Proto Bora-Muinane
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Published in:
Liames

Citation for published version (APA):
Seifart, F., & Echeverri, J. A. (2015). Proto Bora-Muinane. Liames, 15(2), 279-311.

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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 CLAVE: Lingüística histórica; Bora; Muinane; Familia Bora; Amazonía Noroccidental.
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 |
|--------|--------|----------|---------|-------|---------|
| Plosive| pʰ 5.0% p 6.5% | tʰ 4.0% t 2.9% | tˢʰ 5.2% tˢ 0.2% | kʰ 8.5% k 0.1% | ? onset 6.1% coda 2.8% |
|        | pʰʲ * pʲ 0.5% | tʰʲ 2.0% tʲ * | jʰ 1.4% jʲ 3.8% | kʰʲ 1.3% kʲ * | ?ʲ 0.6% |
| Fricatives | β 4.6% | j 1.0% | h onset 5.1% coda 7.8% | h | |
|        | β 0.4% | j 1.0% | h 1.2% | h | |
| Trills | r 1.4% | n 8.3% | n | n | |
| Nasals | m 9.9% | n 2.1% | n | n | |
|        | mʲ 0.4% | n | n | n | |

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

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% | tŒ 0.4% dŒ 1.1% | k 8.3% g 11.2% | ? 6.6% |
|        | tʃ 0.7% | tʃ 0.9% | tʃ 0.3% | kʃ 2.3% | h 10.5% |
| Fricative | ɸ 5.3% β 3.3% | s 6.4% | r 2.0% | j 1.2% | |
| Resonant | r 0.2% | n 10.1% | n 1.5% | n | |
| Nasal | m 11.4% | n | n | n | |

i 15.2% i 19.0% u 12.6% u 9.1%
Bora has palatalized counterparts of every one of its consonants (j being the palatalized counterpart of r, ʧ of ʦ, and ʤ of ʦ) 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.

| Regular consonant correspondences | Supporting sets |
|----------------------------------|-----------------|
| **PBoM** | **Bo** | **Mu** | **Context** | **Supporting sets** |
| *p | pʰ | φ | 68, 87, 99, 116, 116, 117, 118, 120, 128, 136, 146, 147, 148, 228, 294, 295, 297, 312, 321, 334, 351, 354, 375, 386, 387, 403, 404, 406, 407, 414, 444, 445, 447, 447, 461, 471, 495, 496, 498 |
| *pp | hᵖʰ | φ | 14, 15, 38, 39, 48, 198, 294, 307, 319, 319, 408, 527, 543 |
| *β | βʲ | 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 |
|   |   |   |   |
|---|---|---|---|
| **b** | **p** | **b** | **ai, i_** |
| **b** | **p** | **b** | **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, 509, 519, 520, 551, 560, 560 |
| **d** | **t** | **d** |   |
|   |   |   | 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** | **ɡ** | **dʒ** |   |
|   |   |   | 6, 82, 105, 352, 402, 412, 509, 511, 562 |
| **t** | **tʰ** | **t** | **i_** |
|   |   |   | 207, 215, 219, 225, 414, 497, 498 |
| **t** | **tʰ** | **t̍** | **ai_** |
|   |   |   | 214, 354 (220, 262 exceptions) |
| **t** | **tʰ** | **t** | **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** | **htʰ** | **tt** | **i_** |
|   |   |   | 139, 313, 117, 150, 269 |
| **tt** | **htʰ** | **t** | **i_** |
|   |   |   | assuming undetected gemination in Muinane: 482, 508 |
| **tt** | **htʰ** | **t̍** | **ai_** |
|   |   |   | 277, 295 |
| **tt** | **htʰ** | **t̍** | **ai_** |
|   |   |   | 450 (exception) |
| **tt** | **tʰ** | **t** | **V_ (Bora)** |
|   |   |   | 277, 313; assuming undetected gemination in Muinane: 462 |
| **tt** | **htʰ** | **tt** | **other contexts** |
|   |   |   | 117, 150, 269 |
| **tt** | **htʰ** | **t** | **other context** |
|   |   |   | 331, 482, 508 (assuming undetected gemination in Muinane) |
| **ts** | **tsʰ** | **s** |   |
|   |   |   | 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 |
| **t̄ts** | **htsʰ** | **s** |   |
|   |   |   | 96, 159, 185, 208, 209, 211, 212, 213, 271, 283, 309, 335, 356, 360, 361, 362, 365, 413, 475, 478 |
| **t̄ts** | **tsʰ** | **s** | **hC** |
|   |   |   | 241 |
| **g** | **ɡʰ** | **ɡ** |   |
|   |   |   | 125, 260, 562 |
| **tɡf** | **hɡʰ** | **tɡ** |   |
|   |   |   | 230, 275, 323 |
| **tɡf** | **hɡʰ** | **ɡ** |   |
|   |   |   | assuming undetected gemination in Muinane: 494 |
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| *r  | j   | r    | ai.i_ | 44, 82, 125, 220, 426, 468, 556 |
|-----|-----|------|-------|---------------------------------|
| *r  | r   | r    | other contexts | 66, 126, 145, 267, 305, 330, 336, 353, 359, 345, 347, 509, 553 |
| *k  | kʰ  | k    | ai.i_ | 351, 375, 406, 525, 527, 556 |
| *k  | kʰ  | k    | other contexts | 9, 44, 52, 56, 58, 60, 66, 67, 79, 81, 84, 86, 103, 105, 107, 124, 134, 136, 137, 142, 168, 194, 222, 227, 232, 246, 258, 263, 265, 280, 328, 330, 341, 342, 347, 349, 354, 358, 370, 387, 388, 390, 394, 418, 463, 464, 469, 477, 477, 492, 502, 507, 512, 520, 526, 529, 543, 557, 126, 417, 435, 435 |
| *kk | hkh  | kk  | ai.i_ | 139, 249, 362, 368 |
| *kk | hkh  | k   | ai.i_ | assuming undetected Mu gemination: 158, 394 |
| *kk | hh   | kk   | _k,kʷ (Bo) | 19, 240 |
| *kk | hh   | kk   | i: _kʷ (Bo) | 87 |
| *kk | kʰ   | kk   | V: _ | 126, 223, 354 |
| *kk | hkh  | kk   | other contexts | 12, 32, 61, 68, 83, 104, 110, 150, 161, 242, 290, 343 |
| *kk | hkh  | k    | other contexts | assuming undetected Mu gemination: 451, 474, 476, 506, 532, 535, 539, 541, 550; exceptions: 173, 191, 235, 241 |
| *g  | ts   | g    | _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  | ŏ𝑖   | g    | _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  | k    | g    | _uu  | 477 |
| *g  | kʷ   | g    | _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  | mʰ  | m    | ai.i_ | 122, 146, 203, 386, 489 |
| *m  | mʰ  | m    | 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, 342, 374, 378, 382, 383, 386, 391, 394, 402, 417, 427, 429, 435, 471, 478, 491, 507, 509, 541, 544 |
| Categories | Examples |
|------------|----------|
| *n \( n \backslash n \) \( i_\_ \) | 72, 122, 129, 192, 221, 305, 336, 340, 369, 385, 392, 530 |
| *n \( n \) \( n \) \( ai_\_ \) | 143, 335, 391 |
| *n \( n \) \( n \) \( ai_\_ \) | 15, 112, 133, 165, 234, 294, 312, 319, 321, 444, 521, 554 |
| *n \( n \) \( n \) \( other contexts \) | 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, 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, 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 \( \emptyset \) \( h \) \( #_\_ \) | 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 \( h/ \) \( h \) \( ai,i_\_ \) | 2, 57, 62, 103, 126, 144, 323, 372, 417, 431, 442, 541 |
| *h \( h \) \( h \) \( other contexts \) | 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 |
| *? \( ? \) \( \emptyset \) \( #_\_ \) | 22, 23, 24, 101, 154, 241, 265, 323, 454, 494 |
| *? \( ? \) \( j \) | 268 (exception) |
| *? \( ? \) \( ? \) \( ai,i_\_ \) | 92, 99, 143, 209, 514, 518 |
| *? \( ? \) \( \emptyset \) \( _V: (Mu) \) | 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 |
| *? \( \emptyset \) \( \emptyset \) \( _V: (Bo), Mu \_VV \) | 314 |
| *? \( ? \) \( ? \) \( other contexts \) | 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 |
| *\( \emptyset \) \( \emptyset \) \( j \) \( i_\_ \) | 38, 47, 344, 346, 349 (exception: 14) |
| *\( \emptyset \) \( j \) \( j \) \( ai_\_ \) | 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 \(\star p\) 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 \(\mathcal{P}:\emptyset\) before short vowel, not word-initial (105, 126, 302, 388, 435), \(\beta:\emptyset\) (456), \(\beta:b\) (126, 388, 394), \(t:\emptyset d\) (302), \(\theta^h:\emptyset g\) (378), \(i:j\) (388), \(n:m; m:n\) (21 (nemi vs. meni)), \(\theta^h: f\) (119: ‘cat’ loan from Spanish), \(t^h: t\) (358), \(\emptyset: ?\) (380), \(k^h: ?\) (48), \(k^h: ?\) (319), \(\beta: ?\) (253, 562), \(k^h: \beta\) (137), \(r: \beta\) (458).

### Table 2: Regular vowel correspondences

| PBBoM | Bo | Mu | Context | Supporting sets |
|-------|----|----|---------|-----------------|
| *a    | a  | a  |         | 3, 6, 8, 16, 18, 23, 32, 35, 35, 38, 41, 41, 42, 43, 43, 44, 45, 45, 47, 47, 52, 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, 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, 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, 562. |
| ai    | a  | ai |         | 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  | other contexts | 15, 143, 158, 165, 312, 321, 335, 354, 389, 391, 391, 431, 444, 447, 450, 521, 554. |
|       |    |    | +palatalization |                             |
| *e   | i   | e   | 1, 1, 7, 9, 10, 14, 18, 22, 23, 24, 27, 31, 34, 42, 45, 46, 61, 66, 67, 72, 88, 90, 109, 128, 129, 136, 139, 148, 153, 154, 161, 171, 174, 185, 208, 209, 211, 212, 213, 221, 226, 226, 235, 235, 241, 244, 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, 450, 454, 461, 464, 476, 478, 491, 492, 495, 496, 498, 502, 502, 510, 510, 522, 522, 533, 543, 544, 126, 150, 150, 150, 435 |
| *i   | i   | i   | 2, 3, 4, 8, 16, 21, 38, 39, 44, 44, 47, 49, 57, 61, 62, 69, 69, 71, 72, 78, 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  | 86, 235, 243, 270, 281, 282, 316, 331 |
| *i   | _m_ | 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, 268, 277, 280, 285, 290, 291, 293, 294, 295, 302, 302, 313, 314, 318, 319, 322, 323, 328, 335, 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 |
A total of only 38 vowel correspondences do not follow these rules: \( i: \emptyset \) (344), \( e:a \) (360, 467), \( i:a \) (342), \( o:a \) (150=441, 330), \( u:a \) (378), \( \emptyset:e \) (235, with other exceptions), \( a:e \) (235, 291=551, 431, 458), \( i:e \) (336, 358, 417), \( u:e \) (150=161, 255), \( e:i \) (525), \( i:i \) (not \(_i\)) (38=344=346, 89=383, 475), \( u:i \) (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), \( u:o \) (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...
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 $ih/ha-k^w/a$ (be-cl: plank) ‘seat’ from $ihk^h/a$ ‘to be’. We also recognized that $i$ becomes $i$ before $i$ in Bora, as in $ii-hi$ (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 $\mathcal{P}$ in coda position (see Thiesen & Weber 2012: 47-53 for Bora). In this context, we reconstruct, unlike Aschmann, $\mathcal{P}$ 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 \( ρ \) 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, \( ρ \) and \( h \) are associated with the following consonant: mé-

\[ \text{mh}\text{ʔuʔaá} (\text{our-foot}) \quad \text{métʰáápa} (\text{our-wife}) \quad \text{mēʔpáʔu} (\text{our-belly}) \quad \text{mē-páʔkʰo} (\text{our-uvilla}) \quad \text{our uvilla (fruit)}. \]

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 \( \dagger \) symbol after the English gloss indicates items in the Swadesh’s basic vocabulary, and the symbol \( \ddagger \) 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-faced 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- kʷa ‘lick-cl:plank’; Mu néhe-ba [APBM *(mê) - ?nixi-()]
2. PBoM *i-hí MOUTH †‡ | Bo iʔ-húuú ‘3-cl:tube’; Mu iʔ-hí [APBM *iʔ-xu (?-mouth)]
3. PBoM *hini-ba LIP | Bo úni-pa ‘spit-cl’; Mu híni-ba [APBM *(mê)-xúi-niba (mouth-?)]
4. PBoM *iʔgai TOOTH †‡ | Bo iʔ-kwáhíi ‘3-?cl:plank?’; Mu iigai [APBM *iʔ-gái-neé {tooth-finger-?,23}, *(mê)-iʔgá(xii)]
5. PBoM *tihiʔu NOSE †‡ | Bo tía-ku-ʔo ‘smell-?cl:tube?-cl:oblong’; Mu tihiʔu [APBM *túux-u-ʔ(exu)]
6. PBoM *adj-i EYE †‡ | Bo áǎjú-u ‘above-cl:round’; Mu áǎdʒ-i [APBM *(mê)-ǎάjùu]
7. PBoM *ni()-meeʔu EAR †‡ | Bo núńu-míśo ‘hear?-cl:skin’; Mu ní-hí-meeʔu ‘hear?-?-cl:tube?-cl:skin’ [APBM *núux-u-míʔo]
8. PBoM *niga-i HEAD † | Bo niıkʷ-a-ʔu ‘head-cl:round’; Mu niga-i [APBM *nigau]
9. PBoM *ime-ku FOREHEAD | Bo ʔúm-i-kʰo ‘face-cl’; Mu ñe-mi-ku [APBM *úumiko]
10. PBoM *-hee- HAIR †‡ | Bo ʔáʔ-hé ‘3.sg-hair-pl’; Mu nič-ʔé ‘head-hair-pl’ (see 243,270,316) [APBM *nigaw-xiine {head-hair, 8,243}, *(mê)-niga(w)-ko]
12. PBoM *híkk() BEARD | Bo úxh₀ʔe; Mu hiʔkko’ai [APBM *xúkk(e) (?ai)]
14. PBoM *ppee-i-he CHEST | Bo ḫpré-ɯ ‘-cl:flat’; Mu féeji-he [APBM *(mê)-ppiiu-xi {chest-flat,61}, *(xibuumga, kúumduum) miik(kk)o, (…)]
15. PBoM *mippaino WOMAN’S BREAST †‡ | Bo muh₀pʰáhë; Mu mifëno [APBM *(mê)-múppaine]
16. PBoM *iʔba ABDOMEN | Bo iʔpá-u ‘belly-cl:round’; Mu iʔba (Note =244,245,272) [APBM *(áá)-miʔo {14}, *(mê)-iʔbá(u) (244,245,272)]
18. PBoM *hihe-ba SHOULDER | Bo úhi-pa ‘?-cl’; Mu hihe-bai [APBM *(mê)-xúxi-ba(u)]
19. PBoM *nokki-gai ARM † | Bo nèhhu-kʷa ‘side-cl:plank’; Mu nókkí-gai [APBM *(mê)-nèkkw-gai]
21. PBoM *(o) Jessica ELBOW | Bo nēmi-u ‘?-cl:round’; Mu nèmi-ku ‘?-cl:pointed’ [APBM (mêniko), (mê-nèmiu)]
22. PBoM *ʔuttsé HAND † | Bo ʔóhtsʰi; Mu úse [APBM *(mê)-ʔotsii]
23. PBoM *ʔuttsé-gai FINGER | Bo ʔóhtsʰi-kʷa ‘hand-cl:plank’; Mu úse-gai [APBM *(mê)-ʔotsi-gai {hand-finger,4,(11?)},19,24,30,50,87}]
24. PBoM *ʔuttsé-gai-méʔu FINGERNAIL | Bo ʔóhtsʰi-kʷa-miʔo ‘hand-cl:plank-cl:skin’; Mu úse-gai-méeʔu [APBM *(mê)-ʔotsi-gai-miʔo]
27. PBoM *memu KNEE †‡ | Bo mimo-k’o ‘knee-cl:pointed’; Mu měmu-ba ‘knee-cl’ [APBM *(mě)-mimo-()]

29. PBoM *ttiʔaai FOOT † | Bo htuʔuʔ-ʔaaí; Mu tíʔai [APBM *(mě)-ttuʔuʔ-aaí]

30. PBoM *tti-gaai TOE | Bo htuʔu-k’-ʔaaí ‘foot-cl:plank’; Mu ti-gai [APBM *(mě)-ttuʔuʔ-gaai {foot-finger,23}]

31. PBoM *mecʔo SKIN †‡ | Bo miʔćeć; Mu mćeʔe [APBM *(iáábe) (mě)-ʔmiʔće(é)]

32. PBoM *bakkɨ BONE †‡ | Bo páhkʰɯɯ́; Mu bákkɨ [APBM *bákkɯɯ́]

33. PBoM *ttɨʔaai FOOT † | Bo htʰɯ́-ʔaá; Mu tɨ́-ʔai [APBM *(mě)-ttɯ́-ʔaáí]

34. PBoM *ttɨ-gaai TOE | Bo htʰɯ́-k’-ʔaá ‘foot-cl:plank’; Mu tɨ́-gai [APBM *(mě)-ttɯ́-gai {foot-finger,23}]

35. PBoM *meʔo SKIN †‡ | Bo mɨ́ɨʔeé; Mu méeʔe [APBM *(iáábe) (mě)-ʔmɨ́ɨʔe(é)]

36. PBoM *bakkɨ BONE †‡ | Bo páhkʰɯɯ́; Mu bákkɨ [APBM *bákkɯɯ́]

37. PBoM *ttɨʔaai FOOT † | Bo htʰɯ́-ʔaá; Mu tɨ́-ʔai [APBM *(mě)-ttɯ́-ʔaáí]

38. PBoM *m()a-mɨnaa-ppi MAN † | Bo mia-miúnãa-hp’i ‘real-people-masc.sg’; Mu mijá-miña-ph’i [APBM *gai-ppi, *miámůná-ppi {41}]

39. PBoM *gai-ppi MAN | Bo k’a-hp’i ‘-masc.sg’; Mu gái-ph’i [APBM *gai-ppi, *tsaa-ppi {one-male}]

40. PBoM *gai-go WOMAN † | Bo k’a-fé ‘-fem.sg’; Mu gáí-go [APBM *gai-ge, (miámůná-ge) {41}]

41. PBoM *m()a-mɨnaa PEOPLE | Bo mia-miúnãa ‘real-people’; Mu mijá-miña [APBM *miámůnáa {38,40}]

42. PBoM *tahe HUSBAND | Bo t’ahí; Mu tåhe [APBM *taxi, *ái-tåxi {my-husband}, *áixuúu]

43. PBoM *taaba WIFE | Bo t’aápa; Mu táaba [APBM *taába, *ái-taabá {my wife}, (mega)]

44. PBoM *giʔiru, kaani FATHER | Bo giʔíjo, k’aani; Mu giʔíru, kááni [APBM *giʔi-ro(bi), (kááni)]

45. PBoM *gaʔa-ro, *tseehi MOTHER | Bo k’aʔáro, tsviʔu; Mu gáʔáru, sééhi [APBM *giʔi-ro(bi), (kááni)]

46. PBoM *seemono BABY, INFANT | Bo tsviʔu; Mu séemone [APBM *tsie̍mone {327}]

47. PBoM *amia OLD MAN | Bo amiía-be ‘elder-masc.sg’; Mu ámijàa-bo [APBM (ámia-te), (kiáʔote), (keéme) {246,347}]

48. PBoM *ni-ppai()u WATER †‡ | Bo nú-hp’ak’h’o ‘water-cl:liquid’; Mu nú-fáiʔu [APBM *nú-ppaiko {water-liquid}]
49. PBoM *too-ʔi, *muuai river | Bo ṭeé-ʔi ‘river-cl’, moóa; Mu têé-ʔi, múúai (Note: see 71,250,311,379) [APBM *moóai (311), *têé-ʔi (river-line,250,71)]

52. PBoM *kaaha swamp | Bo kʰááhá-nepa; Mu iʔá-káaha [APBM *(ipá)-káa-xa-(neba), *káa-(mi)]

56. PBoM *kiihi-gai, fire †‡ | Bo kʰúúhiu-kʷa ‘fire?-cl’; Mu kííhi-gai [APBM *kútúxu-gai, (kotsíibai)]

57. PBoM *bai-giihi ash †‡ | Bo pá-gjíhɯ ‘?-powder’; Mu bai-giihi (Note: see 372) [APBM *bái-gixu ‘?-powder,372’]

58. PBoM *kiihi-gai- charcoal | Bo kʰúúhiu-kʷa-ju ‘fire-cl:round’; Mu kííhi-gai-ku ‘fire-cl:pointed’ (Note = 56) [APBM *kútúxu-gai-(kko) {56}]

60. PBoM *kuu firewood | Bo kʰoo; Mu kúúhoʔo [APBM *koό-]

64. PBoM *nɨʔba sun † | Bo nɯʔpa; Mu nɨ́ʔɨba (Note =65) [APBM *kóoxɨ ́-e(ppi) nɯʔɯ-ba {day-? sun-?, 67,65}]

65. PBoM *nɨʔba moon † | Bo nɯʔpa; Mu nɨ́ʔɨba (Note =64) [APBM *pékkó-e(ppi) nɯʔɯ-ba {night-? sun-?, 68,64}]

66. PBoM *mekki-gai star †‡ | Bo mɪ́kʰɯ́-ʔi ‘star-cl:plank’; Mu méekki-gai [APBM *mɪkúurú-gai]

67. PBoM *kuuhe day | Bo kʰóóhɨɨ ‘today’; Mu kúuhe ‘today’ [APBM *kóoxɨɨ]

68. PBoM *pokku night †‡ | Bo pʰehkʰo; Mu fúkkhu [APBM *pekko]

69. PBoM *tsittsi thunder | Boʧʰihʧʰi; Mu sísí [APBM *(tsittsi, (dáʔnáʔo)]

71. PBoM *tui-ʔi rainbow | Bo ṭuuí-ʔi ‘red-cl:line’; Mu tui-ʔi [APBM *tutuí-ʔi {red-line,294,49,250}]

72. PBoM *hiini-he earth † | Bo íínuhi ‘earth-cl:flat’; Mu hiini-he [APBM *xiínú-xi]

74. PBoM *n(gai-jìʔai sand †‡ | Bo někʰ-a-juuíʔa ‘stone-grains’; Mu hiinigai-jìʔai (Note = 251) [APBM *(xíį)nɛ-gai-yúʔ-ai {73,251,252}]

75. PBoM *ha house ‡ | Bo haá; Mu ii-ha ‘3-house’ [APBM *iiʔ-xa, *káamée-xa, *(bááe)-xa]

77. PBoM *gooʔu-ga, doorway | Bo ʧééʔo-kʷa ‘?-cl:plank’; Mu gúʔu-ga [APBM *géeʔo-ga, (bágɨ́jáxɯ)]

78. PBoM *ikka-ga seat, stool | Bo ihh/a-kʷa ‘be-cl:plank’; Mu íkka-ga [APBM *ikka-ga, (akúúʃe-ga)]
79. PBoM *kiga- | Bo kʰuŋkʷá-iʔkʰu ‘sleep-cl:frame’; Mu kiga-tahe ‘sleep-?’ (Note = 81,232,280) [APBM *kugá-(taxi), *kugá-(iʔkui), (inébaxi), (iikaxi)]

80. PBoM *gaiba | Bo kʰaápːa; Mu gááiba [APBM *gaáí-ba]

81. PBoM *giri-ʔdu | Bo ffijiʔfo ‘?-cl:pot’; Mu giriʔíʔdu [APBM *giriʔjo]

82. PBoM *gaikkuaʔai | Bo kʰáakʰoʔa; Mu gáikkuaʔai [APBM *gáikkoʔa]

83. PBoM *gaikkuʔai | Bo sɨɨʦʰɯ-kʰa ‘?-cl:plank’; Mu sɨɨʦʰɯ-ga ‘canoe-cl:plank’ [APBM *sɨɨʦʰɯ-ga]

84. PBoM *bupˈdú-ɡa | Bo tʰuŋkʰoʔa ‘?cl:pot’; Mu tʰuŋkʰoʔa [APBM *tʰuŋkʰoʔa]
100. PBoM *gooi ARMADILLO | Bo ʧeɛu; Mu góoi [APBM *geɛu, (dóótoùʔaamine), (káápínau)]

101. PBoM *ʔuuʔi DOG | Bo ooʔi-p’e ‘jaguar-masc.sg’; Mu -ʔuí [APBM (xúukko), (ooʔiibe)]

102. PBoM *niʃi-gai RED DEER | Bo niʃu-k’a ‘deer-cl’; Mu niʃi-gai [APBM *niʃi-gai, *xiibai]

103. PBoM *kikiíh() BAT | Bo k’ik’iːh’e; Mu kikihe [APBM *kikiíxe]

104. PBoM *tsukku OTTER | Bo ts’ohk’o; Mu súkku [APBM *sokko]

105. PBoM *kiʔdiba CEBUS, MONKEY | Bo k’uʔfípa; Mu kidíba [APBM *(čoyíyi), *kuʔjíba]

107. PBoM *kiimí SPIDER MONKEY | Bo k’uʔmíu; Mu kiimí [APBM *(xúbiijaxi), *kuʔmíu]

109. PBoM *heehi, *tuuʔhe ANTEATER | Bo ilhu, t’oʔhi; Mu hééhi, túuhe [APBM *xixwi, *tooʔxi]

111. PBoM *niʔba, *m()ʔduba CROCODILE | Bo niʔpa, meʔtópa; Mu níʔiba, méédúba [APBM *niʔiba, *meʔdóba]

112. PBoM *maaina-ʔu IGUANA | Bo mááɲa-ʔu ‘iguana-cl’; Mu mááɲá-ʔu [APBM *mááínaʔo, (xoóčáíʔi)]

115. PBoM *mooni COLLARED PECCARY | Bo meéni; Mu móeni [APBM *meéni]

116. PBoM *paapaiba WHITE-LIPPED PECCARY | Bo p’uáɹp’ap’u; Mu fááϕaiba [APBM *páapaiba, (mineébe)]

117. PBoM *patti AGOUTI | Bo p’ah’twu (Miraña dialect); Mu fátti [APBM (páttu), (birumuuxi)]

118. PBoM *giʔpo RAT | Bo giʔp’bje; Mu gíʔiϕo [APBM (gi’ipe), (nuuımira), (kuuʃébe), (aatáriu)]

119. PBoM *miitʃi CAT | Bo miitʃi; Mu miíʃi (Note: loan from Spanish) [APBM *miíʃi {Spanish}]

120. PBoM *giʔpo MOUSE | Bo giʔp’ce; Mu gíiϕo [APBM *giʔpe, (kuuʃéba), (biıččau)]

121. PBoM *bu TAIL | Bo pó-k’aá ‘tail-cl’; Mu ii-ʔu ‘3.sg-tail-cl’ [APBM (iiboʔo), (bógaá), (gagááʃe)]

122. PBoM *hiinimo SNAKE | Bo iiɲim’e; Mu hái鑫mo [APBM *xíinime, (ittu)]

123. PBoM *buua, *iigai- ANACONDA, WATER BOA | Bo póóáá, ik’ak’o; Mu búua, igáʃati (Note: possibly a loan from Tupian) [APBM *bóóáá {Spanish?}, *iigai(ko)]

124. PBoM *taakaʔo RATTLE SNAKE | Bo t’áak’a;e; Mu táakaʔo [APBM *táakaʔe]
126. **PBoM** *hakuga, (jiiri)i, nihaga, miimbeba, haakkiba TOAD | Bo a2k’ok’a, biiuiri’i, nihak’a, muumipia, aak’upa* | Mu hakykuga, biiiri, nihaga, miimbeba, haakkiba [APBM *xa?k(o)ga, *(b)uuiri’i, *muuu?miba, (xaakkuba), (...)]

128. **PBoM** *paaibe HUMMINGBIRD | Bo p’iak’o; Mu faaibe, [APBM *pā(i)bi(ʔo), (róóbīju)]

129. **PBoM** *heebaa, *in(ʔ)ai MACAW | Bo iiša, iha; Mu heebaa, inoai [APBM *xiiβaa, *in(a)ai, (iiri, èèrida, iiriča)]

130. **PBoM** *nibo TOUCAN | Bo nuuf; Mu nigo [APBM *nuuge, (xuúukkugai), *(r)ii(ʔ)oo(ʔo), *b(airi)(gai)]

131. **PBoM** *aini BUZZARD | Bo aɲi; Mu üni [APBM *ainu (tsókkoga)]

132. **PBoM** *kigaa CURASSOW | Bo k’iiuk’h-k’o ‘curassow-cl’; Mu kigá-’o ‘curassow-cl’ [APBM (kúgá’e)]

133. **PBoM** *peeka-he GUAN | Bo p’iiak’o-hi ‘guan-cl’; Mu féékha-he [APBM *piikaksi]

134. **PBoM** *ka(a)ha HEN | Bo k’ärak’a; Mu kátta’a (Note: loan from Tupi) [APBM *ka(ttá-βa), *ká(raqa) {Tucano}, gájeraáʔe, gájeraáʔe), (kettútuu)]

135. **PBoM** *gaaike-he, *nitta PIRANHA | Bo k’iak’h-k’o-hi, nih’ta-hi ‘piranha-cl’; Mu gáikku-he, nitta [APBM *(nitta), *gáikkoxi]

137. **PBoM** *hiiku-ga FLEA | Bo uuúk’h-k’a ‘?-cl:plank’; Mu hiikų-gai [APBM *xiiúko-gai]

138. **PBoM** *gaaingi-ʔu LOUSE †‡ | Bo k’iání-ʔo ‘louse-cl:oval’; Mu gáaní-ʔu [APBM *gáiniʔo, *gai(ʔtexi)]

140. **PBoM** *gaaihî MOSQUITO | Bo k’al’h; Mu gáaihî [APBM *gáai-xu(-ba), *gái-(muú-taba), (opijui)]

141. **PBoM** *maʔari TERMITE | Bo máʔarí-muúpe ‘termite-person’; Mu máʔari [APBM *(múuju(y)iwi), *máʔarí(muuí-be), (táabane), (táki-ki-ba), (mooá-ba)]

142. **PBoM** *piimo ANT ‡ | Bo p’iim’apa; Mu fiimo [APBM *piime(ba)]

143. **PBoM** *paaga- SPIDER | Bo p’aak’h-ju ‘spider-cl:round’; Mu págga-‘he ‘spider-cl:disc’ [APBM *páaga-xi, *paagá-(yui), (xúúumóʔai), (iíkkoxi), (doʔgá-xi)]

145. **PBoM** *nápihe JIGGER (TUNGA PENETRANS) | Bo níp’ahi; Mu nípihe [APBM *nípa-xi]

146. **PBoM** *bahî BUSH | Bo páhuû; Mu báhi [APBM *báxutú]

147. **PBoM** *namettîhe, *tsukkum(he) OPEN GRASSLAND | Bo nómiht’uhi, ts’óhk’omuhi* | Mu námettîhe, súkkumêhe (Note: see 161; dialect. variant Mu námettêhe) [APBM *(námittuxi), *tsókkumuxi]

150. **PBoM** *gahii, *baaii HILL | Bo k’áhuú, pâuú; Mu gáhi, bái [APBM *gáxutú, *(káme)-gáxu, *(pá)-gaxu, *báauú, *(pá)-ʔbau {293}]

151. **PBoM** *baaii HILL | Bo k’áhuú, pâuú; Mu gáhi, bái [APBM *gáxutú, *(káme)-gáxu, *(pá)-gaxu, *báauú, *(pá)-ʔbau {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 ʔáámi; Mu áame (Note =154) [APBM *(ína)-ʔámi, (-xútúʔoó), (mííumwu)]

154. PBoM *-ʔaame TREE LEAF | Bo ínaʔáami; Mu áame (Note =153) [APBM *(ína)-ʔámi]

158. PBoM *ba(i)(k)ko- ROOT †‡ | Bo páhkʰjeec; Mu bakóʔoko [APBM *ba(i)(k)ké-(ʔeke), *bá(i)(k)keč, (-tane)]

159. PBoM *battsó- SEED | Bo pahṭsʰó-k*a ‘plant-cl:plank’; Mu basú-ta [APBM *battsó(-), (néebaba), (painéβa-uu)]

160. PBoM ìmoo-ʔi STICK | Bo úme-ʔe-i ‘wood-cl:tree-cl:stick’; Mu ímee-ʔi ‘wood-cl:stick’ [APBM *úme-ʔe-i, *úmë-(ne-ba), (jári-ga)]

161. PBoM *tsukkume-he GRASS | Bo tʰóhkʰómɯ-hɨ ‘grassland-cl:disc’; Mu súkkume-he (Note =150) [APBM *tsókkómɯxɨ, (páixɯ), (piβa)]

163. PBoM *máaʔu CASSAVA (BREAD) | Bo mááʔi; Mu máaʔu [APBM *(xáara), (páikoómi) {sweet}, *piķkaa, (baaxúri) {bitter}]}

165. PBoM *baino TOBACCO | Bo pape; Mu báno [APBM *baine]

166. PBoM *haʔdi COTTON | Bo aʔti; Mu háʔadi [APBM *xáʔadi]

167. PBoM *duutu GOURD | Bo toóʔo; Mu dúutuʔu [APBM (xá?axi), *dóoto-]

180. PBoM *moomo-ba CHICHA (OF PECHE PALT FRUITS) | Bo méemeba, (báaxɯ́ ribá)
181. PBoM *ʦaa-no* ONE †‡ | Bo *ʦʰa-ne* ‘one-inan’; Mu *sáá-no* [APBM *ʦaane]

182. PBoM *mi-no-kɨ* TWO † | Bo *mí-ɲé-ʦʰuːɨɨ* ‘two-inan-dual’; Mu *mii-no-ḵi* [APBM *mínékkũuːɨɨ]

185. PBoM *saʔuutʦe* FIVE | Bo *ʦʰáʔohʦʰi* ‘one-hand’; Mu *saʔu-ʨuse* [APBM *ʦáʔotʦi {one-hand}]

191. PBoM *ttɨkkonɨ* FIRST | Bo tʰɯhkʰénɯ; Mu í ttɨkonɨ [APBM *(i)tɯ(k)kenu, (ũmɨgare), (ʦáʔiixũtũtũre)]

192. PBoM *niiʔnoo-* LAST | Bo niʔɲé-re ‘last-?’; Mu *niinoo-no* [APBM *niiʔnɛe-nɛ(-re), (ȁjuba-)]

194. PBoM *kiimi-ba* DRUM | Bo kʰũũumu-pa ‘signal_drum-cl’; Mu *kiimiba* [APBM *kũũumu-ba]

197. PBoM *maaʔnii* MASK ‡ | Bo mаʔnii; Mu maaniʔ-time ‘mask-face’ [APBM *mɑáʔniiʔumo]
208. PBoM *taɪ-ʔutʦe MY HAND | Bo tʰá-ʔóhʦʰɨ ‘my-hand’; Mu táʔ-use [APBM *tá-ʔótsɨ {204}]

209. PBoM *diɪ-ʔutʦe THY HAND | Bo tʰáʔ-ʔóhʦʰɨ ‘2-hand’; Mu diɪʔ-use [APBM *diɪʔ-ʔótsɨ]

210. PBoM *diɪ-bo ʔutʦe HIS HAND | Bo tiɪpɛʔ-ʔóhʦʰɨ; Mu diɪbo ʔuse [APBM *(diɪ)-be-ʔótsi, *(aá)-be-ʔótsi, *(áá-di)-ʔótsi]

211. PBoM *moʔutʦe-no OUR HANDS ‡ | Bo méʔ-ʔóhʦʰɨ-ne ‘our-hand-pl’; Mu múʔ-use-ne [APBM *méʔ-ʔótsi-ne]

212. PBoM *amɪʔai ʔutʦe-no OUR HANDS ‡ | Bo amɪʔáʔ-ʔóhʦʰɨ-ne; Mu amɪʔai ʔuse-ne [APBM *amútúʔ-áí-ʔótsi-ne]

213. PBoM *diɪto ʔutʦe-no THEIR HANDS | Bo tiɪπɛʔ-ʔóhʦʰɨ; Mu diɪtoʊsɛne [APBM *diɪ-te-ʔótsi-ne, *(aá)-te-ʔótsi-ne]

214. PBoM *taɪ-ʔu póo-kʷa ‘my-shoot-cl:plank’; Mu taʔ-ʔúbu-ga [APBM *tá-ʔúbu-ga]

215. PBoM *diɪʔ-ʔúbu-ga ‘thy bow’; Mu diɪʔ-ʔúbu-ga [APBM *diɪʔ-ʔúbu-ga]

216. PBoM *diɪ-bo ʔúbu-ga HIS BOW | Bo tiɪʔ-ʔúbu-ga; Mu diɪbo ʔúbu-ga

217. PBoM *moʔúbu-ga OUR BOW | Bo méʔ-ʔúbu-ga; Mu moʔúbu-ga

218. PBoM *amɪʔai ʔúbu-ga YOUR BOW | Bo amɪʔáʔ-ʔúbu-ga; Mu amɪʔai ʔúbu-ga

219. PBoM *diɪ-ʔúbu-ga THEIR BOW | Bo tiɪʔ-ʔúbu-ga; Mu diɪ-ʔúbu-ga

220. PBoM *miʔa-no, *giara BIG †‡ | Bo miʔa-ne ‘big-inan’ (Note: see 262), tʃiːa; Mu mɪvɐ-no ‘big-inan’, giːrɐ-ne [APBM *mita-ne, *giara-ne, *kee-(pi)-ne, (bɒkku-ne), (…)]

221. PBoM *nume- SMALL †‡ | Bo nɒmɪ; Mu nʊmɛnɛ [APBM *nɔmɪ-(ni-ni), (áxäʔo-ne-gayu), (áyä-ne-gayu, áirá-ne-gayu), (uʔxɛnɛ-gayu), (ɛoʔxu), (tʊʔɪ’tuɪɪu)]

222. PBoM *tsɪiku COLD † | Bo ts’ʊuʊkʰo; Mu siʔɪku [APBM *tsuʊku, (dáʔkoʊ)]

223. PBoM *aɨguukku HOT † | Bo aʃʊʊkʰo; Mu aɪɡʊʊk*-no ‘hot-inan’ [APBM *áigookkó-né, (péemɛʃako-ne), (gánokó-ó-ne, gánékó-ó-ne)]

224. PBoM *ɪmɪ GOOD †‡ | Bo ɪmɪ; Mu ɪmɪ-ne ‘good-inan’ [APBM *imí-ne, *imí-(gayu), *(imíá)-ne]

225. PBoM *imɪ-ʔi-ʔu-no BAD | Bo imɪ-ʔi-ʔu-no ‘good-neg-inan’; Mu imɪ-ʔi-ʔu-no [APBM *imí-tú-ne]

226. PBoM *sətsɛe WHITE † | Bo s’ɪtsɛ; Mu sɛsɛɛɛ [APBM *tsɛtɛ-ne]

227. PBoM *kiʃo- BLACK †‡ | Bo kʰʊuʃe-ne; Mu kiʃo-no ‘black-inan’ (Note =328) [APBM *kuʃe-ne, (bát tume)]
228. PBoM *di-po* GO! | Bo *ti-pʰe* ‘imp-go’; Mu *dífó* [APBM *di-pe]

229. PBoM *di-tsaa* COME! | Bo *ti-gʰa* ‘imp-come’; Mu *di-sáá* ‘imp-come’ [APBM *di-tsaa]

230. PBoM *matʃu* EAT! | Bo *máhφoó*; Mu *matʃú* (Note =275) [APBM *maččőó]

231. PBoM *d-adoú* DRINK! | Bo *t-átóó* ‘imp-drink’; Mu *d-adú* [APBM *d-ádoó]

232. PBoM *kɪgɑ́* SLEEP! | Bo *kʰúkʰáá*; Mu *kɪgá* (Note =79,81,280) [APBM *(mɛ)-kúgá]

235. PBoM *nehe()()-nih()kk()* TIP OF TONGUE | Bo *mé?-nɪhi-ka-nɪhkʰá-uu* ‘our-tongue-cl: plank-end-cl:round’; Mu *néhe-ba-nɪheke* ‘tongue-cl-end’ [APBM *(mɛ-)?nɪxi-(gá)-ńɪx(i) k(åu)]

236. PBoM *niɪɡa* LONG HAIR | Bo *niɪkʰ-a-kʰo* ‘head-cl’; Mu *nɪɡa-i-heene* ‘head-cl-hair’ (Note: see 8) [APBM *(mɪibaig), *nɪɡa()]

245. PBoM *iiʔba* INTESTINES | Bo *íʔpá*; Mu *íiba* (Note =16,244,272) [APBM *(mɛ)-íiʔbá(ɯ)]

249. PBoM *gaikkuʔai*, *-pagi* CORN FIELD | Bo *kʷáhkʰʲoʔa*, -pʰáʧi; Mu *gáikkuʔai*, ɸági [APBM *gáikkoʔai, (pági), (ɯ́ mɪʔe) {83}]

251. PBoM *n()gai-ɨʔai* PEBBLES | Bo *nékʷa-jɯ́ ɯ́ ʔá* ‘stone-grains’; Mu *híígai-ɪʔai* (Note =74) [APBM *(xíí)-négaiyɯ́ -ʔái, *négaiyɯ́ (-gɯ́ ɯ́ né) {73,74,252}, (gííʦiɯ)]

253. PBoM *hɪi()ai* PATH | Bo *hʊuúβa*; Mu *hɪi̞ai* [APBM *xɛɯu-()]
255. PBoM *niih(-)ga SHelter | Bo nūuikhù-k’a ‘-cl:plank’; Mu niihe-ga [APBM *nūuixui-ga, *(xiió)-ga]

256. PBoM *hi- THIS †‡ | Bo i-nee ‘here-inan’; Mu hi-no [APBM *xineé, *xi(xi), (ánnutú), (ááimeč), (écné)]

257. PBoM *ho?- THat † | Bo ē?-nee ‘there-inan’; Mu hódo-no [APBM *xe(?)é-ne, (teé-), (díiibe) {204}, (ánnutú)]

258. PBoM *mi- ‘who’ †‡ | Bo múʔa, k’aat?):ʔa; Mu mihí, káháání, káháámó (Note: *mí- ‘who’, *ká- ‘which’) [APBM *ka(aitéʔa)-xaa-, *mú(ʔa)-xå]

259. PBoM *hi- *hí-ɲeé ‘here-inan’; Mu hí-no [APBM *xíneé, *xi(xɨ), (áánɯɯ́), (ááímeé), (eéne)]

260. PBoM *hoʔ-, tha t † | Bo éʔ-neé ‘there-inan’; Mu hóʔo-no [APBM *xe(ʔ)é-ne, (teé-), (díiibe) {204}, (áánɯɯ)]

261. PBoM *mɨ-, *ka- who †‡ | Bo mɯ́ʔa, kʰaa tʰʲéʔa; Mu mɨhɨ́, káháánɨ, káháámo (Note: *mɨ́- ‘who’, *ká- ‘which’) [APBM ?*ka(aitéʔa)-xaa-, *mɯ́ -(ʔa)-xa]

262. PBoM *ʦaʔa, *-tɨ not †‡ | Bo ʦʰáʔaá, -tʰɯ; Mu ʧáʔa no, -tɨ [APBM *(-tɯ), *ʦáʔaá-(ne)]

263. PBoM *pa-no all † | Bo pʰá-neé ‘all-inan-rest’; Mu ɸáá-no ‘all-inan’ [APBM ((p)airɯɯ-kɯ-ne), *pamere, *pa-nee-(re)]

264. PBoM *mita- many † | Bo mítʰʲa-ne ‘many-inan’; Mu mítʲa ‘power’ (Note: see 220) [APBM *míta-(ne), (gíráá-me), (ʦíítɯ), (ɨʔnáʔo)]

265. PBoM *kaamo- long †‡ | Bo kʰááme-ne ‘long-inan’; Mu káámo-βo-no ‘long-?-inan’ [APBM *kááme(-βe)-ne]

266. PBoM *-meeʔu, bark †‡ | Bo -mɨ́ʔo; Mu kuu-mééʔu ‘wood-shell’ [APBM *(koo)-mɨ́ʔo, *(ɯ́ méʔé) *(ʔaǰɯ́ e)-mɨ́ʔo]

267. PBoM *ʔookuu, *duu flesh †‡ | Bo ʔéékʰoó, toó; Mu úúku, dúú hoʔo [APBM *éékoó, *doó-(xeʔe), *(táí)-do, (aʦímɯ)]

268. PBoM *ʔutʦe-gai-meeʔu claw † | Bo ʔóhʦʰɨ́-kʷa-mɨ́ʔo ‘hand-cl:plank-cl:shell’; Mu asi-ʔúsé-gai-méeʔu ‘animal-hand-cl:plank-cl:shell’ [APBM *(mé)-ʔottsí-gai-miiʔo, *(atsi)-ʔottsí-gai-miiʔo]

269. PBoM *iiʔba belly † | Bo ʔiʔbá ‘-cl:round’; Mu ʔiʔjí [APBM *iiʔyúɯ]

270. PBoM *iʔganoo liver †‡ | Bo iʔkʷáneé; Mu ñiğano [APBM *(mé)-ʔiʔgá-neé]
274. PBoM *adu DRINK †‡ | Bo ato; Mu -ádu- (Note: see 231) [APBM *ado (231), (ádukúñuu)]

275. PBoM *matťu EAT (NON MEAT) †‡ | Bo mahťoò; Mu matťu (Note =230) [APBM *doo-(ʔi) {meat}, *geéne {fruit}, *maččo {164}]

276. PBoM *eeʔdu- BITE †‡ | Bo iʔto; Mu éédu- [APBM *iiʔdo, (digúkkuu), (denókk), (dígeʔxúku)]

277. PBoM *aittɨme SEE †‡ | Bo ahtʰʲɯ́ mɨ; Mu áttʲɨ́me- (Note cf. 450) [APBM *aittɯ́ mɨ(ɨɨ́ té), (mɨ́ɨkkɯ), (dɯ́ xɯɯ́ ), (ɯɯ́ xe)]

278. PBoM *goobu- HEAR †‡ | Boʧeépo; Mu gúúbu- [APBM *geébo, (…)]

279. PBoM *gaaha KNOW †‡ | Bo kʷaahá kʰɯ; Mu gááha- [APBM *gaaxá(kɯ), (piiβéte)]

280. PBoM *kɨga SLEEP † | Bo kʰɯkʷa; Mu kɨ́ga- (Note =79, 81, 232) [APBM *kɯga]

281. PBoM *gihe-βo DIE † | Boʦɨhɨ́-βe 'death-vblz'; Mu gíhéβesu-ʔi 'dead-vblz-caus' [APBM *gɨxɨ́-βe, (čééme), (…)]

282. PBoM *gɨhe-βo-ʦu, KILL | Boʦɨ́hɨ-βé-ʦʰo 'dead-vblz-caus'; Mu gíhéβesu-ʔi 'dead-vblz-caus' [APBM *gɨ́xɨ-βé-ʦo, *gɨ́xɨ-(nɯ), (gáikkáao), (gáiuuuʔáro), (…)]

283. PBoM *itʦi SWIM † | Bo ihʧʰi; Mu ísi- [APBM *itʦi]

284. PBoM *gaʔpo FLY †‡ | Bo kʷaʔpʰe; Mu gáʔáɸe-ʔi [APBM *gaʔape, (gaaméne)]

285. PBoM *hɨɨb()go, NOO SAY †‡ | Boɯɯpáʧe, neé; Mu hɨ́ɨ́ bege-ʔi, néé-ʔi [APBM *xɯɯb(ái)ge, *neé, (iʔxɯ́ βa)]

286. PBoM *tɨ-ppai-no RED †‡ | Bo tʰɯ́-hpʰa-ɲe 'red-liquid-inan' (see 33,26); Mu tɨ́-ɸai-ɲo (see 33,26)' [APBM *tɯ́-ppai-ne {33,266}]

287. PBoM *baaii MOUNTAIN † | Bo kʷáhɯɯ́, páuu; Mu gáhí, báai (Note: see 151) [APBM *gáxuntu, *káme-(βo)-gáxu, *báaantu, *káme-(βo)-ʔbáatu {151}]

288. PBoM *ti-ppai-no RED †‡ | Bo tʰú-Hpʰa-ne ‘red-liquid-inan’ (see 33,26); Mu tí-φai-no (see 33,26)’ [APBM *tu-ppai-ne {33,266}]

289. PBoM *ahtiβa GREEN † | Bo ahtʰɨβa; Mu attúβa-=no [APBM *ahtíũβa-ne]

290. PBoM *gi() YELLOW † | Boʧíhkʰxeũβu; Mu giγiβano [APBM *gi(-giβa)-ne, *gi(-kká)-ne-(ũβu)]

291. PBoM *gaʔpo FULL † | Bo kʷaʔpʰe; Mu gáʔáɸo-no (Note =471) [APBM *gaʔape-né, *(tsane) gáʔap(é) (k)kúñú-né, (gáittóókú)]
298. PBoM *boʔ-no NEW †‖ | Bo péʔ-nej; Mu bόʔ-no [APBM *béʔe-ne]

301. PBoM *momo NAME †‖ | Bo meme; Mu mómo [APBM *meme]

302. PBoM *miʔ(i) HOW | Bo muʔtu; Mu mǐʃi [APBM *muʔ(j)u, *muʔ(d)u, (kēbādμu)]

305. PBoM *hi-noo-ri HERE | Bo i-neé-ri ‘here-inan-loc’; Mu hi-neé-ri [APBM *(xó-o-ga-βu), (ximáine), (iiγc), (itsii, ičii), *xínec-ri, *xíncc-(βu)]

306. PBoM *oo-no THERE | Bo éé-nej ‘there-inan’; Mu óó-nej [APBM (xaʔu), (taʔu), (cene), (omáina), (će-gēe), (će-tśii), (tē-tśii), (tēʔug)]

307. PBoM *tsi-ppi OTHER | Bo tsi-hp'i ‘other-masc.sg’; Mu sı-菲 [APBM *tsi-ppi {masc}, *tsi-(ppi-ge), *tsi-(ne), *tsi-]

309. PBoM *tʦu- FOG | Bo ohts'ó ‘smoke’; Mu súi [APBM *(o)tsó-(u), (āimóo-ppaiko) {59,247,248}]

310. PBoM *niiβa FLOW | Bo niiβa; Mu niiβa-ʔi [APBM (gaάpe), (niiβa), (koo)]

311. PBoM *muuai SEA | Bo moóai; Mu múúai (Note: =49,379) [APBM *moóai, (iiβámű dokό-ppáiko)]

312. PBoM *peepai-no, *maa- WET | Bo maháábe, pʰü̚pʰa-ne ‘moist-inan’; Mu máāpo, féépha-jo (Note: see 403) [APBM (piʔ-ppai-ne), (máāi-ne), (muri̞lje), (maxáábe), (reʔre), (uutíru), (uuluůje), (relu̞kku)]

313. PBoM *nitti- WASH | Bo nihtʰu; Mu nittʰiʔi (Note: see 482) [APBM *nittú-(ku), (gáiʦáiʦaʔxɯ́ kɯ, gáčáčaʔxɯ́ kɯ), (íǰoáko), (ibůmůiako)]

314. PBoM *hiʔba WORM | Bo uuápa; Mu hiʔba [APBM *xw(ʔ)úba, (ćeʔoii, čćo̞oii), (ápapiko), (…)]

316. PBoM *iʔhe- FUR | Bo iʔhihi; Mu ihé-e (Note: see 10,243,270) [APBM *iʔxi-(ʔono), *iʔxi-(xii)]

318. PBoM *hii- SALIVA | Bo uuńipa, uuńi; Mu hi̞re [APBM *xw(ʔ)-ri, *xw-(-ni-ba)]

319. PBoM *mippaino-ppai(ʔ)u MILK | Bo múhþpʰáne-hpʰákʰo ‘breast-liquid’; Mu míφap̥o-φaiʔu ‘breast-liquid’ [APBM * múppañe-ppaiko {breast-liquid,15,48}]

320. PBoM *-ma WITH | Bo -ma; Mu -ma [APBM *-ma, (-ri)]

321. PBoM *pai̞no IN † | Bo pʰap̥ne; Mu φap̥o [APBM (-βu), (paine)]

322. PBoM *-bi AT | Bo -βu ‘adlative case’; Mu -βi [APBM (tsasii), (-βu)]

323. PBoM *-ʔatʃihi IF | Bo ṭahγʃihiu; Mu atʃihi [APBM *-ʔaččǐuku, (-ka)]

327. PBoM *tee-mo-no CHILD | Bo šii-me-ne ‘child-pl-inan’; Mu séémene [APBM *tsii-me-ne, *(gai-pii)-tšii]
328. PBoM *kiβo-, dark | Bo kʰuíũũñe-ne; ‘dark-inan’ Mu kíβo-no (Note =227) [APBM *kúβe-ne, *kúβeʔteé-ne, *kúβe-(tsií)]

330. PBoM *kare- wide ‡ | Bo kʰorii-ne ‘wide-inan’; Mu kárékuno [APBM *(k(a)ri)(ko)-né, (mitane)]

331. PBoM *iihe narrow | Bo ɨɨhɨ́; Mu ííhe-ne [APBM *ixi-né-(gáyu), (úuttsíne), (áyane), (páyokke)]

334. PBoM *peeme thick ‡ | Bo pʰɨɨ́mɨ; Mu fêéme-ne [APBM *pɨɨ́mɨ-(ne)]

335. PBoM *ɨtʦi-, aini- thin | Bo ani, uhtsʰi; Mu isino, ápino [APBM *(u)ttsi-(ne), aini-(ne)]

338. PBoM *ʦɨɨʔhe-βa-tɨ-no dull | Bo ʦʰɯ́ ʔhɨ́-βa-tʰɯ́ -ne ‘sharp-have-neg-inan’; Mu sɨ́ɨ́he-βa-tɨ-no [APBM *ʦɯ́ ɯ́ ʔxɨβa-tɯ́ -ne, (gíʔi-ne)]

340. PBoM *hiinɨ-βa- dirty | Bo iiɲɯ́ -βá-ne ‘earth-have-inan’, pɨɨβa; Mu híínɨβa no, bééβa [APBM *xiin(ɯ̀ )-βá-ne, *(βɨɨ)-βa-ne, *(mɯʔɯni)-βa-ne, *ɯ́ dííkk(o-ne), *ɯ́ dííkk(ɯɯ́ ), (neʔni)]

341. PBoM *tuukɨ- rotten | Bo tʰóókʰɯ-ne ‘rotten-inan’; Mu túúkɨ-ne [APBM *tóókɯ-ne, (nókókoo-ne, nêkêkoo-ne), (rááraá), (cāxaabē-né)]

342. PBoM *(p)rɨɨkɨ-, *mooβa- smooth | Bo pʰɨ́rɯɯkʰɯ́ -ne, mééβa-ne; Mu párʲɨ́ɨ́kɨ no, móóβa [APBM *(p)(ai)rɯɯkɯ́ -ne, *mééβa-ne, *rɯ(tɯ́ )rɯ́ (tɯ)-(ko-ne), (tɯ́ ʔtɯ́ -ríβa-tɯ́ -ne)]

343. PBoM *ʦa-tɨkko-βo straight | Bo ʦʰa-tʰɯ́ hkʰe-βe ‘one-straight-? ’; Mu sá-tɨ́kko-βo [APBM *ʦa-tɨkko-βo]

345. PBoM *nani- left | Bo náni-ɲéhkʰɯ ‘left-side’; Mu nániʔi-go [APBM *náni-(ʔuge), *náni- (nékku)]

346. PBoM *(m)aa- correct | Bo imiáá-ne ‘true-inan’; Mu miáá-no (Note =346) [APBM *(t)uukbe-be {343}, *(i)miáá-ne {343}]

349. PBoM *giilki pull | Bo fɨuúkʰɯ; Mu giįįiki-ʔi [APBM *giíuku, (tάjáriʔx)úuku)]

351. PBoM *piku throw | Bo pʰikʰo- ‘put’; Mu fíkʰo-ʔi ‘put-pred’ [APBM *piko, (gáino), (xukko), (gaáo), (gaagóo), (iččiβéʦo, ʔttsiβéʦo), (kʔpínɯ)]
352. **PBoM *idgaaju** hit ‡ | Bo íďaďo| Mu íďaďu-ʔi ‘hit-pred’ [APBM *įjaño, *gá-(irectory), *gá-(múńukus), *gá- (póőbi), *gá-(paákko), *gá-(iako), *gá-(púxuxuʔxáko), (ečíménu), (kášítéteʔxúko)]

353. **PBoM *ga(er)-** split | Bo kʰ-agɛ́ʔeákko; Mu gádʒéréku-ʔi ‘split-pred’ [APBM *gá(č) ére(á)ko]

354. **PBoM *kapait-i(o)-ni** pierce | Bo kʰapáitú-úkku-nu ‘pierce-?-do’; Mu káfáttikki-ʔi ‘pierce-pred’ [APBM *kápáituúkku-nu, (gá?exyuro)]

355. **PBoM *tsooʔdi** dig | Bo ts(eʔ)iti; Mu séédi-ʔi ‘dig-pred’ [APBM *sečʔi, (kanoko), (ganóko)]

356. **PBoM *tsittsi, *du?he(ni)** tie ‡ | Bo tʃiʔhʃxu, toʔhi-nu ‘strap-do’; Mu sisi-ʔi, dúúhé-ni-ʔi ‘strap-do’ [APBM *tʃitsi, *doʔxɨ́n(ɯ)]

358. **PBoM *aak()()o-** fall ‡ | Bo aakí(t)te; Mu ááké’été-ʔi [APBM *aakí(t)te, (áípi, áipe)]

360. **PBoM *etʦam()i-** think | Bo ɨ́hʦʰaméi; Mu ésámáái-ʔi [APBM *ɨ́tʦam(áá)i, *ɨ́tʦ(ɯ́ -kɯnɯ), *ɨtʦ(o)]

361. **PBoM *matʦi-βa** sing | Bo mahʦʰí-βa ‘song-have’; Mu mási-βa-ʔi [APBM *matʦí-βa, (gáníkkaméi)]

362. **PBoM *higikk(), *uttsu** swell ‡ | Bo uʃʃiʔkku, ohtsʰó; Mu higikk-ʔi, úsu-ʔi [APBM *xugikk(o), *ôttš-ʔi, (numuunikku), *xúgi(ukku), (tsǐʔxúku), (aráʔko) {tr}, (ʃoʃókkku), (kuiʃa), (áipuxakóʃbe) {intr}]

363. **PBoM *ebatsu, buutsu-** blow ‡ | Bo ipátsʰo, pohtsʰókku; Mu ébásu-ʔi, búúsu-ʔi [APBM *ibáts(ɯ)(ʔxáko), *bruš-ko, *gittš-ku, (poonu), (bipó), (ʃoʃókkku), (koiʃka), (booikku), (áapuxúkku), (čióako), (uutubu)]

364. **PBoM *igi** fear | Bo iʃʃi; Mu igí-ʔi (Note =542) [APBM *igī, *(ai)n(ó)uʔ(i)kko(), *nuʔ(néʃe), (ápiisíše, ápiisíçe), (áábiméi), (ámísáraʔkóge), (nóuʔkóge)]

365. **PBoM *aami-tsu** squeeze ‡ | Bo aamú-tsʰó ‘hit-caus’; Mu áámí-su-ʔi [APBM *(m)aámù, *aamú-tsó, ((ai)n(ai)niko), (gátiai), (paatiʔxáko, páčíʔxáko), (…)]

368. **PBoM *ikka** hold | Bo ihkʰa ‘be’; Mu ikka-ʔi ‘be’ [APBM *ikka(ne), (gááyukkunuu), (kátóroʔxáko), (teʔme), (maitʃőtsó, maččótsó)]

369. **PBoM *giino, baa-ri** down | Bo ʃiʔne, paá-ri ‘below-loc’; Mu giño, báari [APBM *gií-ne, *baári]

370. **PBoM *kamo** up | Bo kʰaame; Mu káamoʃʃi [APBM *kaame]

371. **PBoM *naamo-** ripe | Bo name-ne ‘sweet-inan’; Mu náamo-no (Note =558) [APBM *náame-ne, (tupai-ne), (kéémene)]

372. **PBoM *gihi** dust | Bo fíʔxuúč; Mu gihi [APBM *pá-gixu {57,164,171}, *(xínú)-giixu {72}]
373. PBoM *butee- ALIVE | Bo póʔi-pe ‘alive-masc.sg’; Mu bùʔee-no [APBM *bóʔii-(beke), (gáxánékkúuí(beke)), (mënúñékkúuí-beke)]

374. PBoM *gaaiiba-ROPE | Bo póʔi-ɪ́ ‘alive-masc.sg’; Mu bùʔée- [APBM *bóʔii-(beke), (gáxánékkúuí-(beke)), (mënúñékkúuí-(beke))]

375. PBoM *gaaiba-ɨROPE | Bo kʷáápʲa-ɯ ‘?-cl’; Mu gáaiba-ɨ [APBM *gáaibaɯ, (dóoxiyu), (pádoxi)]

376. PBoM *pi(k)kaba YEAR | Bo pʰíhkʰ.jpa ‘?cl’; Mu ɸikába [APBM *pí(k)kaba, (meeméʔe)]

377. PBoM *-g(ɨ)DIMINUTIVE | Bo -kʷu.ɯ; Mu -gajɨ (Note: The Bora form is bisyllabic)

378. PBoM *muuai BIG RIVER | Bo mooa; Mu múúai (Note = 49.311)

379. PBoM *baa-(ʔ)O-HA LONGHOUSE | Bo pá-e-haá ‘below-belong-house’; Mu báa-ʔo-ha

380. PBoM *hɨgaa-he STONE AXE | Bo ñkʷaá-hɨ ‘stone-cl:disc’; Mu hɨ́gáá-he (Note: = 88)

381. PBoM *n()ʦ()GA MACHESTE | Bo niits’uk-a; Mu nísuga (Note = 89)

382. PBoM *hiibai DEER | Bo iípa ‘grey deer’; Mu hiibái

383. PBoM *in()ʔAI MACAW (BLUE) | Bo íɲaʔa; Mu ínoʔai (Note = 129)

384. PBoM *tiip()MEGAI ANT (CONGA) | Bo t’uúp’á-m’ec’k-a ‘red-woman’; Mu tíip’-megai

385. PBoM *peeka BITTER MANIOC (PLANT) | Bo pʰiik’a; Mu féeka

386. PBoM *ká()()ʔAAKU PUSH | Bo k’áβuí-ʔákk’o ‘push-’; Mu kábújaaku-ʔi (push-predicate)

387. PBoM *áittɨme FIND | Bo áhtʰʲɯmɨ; Mu átʲi-ʔi

388. PBoM *dɨʔkɨ GET ILL | Bo tɯʔkʰɯ; Mu dɨ́ɨkî-ʔi

389. PBoM *gáirɨɨʔAIŅI SQUEEZE MANIOC DOUGH | Bo kʷájɯʔánɯ; Mu gárʲɨ́ɨʔáɲɨ-ʔi

390. PBoM *móonɨ MAKE | Bo meénɯ; Mu móóni

391. PBoM *tæoa CRY | Bo t’eʔme ‘keep, guard’; Mu tééme-ʔi ‘keep, guard’

392. PBoM *máhaa-GET WET | Bo k’áβá -βe; Mu máar-ʔi (Note: see 312)

393. PBoM *kóóβádííku, *gái()Scream | Bo k’áβádííkku, k’áβáhaaße; Mu kóóβádííku-ʔi, gáiba-ʔi

394. PBoM *máa-, *péépai-GET WET | Bo máhaa-βe, pʰp’háβ’βómei; Mu máa-ʔi, féépaí-ʔi (Note: see 312)

395. PBoM *paikuuManioc | Bo pʰákʰoómɯ; Mu ɸáikúumɨɨ
407. PB *piβo be born | Bo pʰiβe; Mu φুβে-ʔi

408. PB *nippei urinate | Bo nihpʰa; Mu nifai-ʔi

410. PB *nobu fart | Bo neˈpo; Mu núbú-su-ʔi

412. PB *dɨdʒ ask | Bo tɨʃo; Mu dɨdʒu-ʔi

414. PB *pita stay | Bo pʰiβa-ʔa-ʃe; Mu φিβε-ʔi

415. PB *i()-ro alone | Bo i-je ‘3-rest’, -re; Mu íi-no-ro ‘3-inan-rest’, -re

427. PB*tugaa sweat | Bo tʰokʷa; Mu tūgáa-ʔi

431. PB*áih()-ba be hungry | Bo ahʲápáβatʰe; Mu áheba

440. PB*ba pay a visit | Bo paa-ʔi; Mu báa-ʔi

444. PB*paino inside | Bo pʰapʰe; Mu φাপο (Note: 321)

445. PB*paiβoo soft, tender | Bo pʰaβee; Mu φাইβεe-ʔi

446. PB*im() happy | Bo imí-hųu; Mu imo imo

447. PB*paapai bitter | Bo pʰaapʰa; Mu φাাφা-ʔi

451. PB*mikku dock, port | Bo múhḵ’ohu; Mu miku
454. PBoM *ime FACE | Bo ʔúmi; Mu ime

456. PBoM *hiβiba BASKET | Bo ʊβiipa; Mu hiíbai

458. PBoM ?*hi(ja)ʔts() FOAM | Bo uráʔtsʰʰ; Mu hišáase

461. PBoM *pééno MIDDLE | Bo pʰiine; Mu fééne

462. PBoM *hanoo-tto THORN | Bo áneeʔtʰo ‘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 -búuna

468. PBoM *giraa- A LOT | Bo ʧiijá; Mu girúano

469. PBoM *dóhiku BEHIND | Bo téhukʰo; Mu dóhiku-ʔt (behind-abl)

471. PBoM *gaʔpo FULL | Bo kʷaʔpʰe; Mu gáʔáʔo (Note: =297)

474. PBoM *mátsakka PEANUTS | Bo mátsʰakʰa; Mu másaka

475. PBoM g()-ʔátʦ() YARD, COURT (OF MALOCA) | Bo ʧáʔahʦʰɨ ‘?-cl:yard’; Mu góóʔási

476. PBoM *héékkɨ CRESTED OROPENDOLA | Bo ihkʰu; Mu hééki

477. PBoM *kaʔginiku MANIOC STARCH DRINK | Bo kʰaʔkiúnkʰo; Mu kááginiku

478. PBoM *gáttsé- ARRIVE | Bo kʷahʦʰɨ; Mu gáse-ʔi

479. PBoM *diiri-ba- OIL | Bo tʰúúruʔa-hpʰákʰ ‘grease-cl:liquid’; Mu diiriba (Note =267)

482. PBoM *níttɨ-ba SIFTER | Bo nihtʰu-pa ‘wash-cl’; Mu nítiba (Note: see 313)

484. PBoM *áiβo SPICY | Bo aβʲe; Mu áiβe-ʔi

489. PBoM *hiibaimo DANCING FESTIVAL | Bo úúupame; Mu hiibaimo

491. PBoM *gádameeʔu MANIOC SQUEEZER | Bo kʷátarí- ‘put inside’, -mɨʔo ‘cl:shell’; Mu gádameeʔu

492. PBoM *méékime MIRROR | Bo mɨkʰumi; Mu méékime

494. PBoM *ʔatʧi, SON †‡ | Bo ʔahʧʰi; Mu áʧi

495. PBoM *mísí, *mipe WE TWO | Bo mɯsʰ ‘1.dual.masc’, mɯpʰ ‘1.dual.fem’; Mu mísí, mɨfe
496. PBoM *amtsi, *ampe you two | Bo ámuŋɛ́, ámuŋpɛ́; Mu ámsi, ámɛfe

497. PBoM *dii-(t)-tsi they two (m.) | Bo tiitɛ́-ɛ́pɛ́ 3-pl-dual.masc; Mu ditiisi

498. PBoM *dii-(t)-pe they two (f.) | Bo tiitɛ́-ɛ́pɛ́ 3-pl-dual.fem'; Mu diitiфе

499. PBoM *i- her | Bo i-; Mu i-

500. PBoM *duu eat meat | Bo toó; Mu dúu-ʔi

501. PBoM *nii weave | Bo nuwu; Mu nii-ʔi

502. PBoM *neheʔku lick | Bo nihi-ʔko; Mu néhéèku-ʔi

503. PBoM *hibu healing blow | Bo wuˈpo; Mu hibúu-ʔi

504. PBoM *aam()hi downriver | Bo áamehu; Mu áamihi

505. PBoM *aikko wake up | Bo ahkʰe; Mu áiké-ʔi

506. PBoM *kiihigai fireplace | Bo kʰúhúkʰa-ʔa 3-pl-cl ‘fireplace’; Mu kiihigai ‘fire’

507. PBoM *nittiba sieve | Bo níhtʰu-ʔa ‘wash-cl’; Mu nítiba

508. PBoM *dzari-ga dancing beam | Bo tʃaarí-kʷa ‘?-cl.plank’; Mu dzáriga

509. PBoM *mitsééste caimito fruit (Pouteria caimito) | Bo mútsʰiɛ́tsʰ; Mu míséése

510. PBoM *háadza palm Socratea exorrhiza | Bo áátfə-ʔe; Mu háadza

511. PBoM *kaati leaves that produce black color | Bo kʰáátfu; Mu káati

512. PBoM *moomo peach palm (Bactris gasipaes) | Bo mééme; Mu móomo

513. PBoM *taα tí-ʔo Cecropia sp. | Bo tʰaαtíʔe ‘Cecropia-cl:tree’; Mu táátí-ʔo

514. PBoM *haaʔo macambo fruit (Theobroma bicolor) | Bo ááʔe; Mu hááʔo

515. PBoM *tiiti-ʔo inga edulis | Bo tʰútʰu-ʔe ‘?-cl’; Mu tīsí-ʔo

516. PBoM *higo-ba ceramic saucepan | Bo útʃe-ʔa ‘?-cl’; Mu higo-ba

517. PBoM *biaku uvilla fruit (Pourouma cecropiaefolia) | Bo pááko; Mu baaku

518. PBoM *aini-hi rifle | Bo aŋu-hu ‘shoot-cl:tube’; Mu áni-hi

519. PBoM *nehe palm Astrocaryum chambira | Bo nihi-ʔe; Mu néhe

520. PBoM *nii mi umari fruit (Poraqueiba sericea) | Bo nímu-ʔe; Mu niimí

521. PBoM *m()niiko edible ant | Bo mɛnǐkʰe; Mu mínikoʔi
526. PBoM *kúúhi AVOCADO (PERSEA AMERICANA) | Bo kóóhu-ʔe; Mu kúúhi

527. PBoM áppai-ku EDIBLE LARVAE | Bo áhpʰa-kʰo ‘larva-cl’; Mu áphaiku

529. PBoM *katsu GRATER | Bo kátsʰoó-kʰa ‘grate-cl:plank’; Mu kásu-ʔi ‘grate’ (Note =418)

530. PBoM íno-ʔo MIRITI PALM (MAURITIA FLEXUOSA) | Bo íne-ʔe ‘miriti-cl:tree’; Mu íno-ʔo

532. PBoM *-ʔakki PILLARS (OF ROUNDHOUSE) | Bo ápʰi-ʔáhkʰu; Mu úmá-ʔaki

533. PBoM *háhe LEPIDOCARYUM TENUE PALM (FOR THATCHING ROOFS) | Bo áhi-ʔípa; Mu háhe

534. PBoM *geen() EAT FRUIT | Bo teéne; Mu gééne-ʔi

535. PBoM *dooikkɨ CHEW COCA | Bo teihkʰu; Mu dééiki

536. PBoM *namo FECES | Bo name; Mu namo

539. PBoM *mákká-ni DROWN | Bo máhkʰu-nu ‘drown-do’; Mu máká-ni-ʔi

541. PBoM *tííhúku PULL OUT | Bo kʷáhʲohko; Mu gáihúku-ʔi

542. PBoM *ígi GET SCARED | Bo ifiːe; Mu ígi-ʔi (Note =366)

543. PBoM *n(kúppé-go- SHAME | Bo nukʰoʔi-ʔe ‘shame-consider’; Mu nükú-φége-ʔi

544. PBoM *gaʔtсе DANCE | Bo kʰaʔtsʰi; Mu gááse-ʔi

547. PBoM *taaβa HUNT | Bo tʰaaβa; Mu tááβa-ʔi

549. PBoM *tí COOK | Bo tʰuːu; Mu tíː-ʔi

550. PBoM *ikki CATCH | Bo uhkʰu; Mu ík-ʔi

551. PBoM *hiib() TELL, NARRATE | Bo uuupáfe; Mu híbe.ge-ʔi (Note =291)

553. PBoM *βiri CUT | Bo -βuruː; Mu gáβiriʔu-ʔi

554. PBoM *aini SHOOT | Bo anu; Mu áni-ʔi

556. PBoM *gírííká-βo- GET DRUNK | Bo ḡíiíkʰa-βe ‘shake-vblz’; Mu gírííká-βe-ʔi

557. PBoM *kimi WOOLY MONKEY (LAGOTHRIX LAGOTRICA) | Bo kʰuúmúu; Mu kímba

558. PBoM *naamo SWEET ‡ | Bo náame; Mu náamo (Note =371)

560. PBoM *-bo MASCULINE (SUFFIX) | Bo -pe; Mu -bo

562. PBoM *apiifu, *djii(a-ni CONJURE | Bo ápʰiɪufe, ʧiúmbá-nu ‘conjure-do’; Mu ápɪf, ʤiiʔa-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.

Recebido: 17/8/2015
Versão revista e corrigida: 21/9/2015
Aceito: 4/10/2015.