xíhxi, *tooʔxi]
110. PBoM ***takki** PACA | Bo *tʰahkʰu*; Mu *tákki* [APBM *takku, (ainókkóʔega)]
111. PBoM ***niʔba**, ***m()ʔduba** CROCODILE | Bo *niʔpa*, *meʔtópa*; Mu *niʔiba*, *méédúba* [APBM *niʔiba, *meeʔdóba]
112. PBoM ***maaina-ʔu** IGUANA | Bo *máána-ʔo* ‘iguana-cl’; Mu *máána-ʔu* [APBM *máánaʔo, (xóóʔáʔi)]
115. PBoM ***moon** COLLARED PECCARY | Bo *meéni*; Mu *méeni* [APBM *meéni]
116. PBoM ***paapaiba** WHITE-LIPPED PECCARY | Bo *pʰáápʰapʰa*; Mu *ʃááʃaiba* [APBM *páapaiba, (míneébe)]
117. PBoM ***patti** AGOUTI | Bo *pʰahʰu* (Miraña dialect); Mu *ʃátti* [APBM (páttu), (birumuxi)]
118. PBoM ***giʔpo** RAT | Bo *ʃiʔpʰe*; Mu *giʔiʃo* [APBM (giʔipe), (nuumíra), (kuuʔéba), (aatsáriu)]
119. PBoM ***miiʃii** CAT | Bo *míʃíʔi*; Mu *míʃi* (Note: loan from Spanish) [APBM *míʃii {Spanish}]
120. PBoM ***giʔpo** MOUSE | Bo *ʃiʔpʰe*; Mu *giʔiʃo* [APBM *giʔpe, (kuuʔéba), (bíʔçau)]
121. PBoM ***bu** TAIL †‡ | Bo *pó-kʷaá* ‘tail-cl’; Mu *íi-bu-ʔu* ‘3.sg-tail-cl’ [APBM (íiʔoʔo), (bógaá), (gagááʔe)]
122. PBoM ***hiinimo** SNAKE | Bo *íʔnimʷe*; Mu *hiinimo* [APBM *xiinime, (ittu)]
123. PBoM ***buua**, ***iigai**- ANACONDA, WATER BOA | Bo *póoaá*, *íikʷakʰo*; Mu *búúa*, *igáʔiʔati* (Note: possibly a loan from Tupian) [APBM *bóoaá {Spanish?}, *iigai(ko)]
124. PBoM ***taakaʔo** RATTLESNAKE | Bo *tʰáákʰaʔe*; Mu *táakaʔo* [APBM *táakaʔe]
125. PBoM ***ʃiraagai** CORAL SNAKE | Bo *ʃʰíjákʷa*; Mu *ʃíráúgai* [APBM *çiráágai, (kábuútu)]

126. PBoM ***hakuga**, (**ǀiiri?i**, **nihaga**, **mii?meba**, **haakkiba** TOAD | Bo *a?k'ók'w*, *βúúrí?í*, *nihák'w*, *mu?mípa*, *áák'wpa*; Mu *hakúkúga*, *bíiri?i*, *nihaga*, *mííméba*, *háákkiba* [APBM *xa?kó(kó)ga, *(β)úúrí?í, *muu?míba, (xáákku)ba, (...)]
128. PBoM ***paabe** HUMMINGBIRD | Bo *p'háápi?o*; Mu *φάάibe*, [APBM *páá(i)bi(?o), (róóbíju)]
129. PBoM ***heefaa**, ***in()?ai** MACAW | Bo *ííβaá*, *ípa?a*; Mu *hééβa*, *ínó?ai* [APBM *xííβaá, *in(a)?ai, (íírída, éérída, ííréda)]
130. PBoM ***nigo** TOUCAN | Bo *nuf?e*; Mu *nigo* [APBM *nuge, (xúútkkugai), *(r(i)?)oó(?o), *b(ai)rí(gai)]
133. PBoM ***aini** BUZZARD | Bo *ǀnu*; Mu *ǀni* [APBM *aintu (tsókkoga)]
134. PBoM ***kiga-** CURASSOW | Bo *k'húk'á-k'w* 'curassow-cl'; Mu *kígá-?o* 'curassow-cl' [APBM (kúgá?e)]
136. PBoM ***peeka-he** GUAN | Bo *p'húk'a-hi* 'guan-cl'; Mu *φééka-he* [APBM *pííxaxi]
137. PBoM ***ka()a** HEN | Bo *k'hárak'a*; Mu *kattáβa* (Note: loan from Tupi) [APBM *ka(ttá-βa), *ká(ra-ka) {Tucano}, gáǀjeráá?e, gáigeráá?e), (kettúu)]
139. PBoM ***gaikku-he**, ***nitta** PIRANHA | Bo *k'áhk'w-hi*, *níh'a-hi* 'piranha-cl'; Mu *gáikku-he*, *nitta* [APBM *(nitta), *gáíkkoxi]
142. PBoM ***hiiku-ga** FLEA | Bo *úúú'k'w-k'w* '?-cl:plank'; Mu *hiiku-gai* [APBM *xúúúko-gai]
143. PBoM ***gaaini-?u** LOUSE †‡ | Bo *k'ááni-?o* 'louse-cl:oval'; Mu *gáaini-?u* [APBM *gáaini?o, *gai(?téxi)]
144. PBoM ***gaaihi** MOSQUITO | Bo *k'wááhu*; Mu *gáaihiba* [APBM *gaái-xu(-ba), *gái-(múúú-tabá), (opíju)]
145. PBoM ***ma?ari** TERMITE | Bo *má?arú-muupe* 'termite-person'; Mu *má?ari* [APBM *(múúúgí(y)u), *má?arú(muuú-be), (táabane), (táki?ki-ba), (mooá-ba)]
146. PBoM ***piimo** ANT ‡ | Bo *p'hím'epa*; Mu *φiimo* [APBM *piime(ba)]
147. PBoM ***paaga-** SPIDER | Bo *p'haak'w-ju* 'spider-cl:round'; Mu *φáaga-he* 'spider-cl:disc' [APBM *páaga-xi, *paagá-(y)u, (xúúúúó?ai), (ííkkoxi), (do?gá-xi)]
148. PBoM ***niipahe** JIGGER (TUNGA PENETRANS) | Bo *núú'p'ahi*; Mu *núúpahe* [APBM *niipa-xi]
149. PBoM ***bahi** BUSH | Bo *páhuú*; Mu *báhi* [APBM *báxuúú]
150. PBoM ***namettihe**, ***tsukkum()he** OPEN GRASSLAND | Bo *nómíh'w'hi*, *ts'óhk'w'ómuhi*; Mu *námettihe*, *súkkumehe* (Note: see 161; dialect. variant Mu *námettehe*) [APBM *(námíttuxi), *tsókkómuxi]
151. PBoM ***gahii**, ***baaii** HILL | Bo *k'wáhuú*, *páhuú*; Mu *gáhi*, *báai* [APBM *gáxuúú, *(káme)-gáxu, *(pá)-gaxu, *báhuú, *(pá)-?bau {293}]

152. PBoM ***imo-ʔo** TREE †‡ | Bo *úme-ʔe* ‘wood-cl:tree’; Mu *imo-ʔo* [APBM *úme-ʔe {tree-wood,60}]
153. PBoM ***aame** LEAF †‡ | Bo *ʔáámíí*; Mu *áame* (Note =154) [APBM *(ina)-ʔáami, (-xúúʔoó), (mííumuu)]
154. PBoM ***-ʔaame** TREE LEAF | Bo *inaʔáámí*; Mu *áame* (Note =153)[APBM *(ina)-ʔáami]
158. PBoM ***ba(i)(k)ko-** ROOT †‡ | Bo *páhk^héé*; Mu *bakóʔoko* [APBM *ba(i)(k)ké-(ʔeke), *bá(i)(k)kéé, (-tane)]
159. PBoM ***battu-** SEED † | Bo *pahs^hó-k^{ra}* ‘plant-cl:plank’; Mu *basú-ta* [APBM *battsó(-), (néébaba), (painéβa-u)]
160. PBoM **imoo-ʔi** STICK | Bo *úmé-ʔe-i* ‘wood-cl:tree-cl:stick’; Mu *ímee-ʔi* ‘wood-cl:stick’ [APBM * úméʔe-i, *úmé-(ne-ba), (jári-ga)]
161. PBoM ***tsukkume-he** GRASS | Bo *ts^hóhk^hóm^u-hí* ‘grassland-cl:disc’; Mu *súkkume-he* (Note =150) [APBM *tsókkómuxi, (páixu), (pííβa)]
163. PBoM ***máaʔu** CASSAVA (BREAD) | Bo *mááʔo*; Mu *máaʔu* [APBM *(xáara), (páikoómi) {sweet}, *píikkaá, (baaxúri) {bitter}]
165. PBoM ***baino** TOBACCO | Bo *pape*; Mu *bápo* [APBM *baine]
166. PBoM ***haʔdi** COTTON | Bo *aʔti*; Mu *háʔadi* [APBM *xáʔadi]
167. PBoM ***duutu** GOURD | Bo *toó^ho*; Mu *dúutuʔu* [APBM (xáʔaxi), *dóoto-]
168. PBoM ***kinii-** YAM | Bo *k^hruni*; Mu *kinirumi* [APBM *kini(romi), *kínií-(u)]
170. PBoM ***nooba-ba** ANNATTO | Bo *néépa-pa* ‘annatto-cl’; Mu *nóoba-ba* [APBM *néébaba]
171. PBoM ***dee-ʔui** CHILI PEPPER | Bo *tíi-ʔou* ‘chili-cl’; Mu *dée-ʔui* [APBM *dǐi-ʔou {fruit}]
172. PBoM ***hiibii-** COCA | Bo *úpií*; Mu *híibi-ʔo* ‘coca-cl:tree’ [APBM *xiíbií-(ʔe)]
173. PBoM ***bakko** BANISTERIUM | Bo *népahk^he*; Mu *bákotami* [APBM *bá(k)ke(tamw), *(né)ba(k)ke]
174. PBoM ***ihe-** PLANTAIN | Bo *uhi*; Mu *iheba* [APBM *úxi(-)]
175. PBoM ***moomo** CHONTA PALM | Bo *meéme*; Mu *móomo* [APBM *meéme, *meéme-(ʔegíʔo), *meéme-(ʔejíʔyo)]
179. PBoM ***imo** SALT † | Bo *úme* ‘vegetable salt’; Mu *ímuʔu* ‘vegetable salt’ [APBM (úmoʔo), (áit(t)ega), (kánaámaá), (kánaáma)]
180. PBoM ***moomo-ba** CHICHA (OF PEACH PALM FRUITS) | Bo *meéme-pa* ‘peach_palm-cl:liquid’; Mu *móomo-ba* [APBM *méemeba, (báaxúribá)]

181. PBoM ***tsaa-no** ONE †‡ | Bo *ts^ha-ne* ‘one-inan’; Mu *sáá-no* [APBM *tsaane]
182. PBoM ***mi-no-ki** TWO † | Bo *mí-néé-k^huuú* ‘two-inan-dual’; Mu *mí-no-kki* [APBM *míinéékkuuú]
185. PBoM ***sa-?uttse** FIVE | Bo *ts^há-?ohts^hí* ‘one-hand’; Mu *sa-?úse* [APBM *tsá-?ottsí {one-hand}]
191. PBoM ***ttikkoni** FIRST | Bo *t^huhk^hénuu*; Mu *ittikoni* [APBM *(it)tu(k)kénuu, (úmígaré), (tsá?íxúttture)]
192. PBoM ***nii?noo-** LAST | Bo *ní?né-re* ‘last-?’; Mu *nínoo-no* [APBM *nii?née-né(-re), (ájuba-)]
194. PBoM ***kiimi-ba** DRUM | Bo *k^húúmmu-pa* ‘signal_drum-cl’; Mu *kíimiba* [APBM *kúúmmu-ba]
196. PBoM ***nihiga** EAR ORNAMENT | Bo *núhú-i-k^ha* ‘ear-cl-cl’; Mu *nihiga-ku* ‘ear-cl-cl’ [APBM *núxúti-ga(ko)]
197. PBoM ***maa?nii** MASK ‡ | Bo *má?ní*; Mu *maani-?ime* ‘mask-face’ [APBM *máá?nii(?tumo)]
198. PBoM ***taabu-minaa-ppi** MEDICINE MAN | Bo *t^háápo-múuná-a-^hp^hi* ‘heal-people-belong-masc.sg’; Mu *táábú-minaa-phi* [APBM (jútúβáábeé), (táábómunaaphi)]
199. PBoM ***aíbohii-bo** CHIEF | Bo *abiéhuú-pe* ‘command-masc.sg’; Mu *aíbohii-bo* [APBM *aíβéxuuú-be]
200. PBoM ***uu** I †‡ | Bo *oó*; Mu *úú-hó?o* (Note: Mu *-ho?o* is dropped in non-nominative, e.g. *u-ko* ‘to me’) [APBM *oó(-xé?e)]
201. PBoM ***ii** THOU †‡ | Bo *uuú*; Mu *ii-hó?o* (Note: Mu *-ho?o* is dropped in non-nominative, e.g. *u-ko* ‘to you’) [APBM *uuú(-xé?e)]
202. PBoM ***aanií**, ***dii-bo** HE ‡ | Bo *áánuú*, *tíi-p^he* ‘3-masc.sg’; Mu *áháani*, *dii-bo* [APBM *dii-be, (aái-be), (aá-be), (áá-nuuú), (aá-di) {204}, *á(x)áa-nuu]
203. PBoM ***aaimoo**, ***dii-go** SHE ‡ | Bo *áám^heé*, *tíi-^hpe* ‘3-fem.sg’; Mu *áháamo*, *dii-go* [APBM *dii-ge, *(aái-)ge, *(áái)-mécé, *(áxáa)-me]
204. PBoM ***haa-no** IT | Bo *aá-ne* ‘3-inan’; Mu *háá-no* [APBM (aái-be) {202,203,257}, (xáá-ne)]
205. PBoM ***mii?ai** WE † | Bo *muú?a*; Mu *míi?ai* [APBM *muú?ai-ai {pl}, *muú?ai-ai {m.d.}, *muú?ai-ai {f.d.}]
206. PBoM ***amiiai** YE | Bo *ámuú?a*; Mu *amíi?ai* [APBM *ámuú?ai-ai, *ámuú?ai-ai {m.d.}, *ámuú?ai-ai {f.d.}]
207. PBoM ***dii-to** THEY | Bo *tíi-^hie* ‘3-pl’; Mu *díi-to* [APBM *dii-te, *(aái)-te {pl}, *dii-t(é)-tsi {m.d.}, *dii-t(é)-pi {f.d.}]

208. PBoM ***tai-?uttse** MY HAND | Bo *tʰá-ʔóhtsʰi* ‘my-hand’; Mu *tá-ʔuse* [APBM *tái-ʔótsi {214}]
209. PBoM ***dii-?uttse** THY HAND | Bo *tí-ʔóhtsʰi* ‘2-hand’; Mu *díi-ʔuse* [APBM *díi-ʔótsi]
210. PBoM ***dii-bo ?uttse** HIS HAND | Bo *típie ʔóhtsʰi*; Mu *dúbo ʔuse* [APBM *(díi)-be-ʔótsi, *(aái)-be-ʔótsi, *(áái-di)-ʔótsi]
211. PBoM ***mo-?uttse-no** OUR HANDS ‡ | Bo *mé-ʔóhtsʰi-ne* ‘our-hand-pl’; Mu *mú-ʔuse-ne* [APBM *mé-ʔótsi-ne]
212. PBoM ***amii?ai ?uttse-no** YOUR HANDS ‡ | Bo *amúʔá ʔóhtsʰine*; Mu *amú?ai ʔuse-ne* [APBM *amúúʔ-ái-ʔótsi-ne]
213. PBoM ***diito ?uttse-no** THEIR HANDS | Bo *títʰie ʔóhtsʰine*; Mu *dútoʔusene* [APBM *díi-te-ʔótsi-ne, *(aái)-te-ʔótsi-ne]
214. PBoM ***tai-tiibu-ga** MY BOW ‡ | Bo *tʰá-tʰiúpo-kʷa* ‘my-shoot-cl:plank’; Mu *ta-tʰiibu-ga* [APBM *tái-túúbo-ga]
215. PBoM ***dii-tiibu-ga** THY BOW | Bo *tí-tʰiúpo-kʷa*; Mu *di-tiibu-ga*
216. PBoM ***dii-bo tiibu-ga** HIS BOW | Bo *típie tʰiúpo-kʷa*; Mu *dúbo tiibu-ga*
217. PBoM ***mo-tiibu-ga** OUR BOW | Bo *mé-tʰiúpo-kʷa*; Mu *mo-tiibu-ga*
218. PBoM ***amii?ai tiibu-ga** YOUR BOW | Bo *amúʔá tʰiúpo-kʷa*; Mu *amú?ai tiibu-ga*
219. PBoM ***dii-to tiibu-ga** THEIR BOW | Bo *títʰie tʰiúpo-kʷa*; Mu *dúto tiibu-ga*
220. PBoM ***mita-no**, ***giraa** BIG †† | Bo *mítʰa-ne* ‘big-inan’ (Note: see 262), *ʒija*; Mu *mítʰa-no* ‘big-inan’, *giraa-no* [APBM *mita-ne, *giraa-ne, *kee-(pi)-ne, (bókkuu-ne), (...)]
221. PBoM ***nume-** SMALL †† | Bo *nomi*; Mu *núménéne* [APBM *nomi-(ni-ni), (áxáitso-ne-gayw), (áyá-né-gayw), (áirá-né-gayw), (uʔxéné-gayw), (čoʔxu), (úúgúryiu)]
222. PBoM ***tsiiku** COLD † | Bo *tʰuuúkʰo*; Mu *síiku* [APBM *tsuúko, (dáiʔkoó)]
223. PBoM ***aiguukku** HOT † | Bo *afóókʰó*; Mu *áigúkku-no* ‘hot-inan’ [APBM *áigookkó-né, (péémeβako-ne), (gánókóó-ne, gánékóó-ne)]
224. PBoM ***imi** GOOD †† | Bo *imí*; Mu *imi-no* ‘good-inan’ [APBM *imí-ne, *imí-(gayw), *(ímiáá)-ne]
225. PBoM ***imi-ti-no** BAD | Bo *imi-tʰiú-ne* ‘good-neg-inan’; Mu *imi-ti-no* [APBM *imi-tú-ne]
226. PBoM ***tsetsee** WHITE † | Bo *tʰitsʰi*; Mu *sésééne* [APBM *tsítsii-ne]
227. PBoM ***kiβo-** BLACK †† | Bo *kʰuuúβe-ne*; Mu *kíβo-no* ‘black-inan’ (Note =328) [APBM *kúúβe-ne, (báttune)]

228. PBoM ***di-po** GO! ‡ | Bo *tí-p^hie* ‘imp-go’; Mu *diφó* [APBM *dí-pe]
229. PBoM ***di-tsa** COME! | Bo *tí-t^ha* ‘imp-come’; Mu *di-sáá* ‘imp-come’ [APBM *dí-tsa]
230. PBoM ***matfju** EAT! ‡ | Bo *máh^hoó*; Mu *matfú* (Note =275) [APBM *maččo]
231. PBoM ***d-aduu** DRINK! ‡ | Bo *t-átoó* ‘imp-drink’; Mu *d-adú* [APBM *d-ádoó]
232. PBoM ***kiga** SLEEP! ‡ | Bo *k^húk^wáá*; Mu *kigá* (Note =79,81,280) [APBM *ktúgá]
234. PBoM ***ii?gai-noo** FRONT TEETH, INCISORS | Bo *i?k^wa-jeé* ‘tooth-pl’; Mu *úga-no* [APBM *(piineéné) *(mé)-íí?gai-neé, (di-xéxé-ba) íí?gai-neé]
235. PBoM ***nehe(-)nih(kk)** TIP OF TONGUE ‡ | Bo *mé?-níhí-k^wá-nih^há-u* ‘our-tongue-cl: plank-end-cl:round’; Mu *néhe-ba-niheke* ‘tongue-cl-end’ [APBM *(mé)-?níxí-(gá)-níx(i) k(áu)]
236. PBoM ***niiga** LONG HAIR | Bo *níik^wa-k^ho* ‘head-cl’; Mu *níga-i-heene* ‘head-cl-hair’ (Note: see 8) [APBM *(míibaigi), *níga(i)]
240. PBoM ***nokki**- LOWER ARM | Bo *néhhú-k^wa-t^hht^ho* ‘side-cl:plank-?’; Mu *nókki* ‘arm’ [APBM *(mé)-nékkú-(gatsítto) {20}]
241. PBoM ***?uttse-kkohe** WRIST | Bo *?óts^hi-hk^héhi* ‘hand-wrist’; Mu *úse-kehe* [APBM *(mé)-?ótsi-(k)kéxi, (tsimé ííkw)]
242. PBoM ***takki**- LOWER LEG | Bo *t^háhk^hii*; Mu *tákkiji* [APBM *(mé)-tákki-(u), (xóonoga, xéenoga)]
243. PBoM ***i?he-no** BODY HAIR | Bo *i?hine*; Mu *ihéene* (Note =270, see 10)’ [APBM *i?xii-ne {270}]
244. PBoM ***ii?ba** STOMACH | Bo *i?páú*; Mu *úba* (Note = 16,245,272) [APBM *(mé)-ii?bá(u) {272,245}, (xíibuuu), *(mé-ke)-máččo-(u), *maččo-(xota)]
245. PBoM ***ii?ba** INTESTINES | Bo *i?páú*; Mu *úba* (Note =16,244,272) [APBM *(mé)-ii?bá(u)]
246. PBoM ***koomo-go** OLD WOMAN | Bo *k^hééme-t^he* ‘old-fem.sg’; Mu *kóomo-go* (Note: see 347) [APBM (ámia-tsa), *kééme-ge {47,347}]
249. PBoM ***gaikku?ai, *-pagi** CORN FIELD | Bo *k^wáhk^ho?a, -p^háfi*; Mu *gáikku?ai, phági* [APBM *gáikko?ai, (pági), (úmi?e) {83}]
250. PBoM ***too-?i** STREAM | Bo *t^héé-?i* ‘river-cl’; Mu *tée-?i* [APBM *tée-?i-(gayu) {river-line-small,49,71}, *tée-(gai-?o), (pákaáxa)]
251. PBoM ***n(gai-i?ai)** PEBBLES ‡ | Bo *nék^wa-júú?á* ‘stone-grains’; Mu *hiinigai-ji?ai* (Note =74) [APBM *(xíí)-négaiyú-?ái, *négaiyú(-gúúmé) {73,74,252}, (giísiu)]
253. PBoM ***hii(oi)** PATH | Bo *huú?ba*; Mu *híi?ai* [APBM *xutú(-)]

255. PBoM ***niih**(**-ga**) SHELTER | Bo *núúhu-k^wa* ‘?-cl:plank’; Mu *níhe-ga* [APBM *núúxu-ga, *(iixó)-ga]
256. PBoM ***hi**- THIS †‡ | Bo *í-neé* ‘here-inan’; Mu *hí-no* [APBM *xineé, *xi(xi), (áanuú), (áámeé), (eéne)]
257. PBoM ***ho?**-, THAT † | Bo *é?-neé* ‘there-inan’; Mu *hó?o-no* [APBM *xe(?)é-ne, (teé-), (diibe) {204}, (áanuú)]
258. PBoM ***mi**-, ***ka**- WHO †‡ | Bo *mú?a*, *k^haat^{hi}é?a*; Mu *míhi*, *káháani*, *káháamo* (Note: *mí- ‘who’, *ká- ‘which’) [APBM ?*ka(aité?a)-xaa-, *mú-(?a)-xa]
260. PBoM ***tsa?a**, ***ti** NOT †‡ | Bo *ts^há?aa*, *-t^hu*; Mu *ǰá?ano*, *-ti* [APBM *(-tu), *tsá?aa(-ne)]
261. PBoM ***pa-no** ALL † | Bo *p^há-neé-re* ‘all-inan-rest’; Mu *pháá-no* ‘all-inan’ [APBM ((p)airuu-kuu-ne), *pamere, *pa-nee(-re)]
262. PBoM ***mita**- MANY † | Bo *mít^{hi}a-ne* ‘many-inan’; Mu *mít^ha* ‘power’ (Note: see 220) [APBM *míta(-ne), (giráá-me), (tsíitu), (i?ná?o)]
263. PBoM ***kaamo**- LONG †‡ | Bo *k^hááme-ne* ‘long-inan’; Mu *káámo-βo-no* ‘long-?-inan’ [APBM *kááme(-βe)-ne]
264. PBoM ***-mee?u**, BARK † | Bo *-mí?o*; Mu *kuu-méé?u* ‘wood-shell’ [APBM *(koo)-mí?o, (úmé?é) *(?ajúe)-mí?o]
265. PBoM ***?ookuu**, ***duu** FLESH †‡ | Bo *?éék^hoó*, *toó*; Mu *úúku*, *dúúho?o* [APBM *éékoó, *doó-(xe?e), *(tái)-do, (atsímu)]
266. PBoM ***tii**- BLOOD | Bo *t^hú-hp^hak^{hi}o* ‘red-cl:liquid’; Mu *tíi-hó?o* ‘red-?’ (Note =33) [APBM *túú-(xé?e), *túú-(ppaiko)]
267. PBoM ***diiri-ba** GREASE † | Bo *túúru-pa* ‘grease-cl:liquid’; Mu *díiri-ba* (Note =479) [APBM *dúúruuba]
268. PBoM ***ii?i** EGG †‡ | Bo *í?húu-ú* ‘?-cl:round’; Mu *ííi* [APBM *íí?yúuu]
269. PBoM **-ttu** HORN †‡ | Bo *-h^ho*; Mu *ittu* (Note: see 462) [APBM *(óka)-(x)ítto, (iyáábetto)]
270. PBoM ***i-hee-no** FEATHER † | Bo *í?hine*; Mu *ihéene* (Note =243,316, see 10) [APBM *ixii-ne {243}]
271. PBoM ***?uttse-gai-mee?u** CLAW † | Bo *?óhts^hí-k^wa-mí?o* ‘hand-cl:plank-cl:shell’; Mu *asi-?úsé-gai-méé?u* ‘animal-hand-cl:plank-cl:shell’ [APBM *(mé)-?ótsi-gai-mí?o, *(atsi)-?ótsi-gai-mí?o]
272. PBoM ***ii?ba** BELLY † | Bo *í?páu*; Mu *íiba* (Note =16,244,245) [APBM *(mé)-íí?bá(ú), (xúíbuu) {244}]
273. PBoM ***i?ganoo** LIVER †‡ | Bo *í?k^wáneé*; Mu *ígano* [APBM *(mé)-í?gá-neé]

274. PBoM ***adu** DRINK †‡ | Bo *ato*; Mu *ádu-* (Note: see 231) [APBM *ado {231}, (ádukúnu)]
275. PBoM ***matfju** EAT (NON MEAT) †‡ | Bo *mahfʰoó*; Mu *matfú* (Note =230) [APBM *doó-(ʔi) {meat}, *geéne {fruit}, *maččo {164}]
276. PBoM ***eeʔdu-** BITE †‡ | Bo *iʔto*; Mu *éedu-* [APBM *iiʔdo, (digúkkwu), (denókkw), (dígeʔxúkkwu)]
277. PBoM ***aittime** SEE †‡ | Bo *ahʰúmi*; Mu *átʰime-* (Note cf. 450) [APBM *aittúmi(ítté), (míkkwu), (dúxwú), (wúixe)]
278. PBoM ***goobu-** HEAR †‡ | Bo *féeʔo*; Mu *gúúbu-* [APBM *geébo, (...)]
279. PBoM ***gaaha** KNOW †‡ | Bo *kʷaahákʰu*; Mu *gááha-* [APBM *gaaxá(kwu), (piibéte)]
280. PBoM ***kiga** SLEEP † | Bo *kʰukʷa*; Mu *kíga-* (Note =79, 81, 232) [APBM *kuwa]
281. PBoM ***gihe-ʔo** DIE † | Bo *tsihí-ʔe* ‘death-vblz’; Mu *gihé-ʔe-ʔi* ‘death-vblz’ [APBM *gixí-ʔe, (čééme), (...)]
282. PBoM ***gihe-ʔo-tsu**, KILL | Bo *tsihí-ʔé-tʰo* ‘dead-vblz-caus’; Mu *gihéʔesu-ʔi* ‘dead-vblz-caus’ [APBM *gixí-ʔé-tso, *gixí-(nuw), (gáikkáao), (gáiuwʔáro), (...)]
283. PBoM ***itsi** SWIM † | Bo *ihfʰi*; Mu *isi-* [APBM *ittsi]
284. PBoM ***gaʔpo** FLY †‡ | Bo *kʷaʔpʰe*; Mu *gáʔáʔe-ʔi* [APBM *gaʔape, (gaaméne)]
285. PBoM ***igo *poo** WALK † | Bo *wife, pʰeé*; Mu *íge-ʔi, ʔéé-ʔi* ‘go’, *ʔúu-ʔi* ‘went’ [APBM *uge, (tadúʔkw), (rixákkw), (peé)]
286. PBoM ***tsaa-** COME †‡ | Bo *tsʰaá*; Mu *sáá-ʔi* [APBM *tsaá-(pé), (náʔxiʔe)]
290. PBoM ***akki** GIVE †‡ | Bo *ahkʰu*; Mu *ákki-ʔi* [APBM *akkw, (éxekkáʔo, éxekkáigo)]
291. PBoM ***hīb(og), *noo** SAY †‡ | Bo *uupáʔe, neé*; Mu *híbege-ʔi, néé-ʔi* [APBM *xuub(ái) ge, *neé, (iʔxúʔa)]
293. PBoM ***gahii, *baaï** MOUNTAIN † | Bo *kʷáhuú, páuú*; Mu *gáhi, báai* (Note: see 151) [APBM *gáxuú, *káme-(ʔo)-gáxu, *báauú, *káme-(ʔo)-ʔbáau {151}]
294. PBoM ***ti-ppai-no** RED †‡ | Bo *tʰú-hpʰa-ne* ‘red-liquid-inan’ (see 33,26)’; Mu *tí-ʔai-no* (see 33,26)’ [APBM *tú-ppai-ne {33,266}]
295. PBoM ***aittiʔa** GREEN † | Bo *ahʰúʔa*; Mu *atʰiʔa-no* [APBM *aittúʔa-ne]
296. PBoM ***gi()** YELLOW † | Bo *fʰihkʰáneúʔú*; Mu *gígibano* [APBM *gíi(-giʔa)-ne, *gíi(-kká)-ne-(úʔu)]
297. PBoM ***gaʔpo** FULL † | Bo *kʷaʔpʰe*; Mu *gáʔáʔo-no* (Note =471) [APBM *gaʔape-né, *(tsane) gáʔap(é) (k)kumú-né, (gáittóokwu)]

298. PBoM ***boʔ-no** NEW †‡ | Bo *péʔ-ne*; Mu *bóʔo-no* [APBM *béʔe-ne]
301. PBoM ***momo** NAME †‡ | Bo *meme*; Mu *mómo* [APBM *meme]
302. PBoM ***miʔ(i)** HOW | Bo *muʔtu*; Mu *míʔi* [APBM *miuʔ(j)u, *miuʔ(d)u, (kébádu)]
305. PBoM ***hi-noo-ri** HERE | Bo *i-nee-ri* ‘here-inan-loc’; Mu *hi-nee-ri* [APBM *(xóo-ga-βu), (ximáine), (íigeé), (ítsii, íçii), *xínee-ri, *xínee-(βu)]
306. PBoM ***oo-no** THERE | Bo *éé-ne* ‘there-inan’; Mu *óó-no* [APBM (xaʔu), (taʔu), (eene), (omaina), (eʔ-gee), (éʔ-tsíi), (té-tsii), (téʔuge)]
307. PBoM ***tsi-ppi** OTHER | Bo *tsʰi-hpʰi* ‘other-masc.sg’; Mu *sí-phi* [APBM *tsi-ppi {masc}, *tsí-(ppi-ge), *tsii-(ne), *tsi-]
309. PBoM ***tsu-** FOG | Bo *ohsʰó* ‘smoke’; Mu *súi* [APBM *(o)tsso-(u), (áimóo-ppaiko) {59,247,248}]
310. PBoM ***niiba** FLOW | Bo *niiba*; Mu *niiba-ʔi* [APBM (gaápe), (niiba), (koo)]
311. PBoM ***muuai** SEA | Bo *moóa*; Mu *múúai* (Note =49,379) [APBM *moóai, (ííβámú dokó-ppáiko)]
312. PBoM ***peepai-no**, ***maa-** WET | Bo *mahááβe*, *pʰípʰá-je* ‘moist-inan’; Mu *mááno*, *φέέφα-jo* (Note: see 403) [APBM (pí-ppai-ne), (máái-ne), (muurííβe), (maxááβe), (reʔre), (uúru), (uuruúβe), (rerékku)]
313. PBoM ***nitti-** WASH | Bo *nihʰu*; Mu *nítʰi-ʔi* (Note: see 482) [APBM *nittú-(ku), (gáitsáitsaʔxútku, gáçáçaʔxútku), (íjoáko), (ibúnuwáko)]
314. PBoM ***hiʔba** WORM | Bo *wúpa*; Mu *hiʔba* [APBM *xuʔ(?)úba, (çéʔói, çóʔói), (áppaiko), (...)]
316. PBoM ***iʔhe-** FUR | Bo *iʔhihi*; Mu *ihéʔene* (Note: see 10,243,270) [APBM *iʔxi-(ʔono), *iʔxi-(xi)]
318. PBoM ***hii-** SALIVA | Bo *uunípa*, *uúni*; Mu *húre* [APBM *xúuu-(ri), *xuuu-(ní-ba)]
319. PBoM ***mippaino-ppai(u)** MILK | Bo *múhpʰáje-hpʰákʰo* ‘breast-liquid’; Mu *míφαρο-φáιʔu* ‘breast-liquid’ [APBM *múppáine-ppáiko {breast-liquid,15,48}]
320. PBoM ***-ma** WITH | Bo *-ma*; Mu *-ma* [APBM *-ma, (-ri)]
321. PBoM ***paino** IN † | Bo *pʰaje*; Mu *φαρο* [APBM (-βu), (paine)]
322. PBoM ***-βi** AT | Bo *-βu* ‘adlative case’; Mu *-βi* [APBM (tsatsii), (-βu)]
323. PBoM ***-ʔatʃihi** IF | Bo *ʔahʃʰíhʰu*; Mu *atʃihi* [APBM *-ʔaččíxuu, (-ka)]
327. PBoM ***tsee-mo-no** CHILD | Bo *tsʰí-me-ne* ‘child-pl-inan’; Mu *séemene* [APBM *tsí-me-ne, *(gái-píi)-tsíi]

328. PBoM ***kifo-**, DARK | Bo *k^húúβe-ne*; ‘dark-inan’ Mu *kifo-no* (Note =227) [APBM *kúβé-ne, *kúβé?teé-né, *kúβe-(tsí)]
330. PBoM ***kare-** WIDE ‡ | Bo *k^horíí-né* ‘wide-inan’; Mu *kárékuno* [APBM *k(a)rí(ko)-né, (mítane)]
331. PBoM ***iíhe** NARROW | Bo *iíhí*; Mu *iíhe-ne* [APBM *iixí-né-(gáyú), (úútsíne), (áyane), (páyokke)]
334. PBoM ***peeme** THICK ‡ | Bo *p^hiími*; Mu *fééme-ne* [APBM *piími-(ne)]
335. PBoM ***itsi-**, **aini-** THIN | Bo *ani*, *uht^hi*; Mu *ísino*, *ápiño* [APBM *úútsi-(ne), aini-(ne)]
336. PBoM ***baa?r(-)no** SHORT | Bo *pá?ríneúβúú*; Mu *báárene* [APBM *báá?rí-ne (-úúβú)]
338. PBoM ***tsü?he-βa-ti-no** DULL | Bo *ts^hú?hí-βa-t^hú-ne* ‘sharp-have-neg-inan’; Mu *sühe-βa-ti-no* [APBM *tsúúú?xíβa-tú-ne, (gí?i-ne)]
339. PBoM ***tsühe-βa** SHARP | Bo *ts^hú?hi-βá-ne* ‘sharp-have-inan’; Mu *síhéβano* [APBM *tsúúú?xíβá-ne]
340. PBoM ***hiini-βa-**, **beeβa-** DIRTY | Bo *ijnú-βá-ne* ‘earth-have-inan’, *piíβa*; Mu *híniβano*, *bééβano* [APBM *xiin(ú)-βá-ne, *(βií)-βa-ne, *(muu?uini)-βa-ne, *úúdiikk(o-ne), *úúdiikk(uú), (ne?ni)]
341. PBoM ***tuuki-** ROTTEN | Bo *t^hóók^hu-ne* ‘rotten-inan’; Mu *túúki-no* [APBM *tóókui-ne, (nókókoo-ne, nékékoo-ne), (rááraá), (čáxaaβé-né)]
342. PBoM ***p(ri)iki-**, ***mooβa-** SMOOTH | Bo *p^hiruuk^hú-ne*, *mééβa-ne*; Mu *páriúkiño*, *móóβano* [APBM *(p)(ai)ruuukú-ne, *mééβa-ne, *ru(tú)rú(tu)-(ko-ne), (tú?tú-ríβa-tú-ne)]
343. PBoM ***tsa-tikko-βo** STRAIGHT | Bo *ts^ha-t^húúhk^he-βe* ‘one-straight-?’; Mu *sá-túkk-βo* [APBM *tsa-túkkeβe]
344. PBoM ***m(ə)aa-** CORRECT | Bo *imiáá-ne* ‘true-inan’; Mu *mijáá-no* (Note =346) [APBM *(túkkeβe-be) {343}, *(i)miáá-ne {343}]
345. PBoM ***nani-** LEFT | Bo *náni-néhk^hu* ‘left-side’; Mu *náni?igo* [APBM *náni-(?uge), *náni-(nékku)]
346. PBoM *(ə)m(a)- RIGHT | Bo *imiá-néhk^hu* ‘right-side’; Mu *imija-nagono* (Note =344) [APBM *(i)mía-(nage-ne), *(i)mía-(nekku)]
347. PBoM ***tsik(-)**, ***koomo-** OLD ‡ | Bo *ts^húúúkk^háa-ne*, *k^heéme*; Mu *síkihe?ino*, *kóomobo* (Note = see 246) [APBM *tsúúúkk(áa)-ne, *tsúúú(áa)-ne, *kéeme-(be) {246,47}, (kija?o-te), (amia-te)]
349. PBoM ***giiki** PULL | Bo *giúúkk^hu*; Mu *giúúki-?i* [APBM *giúúúku, (tájári(?x)úúku)]
351. PBoM ***piku** THROW | Bo *p^hik^hio* ‘put’; Mu *fikú-?i* ‘put-pred’ [APBM *piko, (gáino), (xukko), (gaáo), (gaagóo), (iččíβétsó, itsiβétsó), (ka?pínu)]

352. PBoM ***idzaaju** HIT † | Bo *ífuájo*; Mu *úʒáju-ʔi* ‘hit-pred’ [APBM *ijaáyo, *gá-(bíriko), *gá-(núúku), *gá-(póóβi), *gá-(paákkó), *gá-(iáko), *gá-(púuxuʔxáko), (eʔnénu), (káitíteʔxúko)]
353. PBoM ***ga(er)-** SPLIT | Bo *kʷáʃʰééréákʰo*; Mu *gáʒééréku-ʔi* ‘split-pred’ [APBM *gá(ě) ére(á)ko]
354. PBoM ***kapaíti-(i)ni** PIERCE | Bo *kʰápʰátʰuu-úkkʰuu-nuu* ‘pierce-?-do’; Mu *káʰáttʰíkki-ʔi* ‘pierce-pred’ [APBM *kápáittuuúkkuu-nuu, (gáʔexúro)]
355. PBoM ***tsooʔdi** DIG | Bo *tsʰeʔʔi*; Mu *séédi-ʔi* ‘dig-pred’ [APBM *tseeʔdi, (kanokko), (ganókkó)]
356. PBoM ***tsittsi, *duʔhe-ni** TIE † | Bo *ʃʰihʃʰuu, toʔhí-nuu* ‘strap-do’; Mu *sísi-ʔi, dúúhé-ni-ʔi* ‘strap-do’ [APBM *tsittsu, *doʔxín(w)]
358. PBoM ***aak()o-** FALL † | Bo *aakʰitʰie*; Mu *áákéte-ʔi* [APBM *aakí(t)te, (áipi, áipe)]
359. PBoM ***huuri-** SWELL | Bo *oóri*; Mu *húuri-ʔi* [APBM *xoorii-(ne), (gaaméne), (íbatsúúβe)]
360. PBoM ***ettsam(i)-** THINK | Bo *ihtʰaméi*; Mu *ésámáái-ʔi* [APBM *ittsam(áá)i, *itts(ú-kuntu), *itts(o)]
361. PBoM ***matti-βa** SING | Bo *mahtʰi-βa* ‘song-have’; Mu *mási-βa-ʔi* [APBM *mattsi-βa, (gánikkaméi)]
362. PBoM ***higikk(), *uttsu** SMELL † | Bo *uʃʰihkʰuu, ohtʰó*; Mu *higikkú-ʔi, úsu-ʔi* [APBM *xuugikk(o), *otstó-ʔi, (núnuuuúkkuu), *xúgi(úku), (tsiiʔxúku), (aráʔko) {tr}, (βoβókkú), (kuβa), (áipúxakóóβe) {intr}]
365. PBoM ***ebatsu-, buutsu-** BLOW † | Bo *ipátsʰo, pohtʰókʰuu*; Mu *ébásu-ʔi, búúsu-ʔi* [APBM *íbats(w)ʔxáko), *bootsó-(ku), *gittsú-(ku), (poonu), (gíbo), (βoβókkú), (iókko), (βooíku), (áápuúku), (éiyóáko), (uúbo)]
366. PBoM ***igi** FEAR | Bo *ifí*; Mu *ígi-ʔi* (Note =542) [APBM ?*igi, *(ai)n(ó)uʔ(i)kko(), *nuʔ(néβe), (ápiítsóge, ápiičóge), (áábiméi), (ámítsáraʔkóge), (núuʔkóge)]
367. PBoM ***aami-tsu** SQUEEZE † | Bo *aamú-tsʰó* ‘hit-caus’; Mu *áámí-su-ʔi* [APBM *(m)aámu, *aamú-tsó, ((ai)n(ai)niko), (gátiaini), (páítsiʔxáko, páčʔiʔxáko), (...)]
368. PBoM ***ikka** HOLD | Bo *ihkʰa* ‘be’; Mu *ikka-ʔi* ‘be’ [APBM *ikka(ne), (gááyukkuuntu), (kátóroʔxáko), (teʔme), (maittsóto, maččóto)]
369. PBoM ***giino, baa-ri** DOWN | Bo *ʃʰiɲe, paá-ri* ‘below-loc’; Mu *gúino, báari* [APBM *gii-ne, *baári]
370. PBoM ***kamo** UP | Bo *kʰaame*; Mu *káamoβi* [APBM *kaame]
371. PBoM ***naamo-** RIPE | Bo *name-ne* ‘sweet-inan’; Mu *náamo-no* (Note =558) [APBM *náame-ne, (tupai-ne), (kéémene)]
372. PBoM ***-giihi** DUST | Bo *ʃʰihʰuu*; Mu *gúhi* [APBM *pá-giixu {57,164,171}, *(xiínu)-giixu {72}]

373. PBoM ***buʔee-** ALIVE | Bo *póʔí-pe* ‘alive-masc.sg’; Mu *búʔé-no* [APBM *bóʔí-(beke), (gáxánékkúú-beke), (ménúnékkúú-beke)]
374. PBoM ***gaiba-i** ROPE ‡ | Bo *kʷááʔa-u* ‘?-cl’; Mu *gáaiba-i* [APBM *gáaibau, (dóoxi-yu), (pádoʔxi)]
375. PBoM ***pi(k)kaba** YEAR | Bo *pʰihkʰapa*; Mu *fikába* [APBM *pí(k)kaba, (meeméʔe)]
378. PBoM ***-g(i)** DIMINUTIVE | Bo *-kʷu.u*; Mu *-gaji* (Note: The Bora form is bisyllabic)
379. PBoM ***muuai** BIG RIVER | Bo *moóa*; Mu *múuai* (Note =49,311)
380. PBoM ***baa-(ʔ)o-ha** LONGHOUSE | Bo *pá-e-haá* ‘below-belong-house’; Mu *báa-ʔo-ha*
382. PBoM ***higaa-he** STONE AXE | Bo *úkʷaá-hi* ‘stone-cl:disc’; Mu *higáa-he* (Note: = 88)
383. PBoM ***n(ots)ga** MACHETE | Bo *nütsʰúkʷa*; Mu *núsuga* (Note =89)
384. PBoM ***hiibai** DEER | Bo *iipa* ‘grey deer’; Mu *hiibái*
385. PBoM ***in(ʔ)ai** MACAW (BLUE) | Bo *inaʔa*; Mu *inoʔai* (Note =129)
386. PBoM ***tiip()-megai** ANT (CONGA) | Bo *tʰúúʔpʰá-mieékʷa* ‘red-woman’; Mu *tiiʔo-mogai*
387. PBoM ***peeka** BITTER MANIOC (PLANT) | Bo *pʰiikʰa*; Mu *féeka*
388. PBoM ***ká()ʔaaku** PUSH | Bo *kʰáʔúú-ʔhíákʰo* ‘push-?’; Mu *kábújaaku-ʔi* (push-predicate)
389. PBoM ***áittime** FIND | Bo *áhtʰumi*; Mu *ávime-ʔi*
390. PBoM ***diʔki** GET ILL | Bo *tuʔkʰu*; Mu *diikiba*
391. PBoM ***gáiriiʔaiji** SQUEEZE MANIOC DOUGH | Bo *kʷájuʔánu*; Mu *gáriiʔáji-ʔi*
392. PBoM **íino** GERMINATE | Bo *iipe*; Mu *íine-ʔi*
394. PBoM ***kóóʔadíikku**, ***gái(ʔ)a** SCREAM | Bo *kʰéʔátihkʰo*, *kʷáʔáhaaʔe*; Mu *kóóʔadíiku-ʔi*, *gáiba-ʔi*
395. PBoM ***toomo-** KEEP | Bo *tʰeʔme* ‘keep, guard’; Mu *téeme-ʔi* ‘keep, guard’
398. PBoM ***móóni** MAKE ‡ | Bo *meénu*; Mu *móóni*
401. PBoM ***taa** CRY ‡ | Bo *tʰaa*; Mu *táa-ʔi*
402. PBoM ***gáʔzúu**, ***táhiʔba** ORDER, COMMAND | Bo *kʷaʔʃoo*, *tʰáuuʔpa*; Mu *gáʔzúu-ʔi*, *táhiiba-ʔi*
403. PBoM ***máa-**, ***péépai-** GET WET | Bo *máhaa-ʔe*, *pʰipʰáhʔʃómei*; Mu *máa-ʔi*, *fééʔai-ʔi* (Note: see 312)
406. PBoM ***paikumii** MANICUERA MANIOC | Bo *pʰákʰoóomu*; Mu *ʔáikúumii*

407. PBoM ***píβo** BE BORN | Bo *p^hiβje*; Mu *φύβε-?i*
408. PBoM ***níppai** URINATE | Bo *nihp^ha*; Mu *níφai-?i*
410. PBoM ***nobú** FART | Bo *neépo*; Mu *núbúsu-?i*
412. PBoM ***dídzu** ASK | Bo *tiffo*; Mu *dídzu-?i*
413. PBoM ***nítsu** TASTE | Bo *nuht^ho*; Mu *nísu-?i*
414. PBoM ***pítá()** STAY | Bo *p^hi^há?a-aβe*; Mu *φιτάφέτε-?i*
417. PBoM ***im()-go**, **gáih**-, **káβa**- WANT | Bo *imí-tfe* ‘good-consider’, *k^wahiu*, *k^haaβa*; Mu *íme-ge-?i*, *gáih*-, *káβa*-*?i*
418. PBoM ***katsu** GRATE | Bo *k^haats^ho*; Mu *kásu-?i* (Note =529)
426. PBoM ***i()-ro** ALONE | Bo *i-je* ‘3-rest’, *-re*; Mu *í-no-ro* ‘3-inan-rest’, *-re*
427. PBoM ***tíga** DREAM | Bo *t^huk^wa*; Mu *tíga-?i*
429. PBoM ***tugaa** SWEAT | Bo *t^hok^wa*; Mu *túgáa-?i*
431. PBoM ***áih()**ba BE HUNGRY | Bo *ahápááβat^he*; Mu *áheba*
434. PBoM ***áhé** ITCH | Bo *ahí*; Mu *áhéβano*
435. PBoM ***garééku**, **tsú?kútsu**- ROAST | Bo *k^wári?k^ho*, *ts^hó?k^hots^ho*; Mu *garééku-?i*, *súkúsu-?i*
437. PBoM ***ts()**βa BRING | Bo *ts^híβa*; Mu *síβa-?i*
440. PBoM ***ba** PAY A VISIT | Bo *paa-?i*; Mu *báa-?i*
441. PBoM ***namettihe** GRASSLAND | Bo *nómih^tuhí*; Mu *námettihe* (Note: =150, dialect. variant Mu *námettehe*)
442. PBoM ***íhi** YESTERDAY ‡ | Bo *ih^huu*; Mu *íhi*
444. PBoM ***paino** INSIDE | Bo *p^harne*; Mu *φάno* (Note: 321)
445. PBoM ***paiβoo** SOFT, TENDER | Bo *p^haβje*; Mu *φάίβée-?i*
446. PBoM ***im()** HAPPY | Bo *imí-h^huuu*; Mu *ímo ímo*
447. PBoM ***paapai** BITTER ‡ | Bo *p^haap^ha*; Mu *φάάφα-no*
448. PBoM ***góóβá** FAST | Bo *tfeβá*; Mu *góóβá-no*
450. PBoM ***ái()**ime-**tí** BLIND | Bo *áh^húmi-t^húú-pe* ‘see-neg-masc.sg’; Mu *áatíime-tí*- (Note: cf. 277)
451. PBoM ***mikku** DOCK, PORT | Bo *múhk^hoh^huu*; Mu *míku*

454. PBoM ***ime** FACE | Bo *ʔúmi*; Mu *íme*
456. PBoM ***hiβiiba** BASKET | Bo *úβiipa*; Mu *hiíbai*
458. PBoM ?***hi(a)ʔts()** FOAM | Bo *uráʔtsʰa* ; Mu *hiβáase*
461. PBoM ***péeno** MIDDLE | Bo *pʰiine*; Mu *fééne*
462. PBoM ***hanoo-tto** THORN | Bo *áneéʰo* ‘thorn-cl’; Mu *hánúútu* (Note: see 269)
463. PBoM ***káamo** TALL | Bo *kʰaame*; Mu *káamo*
464. PBoM ***kúume** PALM OENOCARPUS BATAUA | Bo *kʰoómi*; Mu *kúume-ʔe*
465. PBoM ***táábú** MEDICINE | Bo *tʰaapo*; Mu *táábú-ta*
467. PBoM ***buun()** LATER ON | Bo *-poone*; Mu *-búúna*
468. PBoM ***gíraa-** A LOT | Bo *ʔijá*; Mu *gíráano*
469. PBoM ***dóhiku** BEHIND | Bo *téhuukʰo*; Mu *dóhiku-ti* (behind-abl)
471. PBoM ***gaʔpo** FULL | Bo *kʰaʔpʰe*; Mu *gáʔáfono* (Note: =297)
474. PBoM ***mátsakka** PEANUTS | Bo *mátsʰahkʰa*; Mu *másaka*
475. PBoM **g()-ʔáts()** YARD, COURT (OF MALOCA) | Bo *ʔá-ʔahtʰi* ‘ʔ-cl:yard’; Mu *góóʔási*
476. PBoM ***héékki** CRESTED OROPENDOLA | Bo *ihkʰu*; Mu *hééki*
477. PBoM ***kaʔginiku** MANIOC STARCH DRINK | Bo *kʰaʔkúunukʰo*; Mu *kááginiku*
478. PBoM ***gáttse-** ARRIVE | Bo *kʰahtʰi*; Mu *gáse-ʔi*
479. PBoM ***diiri-ba-** OIL | Bo *túúrípa-hpʰákʰi* ‘grease-cl:liquid’; Mu *dúriba* (Note =267)
482. PBoM ***nitti-ba** SIFTER | Bo *níhtʰi-u-pa* ‘wash-cl’; Mu *nítiba* (Note: see 313)
484. PBoM ***áiβo** SPICY | Bo *aβe*; Mu *áiβe-ʔi*
489. PBoM ***hiibaimo** DANCING FESTIVAL | Bo *úúpamje*; Mu *hiibaimo*
491. PBoM ***gádameeʔu** MANIOC SQUEEZER | Bo *kʰátari-* ‘put inside’, *-miiʔo* ‘cl:shell’; Mu *gádameeʔu*
492. PBoM ***méékime** MIRROR | Bo *múukʰumi*; Mu *méékime*
494. PBoM ***ʔattfi**, SON †† | Bo *ʔahʔi*; Mu *úfi*
495. PBoM ***mitsi**, ***mipe** WE TWO | Bo *mutsʰi* ‘1.dual.masc’, *muupʰi* ‘1.dual.fem’; Mu *mísí*, *míʔe*

496. PBoM ***amitsi**, ***amipe** YOU TWO | Bo *ámuts^{hi}*, *ámup^{hi}*; Mu *ámúsi*, *ámúpe*
497. PBoM ***dii-t()-tsi** THEY TWO (M.) | Bo *túit^{hi}é-ts^{hi}* ‘3-pl-dual.masc’; Mu *dúitisi*
498. PBoM ***dii-t()-pe** THEY TWO (F.) | Bo *túit^{hi}é-p^{hi}* ‘3-pl-dual.fem’; Mu *dúitipe*
499. PBoM ***i-** HER | Bo *i-*; Mu *i-*
500. PBoM ***duu** EAT MEAT | Bo *toó*; Mu *dúu-?i*
501. PBoM ***nií** WEAVE | Bo *nuu*; Mu *nú-?i*
502. PBoM ***nehe?ku** LICK | Bo *nihí-?k^{ho}*; Mu *nehéeku-?i*
503. PBoM ***hibu** HEALING BLOW | Bo *uuúpo*; Mu *húibúu-?i*
504. PBoM ***aam(hi)** DOWNRIVER | Bo *ámehuu*; Mu *ámihí*
506. PBoM ***aikko** WAKE UP | Bo *ahk^{hi}e*; Mu *áiké-?i*
507. PBoM ***kíihigai** FIREPLACE | Bo *k^húhúk^{wa}-?áht^{hi}* ‘fire-place’; Mu *kíihigai* ‘fire’
508. PBoM ***nittiba** SIEVE | Bo *níht^{hu}-pa* ‘wash-cl’; Mu *nítiba*
509. PBoM ***ɖgari-ga** DANCING BEAM | Bo *faari-k^{wa}* ‘?-cl.plank’; Mu *ɖáriga*
510. PBoM ***mítsééte** CAIMITO FRUIT (POUTERIA CAIMITO) | Bo *múts^{hi}úts^{hi}*; Mu *míséése*
511. PBoM ***háadza** PALM SOCRATEA EXORRHIZA | Bo *ááfa-?e*; Mu *háadza*
512. PBoM ***kaati** LEAVES THAT PRODUCE BLACK COLOR | Bo *k^háát^{hu}*; Mu *káati*
513. PBoM ***moomo** PEACH PALM (BACTRIS GASIPAES) | Bo *mééme*; Mu *móomo*
514. PBoM ***taaβi-?o** CECROPIA SP. | Bo *t^haaβi^{?e}* ‘Cecropia-cl:tree’; Mu *tááβi-?o*
515. PBoM ***haa?o** MACAMBO FRUIT (THEOBROMA BICOLOR) | Bo *aa?e*; Mu *háa?o*
518. PBoM ***túitsi-?o** INGA EDULIS | Bo *t^húúts^{hi}-?e* ‘?-cl’; Mu *túisi-?o*
519. PBoM ***higo-ba** CERAMIC SAUCEPAN | Bo *úfje-pa* ‘?-cl’; Mu *higo-ba*
520. PBoM ***báaku** UVILLA FRUIT (POUROUMA CECROPIAEFOLIA) | Bo *páák^{ho}*; Mu *báaku*
521. PBoM ***áini-hi** RIFLE | Bo *apú-huu* ‘shoot-cl:tube’; Mu *áni-hi*
522. PBoM ***nehe** PALM ASTROCARYUM CHAMBIRA | Bo *níhi-?e*; Mu *néhe*
523. PBoM ***niimi** UMARÍ FRUIT (PORAQUEIBA SERICEA) | Bo *nímú-?e*; Mu *ními*
525. PBoM ***m(n)úiko** EDIBLE ANT | Bo *ménúik^{hi}e*; Mu *mínúiko?i*

526. PBoM ***kúúhi** AVOCADO (PERSEA AMERICANA) | Bo *k^hóóhu-ʔe*; Mu *kúúhi*
527. PBoM **áppai-ku** EDIBLE LARVAE | Bo *áhp^a-k^ho* ‘larva-cl’; Mu *áppaiku*
529. PBoM ***katsu** GRATER | Bo *k^háts^hoó-k^wa* ‘grate-cl:plank’; Mu *kásu-ʔi* ‘grate’ (Note =418)
530. PBoM **ino-ʔo** MIRITI PALM (MAURITIA FLEXUOSA) | Bo *íne-ʔe* ‘miriti-cl:tree’; Mu *ino-ʔo*
532. PBoM ***-ʔakki** PILLARS (OF ROUNDHOUSE) | Bo *áp^hi-ʔáhk^hu*; Mu *ú má-ʔaki*
533. PBoM ***háhe** LEPIDOCARYUM TENUE PALM (FOR THATCHING ROOFS) | Bo *áhi-ʔípa*; Mu *háhe*
534. PBoM ***geen()** EAT FRUIT | Bo *f^heéne*; Mu *gééne-ʔi*
535. PBoM ***dooikki** CHEW COCA | Bo *teih^hk^hu*; Mu *dééiki*
536. PBoM ***namo** FECES | Bo *name*; Mu *namo*
539. PBoM ***mákká-ni** DROWN | Bo *máhk^a-nu* ‘drown-do’; Mu *mákká-ni-ʔi*
541. PBoM ***gáihúkku** PULL OUT | Bo *k^wáh^hohko*; Mu *gáihúku-ʔi*
542. PBoM ***igi** GET SCARED | Bo *ifí^he*; Mu *igi-ʔi* (Note =366)
543. PBoM ***n()**kúppé-go- SHAME | Bo *núk^hohp^h-f^he* ‘shame-consider’; Mu *núkú-φége-ʔi*
544. PBoM ***gaʔtse** DANCE | Bo *k^waʔts^hi*; Mu *gááse-ʔi*
547. PBoM ***taaba** HUNT | Bo *t^haaβa*; Mu *tááβa-ʔi*
549. PBoM ***ti** COOK | Bo *t^huu*; Mu *tí-ʔi*
550. PBoM ***ikki** CATCH | Bo *uhk^hu*; Mu *iki-ʔi*
551. PBoM ***hiib()**go TELL, NARRATE | Bo *uuupátf^he*; Mu *hiibege-ʔi* (Note =291)
553. PBoM ***βiri** CUT | Bo *-βuru-*; Mu *gáβiriúku-ʔi*
554. PBoM ***aini** SHOOT | Bo *apu*; Mu *áni-ʔi*
556. PBoM ***gíríiká-βo-** GET DRUNK | Bo *f^hijíik^ha-βe* ‘shake-vblz’; Mu *gíríiká-βe-ʔi*
557. PBoM ***kimi** WOOLY MONKEY (LAGOTHRIX LAGOTRICHIA) | Bo *k^huuúmu*; Mu *kíimiba*
558. PBoM ***naamo** SWEET † | Bo *naáme*; Mu *náamo* (Note =371)
560. PBoM ***-bo** MASCULINE (SUFFIX) | Bo *-pe*; Mu *-bo*
562. PBoM ***apiif^hu**, ***ǵii()**a-ni CONJURE | Bo *áp^híif^ho*, *f^huuuβá-nu* ‘conjure-do’; Mu *ápíif^hu*, *ǵíiʔa-ni-ʔi*

6. Conclusions

Our identification of 415 Bora-Muinane cognate sets and the analysis of sound correspondences within these lead to a firm reconstruction of proto Bora-Muinane basic vocabulary and phonology. Our reconstruction leaves very few exceptions and reduces complications proposed in an earlier reconstruction (Aschmann 1993). This reconstruction provides a firm basis for future investigations of potential genealogical relationships of Bora-Muinane with other languages, among them the neighboring languages Witoto, Ocaina, and Nonuya.

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Abbreviations

3 = 3rd person;
 abl= ablative;
 caus = causative;
 cl = classifier;
 fem = feminine;
 inan = inanimate;
 masc = masculine;
 pl = plural;
 sg = singular;
 vblz = verbalizer.

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