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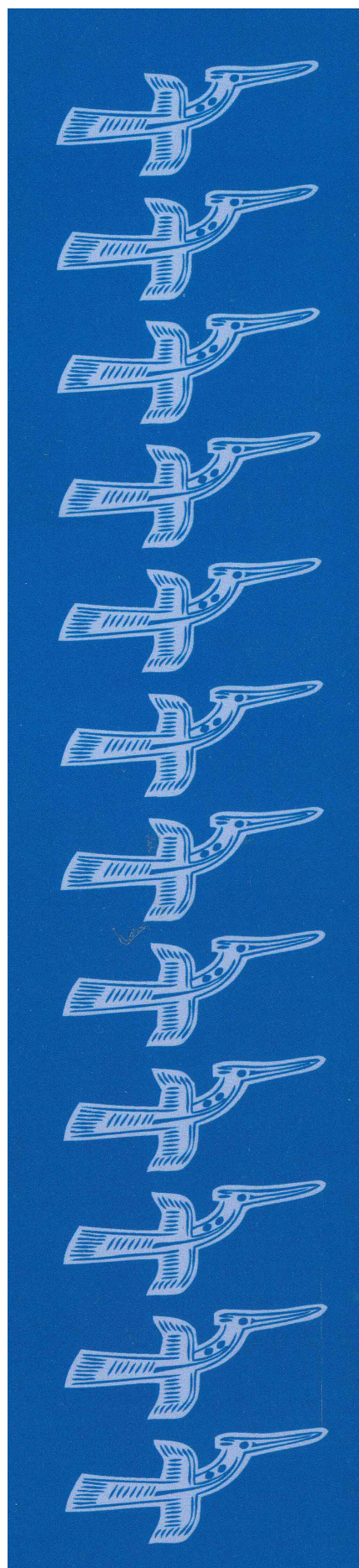
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## Khasi, Pnar, Lyngngam, and War.<sup>1</sup>

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## Abstract

This paper presents the results of lexicostatistical, glottochronological, and Bayesian phylogenetic analyses of a 200 word data set for Standard Khasi, Lyngngam, Pnar and War. Very few works have appeared on the subject of the internal classification of the Khasian branch of Austroasiatic, leaving the existing reference literature disappointingly incomplete. The present analysis supports both the strong identity of Khasian as a unitary branch, with an internally nested branching structure that fits neatly with known historical, geographical and linguistic facts. Additionally, lexically based dating methods suggest that the internal diversification of Khasian began roughly between 1500 and 2000 years ago.

**Keywords:** Lexicostatistics, Bayesian phylogenetics, language classification  
**ISO 639-3 language codes:** kha, lyg, pvb, aml



**Figure 1:** Map of Khasian varieties from Daladier (2010)

<sup>1</sup> The present paper extends a 2004 study by K. S. Nagaraja “A Lexico-statistic study of Khyrnian and Lyngngam dialects of the Khasi language” (The NEHU Journal 2.1:43-56). Special thanks are due to Hiram Ring and Mankular Gashnga for assistance with data and analyses in the preparation of this paper.

## 1. Background: previous studies

Comparative-historical analysis of Khasian remained underdeveloped through the 20th century, primarily because attention has traditionally focused on the standardized variety, which enjoys official status and widespread use in religious contexts in Meghalaya state. We see an indication that language attitudes were well entrenched already in the 1800s in this extract from Roberts (1891) Khasi grammar:

In this work, the dialect of Cherrapunjee is taken as the standard, because it is the purest, as universally acknowledged by the natives, besides being more amenable to systematical arrangement than the patois of the smaller villages.  
(Roberts 1891, xiv)

Robert's text also includes an extensive list of "ugly" (presumably quite popular) non-standard pronunciations that speakers were urged to avoid at all costs. In striking contrast, *The Linguistic Survey of India* (Grierson (1903) correctly recognized four languages which correspond to the four speech varieties analysed in this paper (Khasi (Khyrnium), Pnar (Synteng), War, and Lyngngam<sup>2</sup>) and provided some useful comparative lexical and syntactic examples. However, Grierson's data suffered from limitations in the transcription and other gaps that made it difficult to provide a basis for linguistic analyses, and it would be approximately a century before improved data, similarly systematically organized, would start to become available.

Of the present authors, Nagaraja collected data for both Standard Khasi and Lyngngam in 1988, and published a paper on the status of Lyngngam in 1996. That paper made various observations on the grammatical, lexical and phonological correspondences between Khasi and Lyngngam, including the important observation that, "around forty percent of Lyngngam's vocabulary seems to be unrelated to Khasi." The same author followed up with a lexicostatistical study in 2004, based on a 200 word list that was subsequently used as the basis for our more recent and extensive analysis that is the main topic of this paper. That study found 43.9% of cognates between Khasi and Lyngngam, and using Lee's (1953) glottochronological method calculated a separation date of 1,890 years. Subsequently, other lexicostatistical studies have been conducted independently.

Brightbill et al. (2007) conducted a sociolinguistic survey of Khasian villages in Bangladesh, and at a couple of locations within Meghalaya, presenting their wordlists and lexical analyses in their online report (see URL in the references). Although focusing on the War varieties within Bangladesh, Brightbill et al. provided useful lexical data for a number of Khasian varieties, in the form of a comparative lexicon with more than 300 items. On the basis of that list they calculated the lexicostatistical matrix reproduced as Fig. 2 ("lexical similarity chart" in their terminology):

|                |             |                 |            |               |                |             |            |              |                |            |              |
|----------------|-------------|-----------------|------------|---------------|----------------|-------------|------------|--------------|----------------|------------|--------------|
| Magurchora (I) |             |                 |            |               |                |             |            |              |                |            |              |
| 92             | Barenga (E) |                 |            |               |                |             |            |              |                |            |              |
| 90             | 91          | Niralapunji (A) |            |               |                |             |            |              |                |            |              |
| 90             | 89          | 88              | Singur (D) |               |                |             |            |              |                |            |              |
| 90             | 91          | 88              | 88         | Aliachora (B) |                |             |            |              |                |            |              |
| 88             | 86          | 88              | 86         | 87            | Dabolchora (C) |             |            |              |                |            |              |
| 89             | 86          | 85              | 87         | 87            | 83             | Amlarem (J) |            |              |                |            |              |
|                |             |                 |            |               |                |             |            |              |                |            |              |
| 35             | 35          | 35              | 35         | 35            | 34             | 36          | Noksia (F) |              |                |            |              |
| 18             | 18          | 18              | 18         | 18            | 17             | 17          | 31         | Lyngngam (H) |                |            |              |
| 33             | 33          | 32              | 34         | 32            | 31             | 34          | 49         | 30           | Jaintiapur (G) |            |              |
| 25             | 25          | 26              | 26         | 25            | 24             | 28          | 51         | 34           | 48             | Shella (K) |              |
| 29             | 29          | 29              | 30         | 29            | 27             | 32          | 55         | 36           | 53             | 75         | Shillong (L) |

**Figure 2:** Lexicostatistical matrix of selected Khasian varieties from Brightbill et al. (2007:17)

<sup>2</sup> Another apparent substantial Khasian speech community is Maram, to the west of the main Khasi area, corresponding to the green Pnar (!) area on the western side of Daladier's map. Maram is not treated here due to lack of suitable data, but we can report that impressionistically it is very similar to Standard Khasi.

In Brightbill et al.'s scheme the wordlists are identified mostly by place names: the first six above are War varieties spoken in Bangladesh, while *Amlarem* is a War dialect from Meghalaya, the *Noksia* and *Jaintiapur* are Pnar varieties, the *Shella* is ambiguously explained as being "Khasi-War", and the *Shillong* is from a speaker of Standard Khasi. The main result is that War lects in Bangladesh are clearly identified as varieties of one language with percentages all above 80%. However, the other figures are more difficult to interpret, especially in respect of the particularly low percentages that Lyngngam shares with other lists - as low as 17% - well below what we might anticipate given the analysis of Nagaraja (1996). Their calculations appear to be heavily skewed by a failure to allow for missing items in the lists compared, and are included here mainly for the sake of completeness in reviewing the lexicostatistical data on Khasian.

Another of the present authors, Sidwell, attempted his own lexicostatistical study of Khasian, which is presented in his (2009) survey of Austroasiatic classification. That study used the standard 100 word Swadesh list, aggregating items from the following sources:

- Lyngngam data from Nagaraja (1996),
- Khasi from standard dictionaries,
- Amwi from Weidert (1975),
- Pnar (*Noksia*) and War (*Amlarem*) from Brighthill et al. (2007).

Cognates were identified manually and a matrix generated (Fig. 3) automatically using Jacques Guy's Glotpc.exe program:<sup>3</sup>

|          |                  |               |               |                |
|----------|------------------|---------------|---------------|----------------|
| Lyngngam |                  |               |               |                |
| 63       | Khasi (Shillong) |               |               |                |
| 54       | 75               | Pnar (Noksia) |               |                |
| 41       | 55               | 57            | War (Amlarem) |                |
| 37       | 53               | 51            | 80            | Amwi (Weidert) |

**Figure 3:** Lexicostatistical matrix for five Khasian varieties, by Sidwell (2009)

The above figures were interpreted as indicating that the languages fell into two sub-groups: War versus a Khasi-Pnar-Lyngngam group, with the latter having an ambiguous structure. Generally the main finding that the War varieties form a distinct sub-branch is supported strongly by comparative phonology. War is strongly marked by historical vowel restructuring that saw many mergers with high front vowels, and dissimilatory restructuring of diphthongs. Some examples can be seen in the following table (Fig. 4) of data extracted from Lyngngam from Nagaraja (2004), Brightbill et al. (2007), and Amwi from Weidert (1975).

| Gloss     | Lyngngam              | Khasi<br>(Shillong)   | Pnar<br>(Noksia)      | War<br>(Amlarem) | Amwi        |
|-----------|-----------------------|-----------------------|-----------------------|------------------|-------------|
| 'two'     | <i>a:r</i>            | <i>ʔa:r</i>           | <i>ʔa:r</i>           | <i>ʔi</i>        | <i>ʔũ</i>   |
| 'chicken' | --                    | <i>ʔiar</i>           | <i>ʔiar</i>           | <i>siʔi</i>      | <i>sʔi</i>  |
| 'fish'    | <i>k<sup>h</sup>a</i> | <i>k<sup>h</sup>a</i> | <i>k<sup>h</sup>a</i> | <i>hi</i>        | <i>hi</i>   |
| 'red'     | <i>ənsaw</i>          | <i>saw</i>            | <i>sao</i>            | <i>sia</i>       | <i>sia</i>  |
| 'stone'   | <i>maw</i>            | <i>maw</i>            | <i>mao</i>            | <i>ʃmia</i>      | <i>ʃmia</i> |

**Figure 4:** Comparative data illustrating phonological innovations in War

It is apparent that the lexicostatistical studies conducted so far have been very limited in scope, and conducted with differing data sets that make their result difficult to compare and assess. In this context it was decided to extend Nagaraja's (2004) study, by adding data representing Pnar

<sup>3</sup> Figures on branches are words retained per 1000.

and War to the 200 word list already used for Lyngngam and standard Khasi, and additionally to add Palaung data - Palaung representing a more distantly related Austroasiatic language - to securely root the tree and test overall coherence of Khasian.

## 2. The present study

The present study takes the data set of Nagaraja (2004) to which are added data items for:

- Pnar, Jaintia dialect from Ring (2012).
- War, Lamin dialect from Gashnga (forthcoming).
- Palaung, Namshan dialect from Shorto 2013.

All the data are provided in a table as an appendix to this paper. Cognates are scored in the rightmost column of the table using letter codes, according to the method specified by Guy (1994) in which members of the same etymon are given the same letter, loans and empty fields are given \*. Nagaraja's (2004) cognate assignments were reassessed in the light of the new data, and Sidwell's ongoing proto-Khasian phonological reconstruction,<sup>4</sup> resulting in some changes. The scores were then processed with Guy's GLOTPC.EXE to count the pair-wise percentages, generating the table at (Fig. 5):

|          | Khasi | Pnar | Lyngngam | War | Palaung |
|----------|-------|------|----------|-----|---------|
| Khasi    |       | 74   | 62       | 52  | 20      |
| Pnar     | 74    |      | 55       | 54  | 19      |
| Lyngngam | 62    | 55   |          | 41  | 18      |
| War      | 52    | 54   | 41       |     | 20      |
| Palaung  | 20    | 19   | 18       | 20  |         |

**Figure 5:** Lexicostatistical table for Khasi, Pnar, Lyngngam, War and Palaung.

Overall the matrix indicates straightforward nesting branching relations within Khasian, and unambiguous rooting based on the strikingly consistent 18–20% cognacy with Palaung. Further analysis with Guy's GLOTPC.EXE indicates that the real percentages diverge from theoretically predicted percentages by no more than 2% in respect of any pair-wise comparisons, so we can have some confidence that the analysis is not significantly distorted by drastic differences in rates of lexical change. As regards to inferring interference by borrowing, it appears that the cognacy rates with War are indicative; we know that War and Lyngngam speakers are geographically separated, and can assume that the figure of 41% counted between them is not significantly distorted by loans. On the other hand, Khasi and Pnar show higher percentages against War (52% and 54% respectively) and the somewhat higher agreement between Pnar and War, which are known to be in contact, is surely indicative of some mutual borrowing, which has not been identified and scored so in our dataset. Thus, although the pair-wise comparisons of Pnar-Lyngngam and Pnar-War show similar values (55% and 54% respectively) we can assume that the latter figure is likely to be high because of undiagnosed borrowing (as borrowing between Pnar and War is far more likely than between either and Lyngngam<sup>5</sup>). Similarly, the higher agreement between Khasi-Lyngngam (62%) versus Pnar-Lyngngam (55%) is likely to be indicative of some borrowing of Standard Khasi words into Lyngngam. Of course, it must be acknowledged that it is possible that the above patterns are largely the result of differences in rates of change, but logically it is difficult to see how that would produce such a tidily branching nested tree, as opposed to a more random pattern.

The figure of 74% agreement between Khasi and Pnar is strikingly consistent with 75% figures independently obtained by Brightbill et al. (2007) and Sidwell (2009), and provide significant comfort to the view that they are more or less indicative of the real distance between the two languages. The figures indicate that a high degree of mutual lexical intelligibility is to be predicted, approaching the threshold for treating them as dialects of the same language. Clearly

<sup>4</sup> At the time of writing a 2012 version of this reconstruction is available online at [sealang.net/monkhmer](http://sealang.net/monkhmer). It is expected that this will be replaced with an extensively revised version later in 2013.

<sup>5</sup> If anything, all three are likely to share unrecognised loans from Standard Khasi.

Khasi and Pnar sub-group closely, Lyngngam then appears to sit above Khasi-Pnar, and all three are more distantly related to War, which (as noted above) also is known to have a divergent phonological history.

For those who are bold enough to pursue the question, it is also possible to apply glottochronological calculation to our figures, in full awareness of the harsh critiques of glottochronology, especially since Bergsland and Vogt. (1962). We have done so, using Lee's (1953) formula  $t = \log C / (2 \log r)$  and his retention rate for the 200 item list of 80.5% per thousand years. Applying this formula to the lowest pair-wise percentage at each apparent node, we get the following tree with divergences dated in years (y) before present at Fig. 6.

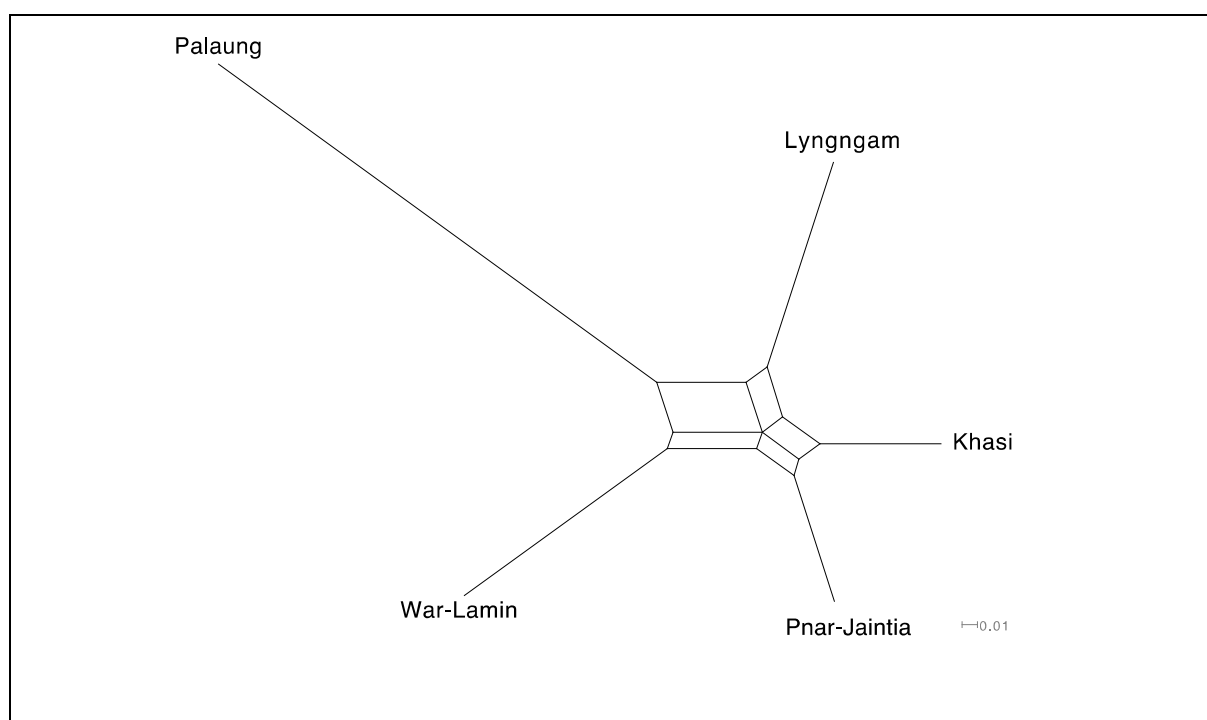
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|          |                                                             |
|----------|-------------------------------------------------------------|
| Khasi    | -----:74%/694y-----:55%/1378y-----:41%/2054y-----:18%/3951y |
| Pnar     | -----'                                                      |
| Lyngngam | -----'                                                      |
| War      | -----'                                                      |
| Palaung  | -----'                                                      |

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**Figure 6:** Family tree with glottochronological dating of divergences table for Khasi, Pnar, Lyngngam, War and Palaung.

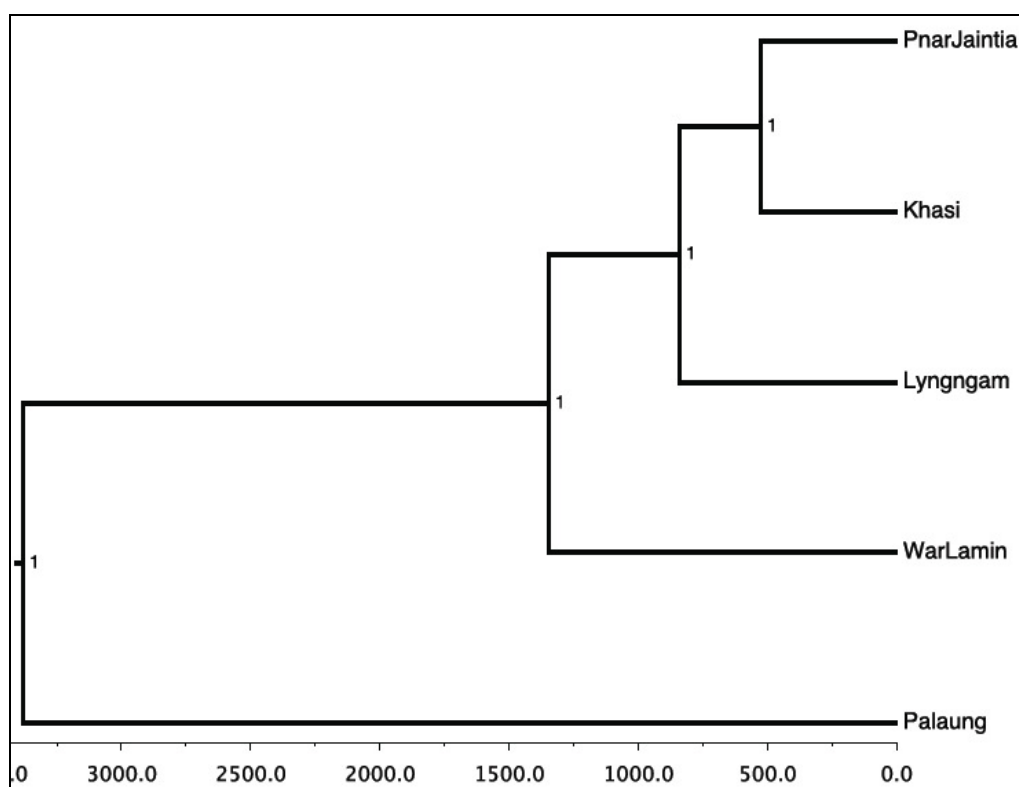
Further computational analyses were carried out on the dataset. Firstly a neighbor net was generated using SplitsTree v4.11.3 (Bryant & Moulton 2003) by Simon Greenhill, here at Fig. 7. The result, displayed below, is quite straightforward, and is largely consistent with the lexicostatistics: the close relation between Khasi and Pnar is reproduced, and the marginally closer relation of them to Lyngngam versus War is evident. No disproportionate inferring signals are evident.



**Figure 7:** Neighbor Net for Khasi, Pnar, Lyngngam, War and Palaung.

Next, a Bayesian Phylogenetic analysis was run by Greenhill using BEAST v1.7.4 (Drummond et al. 2012). Here, a simple Continuous-Time Markov Chain model was used to analyse the binary presence/absence of cognates implementing a strict clock for inferring rates of cognate gains and losses. The analysis was run for 2,000,000 generations, sampling 1,000. The first 200,000 generations were discarded as “burn-in” after inspection of the traces showed that this was sufficient time for the chain to stabilize (c.f. Greenhill, in press). The results are similarly consistent with the lexicostatistics; the number 1 at each node indicates 100% probability of the

branching, as the program consistently generated the same tree with every pass through the data. Additionally the tree is constrained to indicate a time depth of 500 years BP for the Khasi-Pnar split, for the sake of generating a calibrated tree. In so far as we are able to offer any objective bases for calibrating the chronology, the Buranji chronicles of the Ahom kingdom apparently reference the Pnar kingdom at Jaintia about 500 years before present, which suggests a floor under the separation of Khasi and Pnar (e.g. Gait 1906:255 lists Jaintia kings from approximately 1500 AD onwards). In this context, the glottochronological calculation of 694 years for Khasi-Pnar separation seems quite realistic, although still admittedly speculative. The Bayesian analysis estimates the age of the Khasi-Pnar split to be similar – but younger – with a mean of 535 years (95% Highest Posterior Density Interval = 500-603 years), see Fig. 8. In terms of the age of the Khasian subgroup itself, glottochronology estimates the age at 2054 years, while the Bayesian analysis places the origin of this subgroup at a younger median of 1350 years (95% HPD = 1028-1737 years). Given that the Bayesian dating estimate is calibrated to the youngest possible age indicated by our meager historical sources, the estimate of 1350 years is quite likely to be an underestimate, although as such it establishes a reasonable minimum parameter for speculations about pre-Khasian migration into Northeast India.



**Figure 8:** Bayesian Phylogenetic analysis for Khasi, Pnar, Lyngngam, War and Palaung.

### 3. Concluding remarks

The present study makes a further contribution to the emerging field of comparative Khasian linguistics, with a quantitative analysis of lexical correspondences that supports both the unity of the Khasian branch, and a strong nested internal structure. Within Khasian, the War language(s) form the highest branching node, consistent with indications of historical phonological restructuring. The remaining languages form a tightly linked subgroup, with Lyngngam placed outside a Khasi-Pnar core. Whilst these results are intriguing, fine-grained lexical, grammatical and phonological analyses should be applied to further rigorously infer the subgrouping of the Khasian languages.

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## Appendix: Lexical data and cognate scores

Lexical data and cognate scores (\* marks loanwords and missing forms)

|    | Gloss          | Khasi  | Lyngngam | Pnar/Jaintia | War/Lamin | Palaung | Cognate scores |
|----|----------------|--------|----------|--------------|-----------|---------|----------------|
| 1  | all            | roʔ    | prok     | warɔʔ        | bərvʔ     | paj     | aaaab          |
| 2  | and            | ba:d   | nam      | wa           | wa:       | -       | abcd*          |
| 3  | animal         | mra:d  | mra:d    | mra:d        | mrət      | to      | *****          |
| 4  | ashes          | dpej   | əpaw     | tpai         | tvə       | kəhvaŋ  | abacd          |
| 5  | at             | ha     | he       | ha           | ti        | --      | aaab*          |
| 6  | back (anat.)   | dien   | bad don  | rŋkʰi        | təmpvəŋ   | krəŋ    | aabcd          |
| 7  | bad            | spiew  | kincʰa   | siʔ          | kəm       | kʰu (?) | abcde          |
| 8  | bark (of tree) | snep   | snieʔ    | sneiʔ        | snieʔ     | gɔʔ     | aaaab          |
| 9  | because        | namar  | amte     | neibʰaʔ      | kaʔ       | (?)     | abcd*          |
| 10 | belly          | kpoʔ   | ləwbaʔ   | kpoʔ         | pvʔ       | veʔ     | abaac          |
| 11 | big            | heʔ    | kimba    | heʔ          | mia       | daŋ     | ababc          |
| 12 | bird           | sim    | sim      | sim          | ksem      | sim     | aaaaa          |
| 13 | to bite        | daʔ    | kinnap   | dait         | hit       | gaʔ     | abacd          |
| 14 | black          | joŋ    | injoŋ    | jəŋ          | priŋ      | jəm     | aaabc          |
| 15 | blood          | snam   | snam     | snam         | rvə       | hnam    | aaaaa          |
| 16 | blow           | pirsat | pʰinnur  | slu          | pet       | put     | abcd           |

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|    |                  |                        |                         |                    |                  |                  |       |
|----|------------------|------------------------|-------------------------|--------------------|------------------|------------------|-------|
| 17 | bone             | <i>ʃɔŋ</i>             | <i>cɔŋ</i>              | <i>ʃɔɛŋ</i>        | <i>ʃiəʔ</i>      | <i>kəʔaŋ</i>     | aaaaa |
| 18 | breathe          | <i>riŋ minsiem</i>     | <i>riŋ insom</i>        | <i>riŋ m̥seim</i>  | <i>reŋ hənsə</i> | <i>pʰum</i>      | aaaaa |
| 19 | burn             | <i>tʰaŋ</i>            | <i>intʰaŋ / tʰinnəŋ</i> | <i>tʰaŋ</i>        | <i>əaŋ</i>       | <i>gut</i>       | aaaab |
| 20 | child            | <i>kʰun</i>            | <i>kʰon</i>             | <i>kʰɔn</i>        | <i>hɔn</i>       | <i>kuən</i>      | aaaaa |
| 21 | cloud            | <i>lɔoʔ</i>            | <i>lɔoʔ</i>             | <i>lɔoʔ</i>        | <i>ləmpem</i>    | <i>ut</i>        | aaabc |
| 22 | cold             | <i>kʰriat</i>          | <i>binsir</i>           | <i>kdzam</i>       | <i>ktjam</i>     | <i>kat</i>       | abccd |
| 23 | come             | <i>wan</i>             | <i>linnar</i>           | <i>wan</i>         | <i>va, van</i>   | <i>hluh, rət</i> | abaac |
| 24 | count            | <i>ɲjaw</i>            | <i>cʰinnan</i>          | <i>niaw</i>        | <i>ʃa:</i>       | <i>dir</i>       | abacd |
| 25 | cut              | <i>kʰap</i>            | <i>kʰinnap</i>          | <i>aʔ</i>          | <i>pam</i>       | <i>set</i>       | aabcd |
| 26 | day              | <i>sɲi</i>             | <i>sɲej</i>             | <i>sɲi</i>         | <i>ʃɲa:</i>      | <i>səŋi</i>      | aaaaa |
| 27 | die              | <i>jap</i>             | <i>ɲinnap</i>           | <i>jap</i>         | <i>jip</i>       | <i>jəm</i>       | aaaab |
| 28 | dig              | <i>tiʔ</i>             | <i>tinniet</i>          | <i>tiʔ</i>         | <i>tiəʔ</i>      | <i>puər</i>      | aaaab |
| 29 | dirty            | <i>jaboʔ / jakʰlia</i> | <i>d̥immut / ɲimbaʔ</i> | <i>taroj</i>       | <i>ʃəmet</i>     | <i>ju ju (?)</i> | abcde |
| 30 | dog              | <i>ksew</i>            | <i>ksu</i>              | <i>ksaw</i>        | <i>ksia</i>      | <i>sə</i>        | aaaaa |
| 31 | drink            | <i>diʔ</i>             | <i>d̥inniet</i>         | <i>diʔ</i>         | <i>deʔ</i>       | <i>teəŋ</i>      | aaaab |
| 32 | dry              | <i>rkʰiaŋ</i>          | <i>riəŋkʰoŋ</i>         | <i>raw</i>         | <i>rhiaŋ</i>     | <i>raʃ, roh</i>  | aabac |
| 33 | dull, blunt      | <i>isiʔ</i>            | <i>ɲosmoʔ</i>           | <i>tʰla</i>        | <i>len</i>       | --               | abcd* |
| 34 | dust             | <i>pum-pum</i>         | <i>pum-pum</i>          | <i>dʒlpʰoʔ</i>     | <i>tjəlpʰoʔ</i>  | <i>kərboh</i>    | a*bbc |
| 35 | ear              | <i>ʃkor</i>            | <i>ləkur</i>            | <i>tʃkor</i>       | <i>təraŋ</i>     | <i>hɔʔ</i>       | aaabc |
| 36 | earth            | <i>kʰindew</i>         | <i>kmiaŋ</i>            | <i>kʰndaw</i>      | <i>pərθa</i>     | <i>kəte</i>      | abc*d |
| 37 | eat              | <i>ba:m</i>            | <i>binnəŋ</i>           | <i>bam</i>         | <i>bəə</i>       | <i>hap</i>       | aaaac |
| 38 | egg              | <i>pillen</i>          | <i>pilliŋ</i>           | <i>p̥llein</i>     | <i>sɔi</i>       | <i>kətam</i>     | aaabc |
| 39 | eye              | <i>kʰmat</i>           | <i>kʰmat</i>            | <i>kʰmat</i>       | <i>mat</i>       | <i>ŋaj</i>       | aaaab |
| 40 | to fall          | <i>hap</i>             | <i>eŋaj</i>             | <i>hap</i>         | <i>hərem</i>     | <i>rar</i>       | abacd |
| 41 | far              | <i>ɲaj</i>             | <i>ɲi</i>               | <i>dʒɲai</i>       | <i>ʃɲə</i>       | <i>səŋaj</i>     | aaaaa |
| 42 | fat-grease       | <i>sɲa:ɔd</i>          | <i>im̥mir</i>           | <i>kʰlaŋ</i>       | <i>ləʔət</i>     | <i>kəmu</i>      | abcde |
| 43 | father           | <i>kpa</i>             | <i>pa</i>               | <i>pa</i>          | <i>pa</i>        | <i>kun</i>       | aaaab |
| 44 | to fear          | <i>ʃeptieŋ</i>         | <i>tieŋ dait</i>        | <i>teʃn</i>        | <i>ktiəŋ</i>     | <i>jə</i>        | aaaab |
| 45 | feather          | <i>sner</i>            | <i>snir</i>             | <i>tʰawaner</i>    | <i>θəbəniar</i>  | --               | aaaa* |
| 46 | few              | <i>kʰin-diat</i>       | <i>tah-diat</i>         | <i>kʰadʒiak</i>    | --               | <i>bre</i>       | aab*c |
| 47 | to fight         | <i>jafoʔ / jadat</i>   | <i>jamuʔ</i>            | <i>jaʔoʔ</i>       | <i>jaʔ dat</i>   | <i>taik</i>      | aba*c |
| 48 | fire             | <i>diŋ</i>             | <i>ədoŋ</i>             | <i>diŋ</i>         | <i>ʃmen</i>      | <i>ŋər</i>       | aaabc |
| 49 | fish             | <i>doʔkʰa</i>          | <i>kʰa</i>              | <i>dakʰa</i>       | <i>hi</i>        | <i>ka</i>        | aaaaa |
| 50 | five             | <i>san</i>             | <i>san</i>              | <i>san</i>         | <i>ran</i>       | <i>pʰən</i>      | aaaaa |
| 51 | to float         | <i>per</i>             | <i>raŋ</i>              | <i>per</i>         | <i>sper</i>      | <i>plur</i>      | abaac |
| 52 | to flow          | <i>tu:ɔd</i>           | <i>sin-to:ɔd</i>        | <i>to:ɔd</i>       | <i>pər</i>       | <i>hlaj</i>      | aaabc |
| 53 | flower           | <i>sintiew</i>         | <i>sintew</i>           | <i>sntu</i>        | <i>khloə</i>     | <i>poh</i>       | aaabc |
| 54 | to fly           | <i>her</i>             | <i>kindej</i>           | <i>p̥nher</i>      | <i>piar</i>      | <i>pər</i>       | abacc |
| 55 | fog              | <i>dum-lɔoʔ</i>        | <i>nioŋ nia</i>         | <i>lɔoʔ kʰndaw</i> | <i>dom</i>       | <i>aj</i>        | abcad |
| 56 | foot             | <i>kɔat</i>            | <i>kɔat</i>             | <i>kdzat</i>       | <i>nia</i>       | <i>ɲuŋ</i>       | aaabc |
| 57 | four             | <i>saw</i>             | <i>saw</i>              | <i>so</i>          | <i>ria</i>       | <i>pʰon</i>      | aaaab |
| 58 | freeze           | <i>ʃoʔ tʰaʔ</i>        | <i>tiŋŋam / binsier</i> | <i>tʰaʔ</i>        | <i>tʰaʔ</i>      | <i>krəʔ</i>      | abaac |
| 59 | fruit            | <i>soʔ</i>             | <i>suʔ</i>              | <i>səʔ</i>         | <i>səʔ</i>       | <i>ple</i>       | aaaab |
| 60 | give             | <i>aj</i>              | <i>innaj</i>            | <i>e</i>           | <i>ʔa:</i>       | <i>deh</i>       | aaaab |
| 61 | good             | <i>bʰa</i>             | <i>mirrʰiaŋ</i>         | <i>bʰa</i>         | <i>mət</i>       | <i>laʔ</i>       | *a*bc |
| 62 | grass            | <i>pʰlaŋ</i>           | <i>pʰlaŋ</i>            | <i>pʰlaŋ</i>       | <i>smət</i>      | <i>kərban</i>    | aaabc |
| 63 | green            | <i>ɲiŋam</i>           | <i>siŋiaŋ</i>           | <i>ɲiŋam</i>       | <i>ʃəŋam</i>     | <i>ɲər</i>       | aaaab |
| 64 | guts, intestines | <i>snier</i>           | <i>snor</i>             | <i>sner</i>        | <i>nər</i>       | <i>reŋ</i>       | aaaab |
| 65 | hair             | <i>sniuʔ</i>           | <i>sniək</i>            | <i>snʰoʔ</i>       | <i>səʔ</i>       | <i>huʔ</i>       | aaaaa |
| 66 | hand             | <i>kti</i>             | <i>ktej</i>             | <i>kti</i>         | <i>ta:</i>       | <i>ti</i>        | aaaaa |
| 67 | he               | <i>u</i>               | <i>ɲutuʔ / umi</i>      | <i>u</i>           | <i>u</i>         | <i>ən</i>        | aaaab |
| 68 | head             | <i>kʰlieʔ</i>          | <i>kʰliʔ</i>            | <i>kʰleiʔ</i>      | <i>kʰlia</i>     | <i>kiŋ</i>       | aaaab |
| 69 | hear             | <i>sɲap</i>            | <i>sɲu</i>              | <i>sniaw</i>       | <i>sāʔ</i>       | <i>ju</i>        | aaabc |
| 70 | heart            | <i>kloŋ snam</i>       | <i>kloŋ snam</i>        | <i>kləŋ snam</i>   | <i>kləŋ rnoə</i> | <i>nuər</i>      | aaaab |
| 71 | heavy            | <i>heʔ</i>             | <i>kenbaʔ / kʰinnia</i> | <i>kʰia</i>        | <i>stoʔ</i>      | <i>ɲən</i>       | abcde |
| 72 | here             | <i>haŋ ne</i>          | <i>haniʔ</i>            | <i>heini</i>       | <i>tine:</i>     | --               | aaaa* |
| 73 | hit              | <i>tied</i>            | <i>udaʔ</i>             | <i>dat</i>         | <i>dat</i>       | <i>tum</i>       | abccd |
| 74 | hold-take        | <i>ʃim</i>             | <i>tʰom</i>             | <i>tʃim</i>        | <i>lom</i>       | <i>lɛ</i>        | abacd |

|     |                 |                                  |                              |                         |                           |                           |       |
|-----|-----------------|----------------------------------|------------------------------|-------------------------|---------------------------|---------------------------|-------|
| 75  | how             | <i>kumno</i>                     | <i>naŋ net</i>               | <i>kammən</i>           | <i>kinja?</i>             | <i>k<sup>h</sup>uŋ mə</i> | abacd |
| 76  | hunt            | <i>be? (mra:d)</i>               | <i>wuŋ na</i>                | <i>lai siet dɔ?</i>     | <i>pətar</i>              | <i>ɟəm</i>                | abcde |
| 77  | husband         | <i>tɲa / lok</i>                 | <i>koran</i>                 | <i>lɔk</i>              | <i>lɔk</i>                | <i>rəleh</i>              | abbac |
| 78  | I               | <i>ŋa</i>                        | <i>nə</i>                    | <i>ŋa</i>               | <i>ŋə</i>                 | <i>ʔə</i>                 | aaaab |
| 79  | ice             | <i>t<sup>h</sup>a?</i>           | <i>t<sup>h</sup>a?-əlli?</i> | <i>t<sup>h</sup>a?</i>  | <i>t<sup>h</sup>a?</i>    | <i>je ge</i>              | aaaa* |
| 80  | if              | <i>lada</i>                      | <i>lede</i>                  | <i>lada</i>             | <i>nimə</i>               | --                        | aaab* |
| 81  | in              | <i>ha</i>                        | <i>he</i>                    | <i>ha</i>               | <i>ti</i>                 | <i>naə</i>                | aaab* |
| 82  | kill            | <i>pinjap</i>                    | <i>pinnap</i>                | <i>pnjap</i>            | <i>pənjip</i>             | <i>piəm</i>               | aaaab |
| 83  | know            | <i>tip</i>                       | <i>he?kən</i>                | <i>tɪp</i>              | <i>tə?</i>                | <i>nəp</i>                | abaac |
| 84  | lake            | <i>puŋ</i>                       | <i>puŋ</i>                   | <i>puŋ</i>              | <i>sə</i>                 | <i>nɔŋ</i>                | aaab* |
| 85  | laugh           | <i>rk<sup>h</sup>ie</i>          | <i>illom</i>                 | <i>rk<sup>h</sup>ai</i> | <i>rə</i>                 | <i>jum</i>                | abac* |
| 86  | leaf            | <i>sla</i>                       | <i>sla</i>                   | <i>sla</i>              | <i>sli</i>                | <i>hla</i>                | aaaaa |
| 87  | left side       | <i>dian</i>                      | <i>timmiən</i>               | <i>tidien</i>           | <i>di par ta dɪən</i>     | <i>ʔi-ve</i>              | aaaab |
| 88  | leg             | <i>kɟat</i>                      | <i>kɟat</i>                  | <i>kdɜat</i>            | <i>nɪa</i>                | <i>juŋ</i>                | aaabc |
| 89  | to lie, deceive | <i>t<sup>h</sup>ok</i>           | <i>t<sup>h</sup>illo't</i>   | <i>dɜlər</i>            | <i>pənro?</i>             | <i>cɔ?</i>                | abcde |
| 90  | live            | <i>im</i>                        | <i>innim</i>                 | <i>im</i>               | <i>pɔem</i>               | <i>im</i>                 | aaaaa |
| 91  | liver           | <i>do?nu:d</i>                   | <i>no:d</i>                  | <i>no:d</i>             | <i>kθim</i>               | <i>kərtəm</i>             | aaabb |
| 92  | long            | <i>ɟron</i>                      | <i>ɟirron</i>                | <i>dɜrɔŋ</i>            | <i>kəron</i>              | <i>hlun</i>               | aaaab |
| 93  | louse           | <i>ksi / ɟinreip</i>             | <i>silliet</i>               | <i>ksi</i>              | <i>ksa</i>                | <i>si</i>                 | abaaa |
| 94  | man-male        | <i>finran</i>                    | <i>k<sup>h</sup>onkoran</i>  | <i>cɲran</i>            | <i>tərma</i>              | <i>ime</i>                | aaabb |
| 95  | many            | <i>bun</i>                       | <i>bon</i>                   | <i>bon</i>              | <i>fibə</i>               | <i>kun, bərcu</i>         | aaaab |
| 96  | meat-flesh      | <i>do?</i>                       | <i>mə'm</i>                  | <i>dɔ?</i>              | <i>də?</i>                | <i>jəŋ</i>                | abaac |
| 97  | mother          | <i>kmie</i>                      | <i>gma</i>                   | <i>bei</i>              | <i>ma:</i>                | <i>ma</i>                 | aaaaa |
| 98  | mountain        | <i>lum</i>                       | <i>dom</i>                   | <i>lom</i>              | <i>pden</i>               | <i>sor</i>                | aaabc |
| 99  | mouth           | <i>ɟintur</i>                    | <i>gap</i>                   | <i>ktein</i>            | <i>tkəŋ</i>               | <i>mur</i>                | abcde |
| 100 | name            | <i>kirtən</i>                    | <i>kirtən</i>                | <i>pɪrtuid</i>          | <i>tvɪən</i>              | <i>ju</i>                 | a*bc* |
| 101 | narrow          | <i>rafin / bak<sup>h</sup>im</i> | <i>bak<sup>h</sup>im</i>     | <i>k<sup>h</sup>im</i>  | --                        | <i>ɔp</i>                 | a*a** |
| 102 | near            | <i>jan</i>                       | <i>ɟjan</i>                  | <i>dɜan</i>             | <i>tjan</i>               | <i>dət</i>                | aaaab |
| 103 | neck            | <i>rindan</i>                    | <i>kran</i>                  | <i>rdan</i>             | <i>rdan</i>               | <i>rəmən</i>              | abaac |
| 104 | new             | <i>t<sup>h</sup>immaj</i>        | <i>t<sup>h</sup>immaj</i>    | <i>t<sup>h</sup>ɪme</i> | <i>θma:</i>               | <i>kənme</i>              | aaaaa |
| 105 | night           | <i>miet</i>                      | <i>sənpu</i>                 | <i>meit</i>             | <i>ləma?</i>              | <i>sum</i>                | abaac |
| 106 | nose            | <i>k<sup>h</sup>mut</i>          | <i>leumut</i>                | <i>k<sup>h</sup>mut</i> | <i>mərkəŋ</i>             | <i>muh, mur</i>           | aaaba |
| 107 | not             | <i>im</i>                        | <i>inji</i>                  | <i>ɲ</i>                | <i>tə? tə</i>             | <i>kə</i>                 | aabbc |
| 108 | old             | <i>rim</i>                       | <i>rim</i>                   | <i>rim</i>              | <i>sərem</i>              | <i>prim</i>               | aaaaa |
| 109 | one             | <i>uwej</i>                      | <i>uwew</i>                  | <i>wi</i>               | <i>mi</i>                 | <i>u</i>                  | aaaab |
| 110 | other           | <i>ki-wej</i>                    | <i>marber</i>                | <i>kəpsar</i>           | --                        | <i>laj</i>                | aa**b |
| 111 | person          | <i>briew</i>                     | <i>brü</i>                   | <i>bru</i>              | <i>tjəpreu</i>            | <i>bi</i>                 | aaaab |
| 112 | to play         | <i>le? kaj</i>                   | <i>k<sup>h</sup>ellaj</i>    | <i>kɲdei? ke</i>        | <i>khɪrə</i>              | <i>kəvə?</i>              | abacd |
| 113 | to pull         | <i>tan</i>                       | <i>rinnien</i>               | <i>tan</i>              | <i>pətia?</i>             | <i>ruit, tutt</i>         | abacd |
| 114 | to push         | <i>k<sup>h</sup>innia?</i>       | <i>kɪnc<sup>h</sup>ew</i>    | <i>ɲiat</i>             | <i>khən jɪt</i>           | <i>con</i>                | abacd |
| 115 | to rain         | <i>slap</i>                      | <i>slap</i>                  | <i>slap</i>             | <i>sla:</i>               | <i>juŋ</i>                | aaaab |
| 116 | red             | <i>saw</i>                       | <i>ənsaw</i>                 | <i>so</i>               | <i>sɪa</i>                | <i>k<sup>h</sup>o, ni</i> | aaaab |
| 117 | right-correct   | <i>dej</i>                       | <i>dew</i>                   | <i>tɔ?</i>              | <i>tə?</i>                | --                        | aabb* |
| 118 | right side      | <i>mon</i>                       | <i>tim-mon</i>               | <i>timun</i>            | <i>di par ta mən</i>      | <i>k<sup>h</sup>wa</i>    | aaaa* |
| 119 | river           | <i>wa?</i>                       | <i>por</i>                   | <i>wa?</i>              | <i>ɟam</i>                | <i>om</i>                 | abacc |
| 120 | road            | <i>linti</i>                     | <i>twar</i>                  | <i>sərək</i>            | <i>sərək</i>              | <i>deŋ</i>                | abacd |
| 121 | root            | <i>tinraj</i>                    | <i>tirraj</i>                | <i>t<sup>h</sup>eid</i> | <i>fit</i>                | <i>riər</i>               | aabba |
| 122 | rope            | <i>tillaj</i>                    | <i>lanraj</i>                | <i>tɪle</i>             | <i>təro</i>               | <i>vər</i>                | abacd |
| 123 | rotten          | <i>pɔut</i>                      | <i>ɟillit</i>                | <i>pɔut</i>             | <i>khvi</i>               | <i>əm</i>                 | abacd |
| 124 | to rub          | <i>kɪrfut</i>                    | <i>kɪrc<sup>h</sup>ut</i>    | <i>kɪrfut</i>           | <i>kənɟot</i>             | <i>sut</i>                | aaaaa |
| 125 | salt            | <i>mlu?</i>                      | <i>maluk</i>                 | <i>blo?</i>             | <i>pno?</i>               | <i>sɔ?</i>                | aaaab |
| 126 | sand            | <i>ɟiap</i>                      | <i>c<sup>h</sup>ɔjap</i>     | <i>tɟɛap</i>            | <i>sərvə</i>              | <i>saj</i>                | aaabc |
| 127 | to say          | <i>oŋ</i>                        | <i>innon</i>                 | <i>ʔəŋ</i>              | <i>ʔəŋ</i>                | <i>dah</i>                | aaaab |
| 128 | to scratch      | <i>tru:d</i>                     | <i>tirrut</i>                | <i>tɪbət</i>            | <i>k<sup>h</sup>əbət?</i> | <i>pɔ?</i>                | aabbc |
| 129 | sea             | <i>duriaw</i>                    | <i>duriaw</i>                | <i>duriaw</i>           | <i>dorɪəu</i>             | --                        | a*aa* |
| 130 | to see          | <i>jo?i</i>                      | <i>mujo?</i>                 | <i>pait</i>             | <i>ma?</i>                | <i>ju</i>                 | aabca |
| 131 | seed            | <i>simbaj</i>                    | <i>ɟellej</i>                | <i>sɪmbe</i>            | <i>tjosba</i>             | <i>kəɟan</i>              | abaac |
| 132 | to sew          | <i>su?</i>                       | <i>sinnek</i>                | <i>sor</i>              | <i>sə</i>                 | <i>ɟiŋ</i>                | aaaab |

|     |                 |                            |                            |                            |                           |                              |       |
|-----|-----------------|----------------------------|----------------------------|----------------------------|---------------------------|------------------------------|-------|
| 133 | sharp           | <i>nep</i>                 | <i>inta?</i>               | <i>nep</i>                 | <i>nep</i>                | <i>ləm</i>                   | abaac |
| 134 | short           | <i>liṅkot</i>              | <i>timban</i>              | <i>tbien</i>               | <i>ɣfrit</i>              | <i>ɛm</i>                    | abbcd |
| 135 | to sing         | <i>rwaj</i>                | <i>riṅwi</i>               | <i>rwai</i>                | <i>rʋo</i>                | <i>ɣir</i>                   | aaaab |
| 136 | to sit          | <i>foṅ</i>                 | <i>c<sup>h</sup>oṅ</i>     | <i>tfoṅ</i>                | <i>ʃkɪə</i>               | <i>mɔ?</i>                   | aaabc |
| 137 | skin            | <i>snie? do?</i>           | <i>snie? mejm</i>          | <i>snei?</i>               | <i>snɪə?</i>              | <i>hur</i>                   | aaaab |
| 138 | sky             | <i>bneṅ</i>                | <i>brej</i>                | <i>bneṅ</i>                | --                        | <i>pleṅ</i>                  | aba*a |
| 139 | to sleep        | <i>t<sup>h</sup>ia?</i>    | <i>inṅin</i>               | <i>t<sup>h</sup>ia?</i>    | <i>θɪə?</i>               | <i>ʔit</i>                   | abaac |
| 140 | small           | <i>rit</i>                 | <i>doh-dit</i>             | <i>k<sup>h</sup>eṅ</i>     | <i>sbiət</i>              | <i>diət</i>                  | abcdb |
| 141 | to smell        | <i>sma</i>                 | <i>innaw</i>               | <i>sma</i>                 | <i>rʔɪəṅ</i>              | <i>ʔur</i>                   | abacd |
| 142 | smoke           | <i>tdem</i>                | <i>int<sup>h</sup>ak</i>   | <i>tdem</i>                | <i>tdem</i>               | <i>tuuk</i>                  | abaac |
| 143 | smooth          | <i>ɟli?</i>                | <i>ɟimpaj</i>              | <i>ɟali?</i>               | <i>tjəlli?</i>            | <i>kleət</i>                 | abaac |
| 144 | snake           | <i>bseṅ</i>                | <i>bseṅ</i>                | <i>pseṅ</i>                | <i>pseṅ</i>               | <i>hiṅ</i>                   | aaaaa |
| 145 | snow            | <i>jor</i>                 | <i>jor</i>                 | <i>t<sup>h</sup>a?</i>     | <i>ksiəṅ məṅ</i>          | --                           | a*bc* |
| 146 | some            | <i>k<sup>h</sup>indiat</i> | <i>ta?-diat</i>            | <i>k<sup>h</sup>ajiak</i>  | <i>ʃitjṅ</i>              | <i>pərdi</i>                 | aabcd |
| 147 | to spit         | <i>bia?</i>                | <i>ɟirt<sup>h</sup>ew</i>  | <i>mɪt<sup>h</sup>u</i>    | <i>pəθeo</i>              | <i>be?</i>                   | abbba |
| 148 | to split        | <i>p<sup>h</sup>ia?</i>    | <i>t<sup>h</sup>illa?</i>  | <i>p<sup>h</sup>ia?</i>    | <i>phit, khɪə?</i>        | <i>ploh</i>                  | abaac |
| 149 | to squeeze      | <i>k<sup>h</sup>em</i>     | <i>k<sup>h</sup>innim</i>  | <i>ksi?</i>                | <i>ʃəpɪə</i>              | <i>piət</i>                  | aabcc |
| 150 | to stab-pierce  | <i>duṅ</i>                 | <i>danəṅ</i>               | <i>duṅ</i>                 | <i>təndəṅ</i>             | <i>bruḥ</i>                  | aaaab |
| 151 | to stand        | <i>ieṅ</i>                 | <i>niəṅ</i>                | <i>jeṅ</i>                 | <i>rəṅ</i>                | <i>ɟəṅ</i>                   | aaaaa |
| 152 | star            | <i>k<sup>h</sup>lur</i>    | <i>k<sup>h</sup>lor</i>    | <i>k<sup>h</sup>lor</i>    | <i>khloə ʃmen</i>         | <i>səmiṅ</i>                 | aaabb |
| 153 | stick (of wood) | <i>dieṅ</i>                | <i>ədɪəṅ</i>               | <i>deiṅ</i>                | <i>pərnɪa</i>             | <i>hviət</i>                 | aabcd |
| 154 | stone           | <i>maw</i>                 | <i>maw</i>                 | <i>mo</i>                  | <i>ʃmɪa</i>               | <i>mo</i>                    | aaaaa |
| 155 | straight        | <i>biet</i>                | <i>limp<sup>h</sup>ar</i>  | <i>beit</i>                | <i>bit</i>                | <i>p<sup>h</sup>ieṅ</i>      | abaac |
| 156 | to suck         | <i>kjɪt</i>                | <i>kɪṅjok</i>              | <i>bu</i>                  | <i>tjor</i>               | <i>bu, but</i>               | aabcb |
| 157 | sun             | <i>sɟi</i>                 | <i>sɟej</i>                | <i>sɟi</i>                 | <i>njoṅa</i>              | <i>səɟi</i>                  | aaaaa |
| 158 | to swell        | <i>at</i>                  | <i>innat</i>               | <i>ad</i>                  | <i>ʔat</i>                | <i>gu</i>                    | aaaab |
| 159 | to swim         | <i>ɟɟi</i>                 | <i>ɟinnaj</i>              | <i>ɟmpa</i>                | <i>rɪəṅ</i>               | <i>lɔj</i>                   | aabac |
| 160 | tail            | <i>tdəṅ</i>                | <i>kdoṅ</i>                | <i>tdəṅ</i>                | <i>tdəṅ</i>               | <i>sta?</i>                  | aaaab |
| 161 | that            | <i>-ta / -tej</i>          | <i>ga-tej</i>              | <i>katai</i>               | <i>ke/u ton</i>           | <i>taj</i>                   | aaaba |
| 162 | there           | <i>kat<sup>h</sup>ie</i>   | <i>gat<sup>h</sup>o?</i>   | <i>heitai</i>              | <i>tə ton</i>             | --                           | aabc* |
| 163 | they            | <i>ki</i>                  | <i>gni?</i>                | <i>ki</i>                  | <i>ɟə</i>                 | <i>ge</i>                    | abaca |
| 164 | thick           | <i>rben</i>                | <i>rimbin</i>              | <i>rben</i>                | <i>rben</i>               | <i>hət</i>                   | aaaab |
| 165 | thin            | <i>staṅ</i>                | <i>sintaṅ</i>              | <i>staṅ</i>                | <i>staṅ</i>               | <i>hrer</i>                  | aaa*b |
| 166 | think           | <i>pirk<sup>h</sup>at</i>  | <i>pirk<sup>h</sup>at</i>  | <i>prk<sup>h</sup>at</i>   | <i>pərkhat</i>            | <i>t<sup>h</sup>aṅ</i>       | a***b |
| 167 | this            | <i>-ne</i>                 | <i>ga-ni?</i>              | <i>kani</i>                | <i>ke/u ne</i>            | <i>ʔu</i>                    | aaaab |
| 168 | thou            | <i>me / p<sup>h</sup>a</i> | <i>mi / p<sup>h</sup>e</i> | <i>me / p<sup>h</sup>a</i> | <i>ɪəm (m) / ɪəhe (f)</i> | <i>mi</i>                    | aaaba |
| 169 | three           | <i>laj</i>                 | <i>laj</i>                 | <i>le</i>                  | <i>la</i>                 | <i>ʔuaj</i>                  | aaaab |
| 170 | to throw        | <i>kawaṅ</i>               | <i>lint<sup>h</sup>ew</i>  | <i>pak<sup>h</sup>ət</i>   | <i>phədat</i>             | <i>rup</i>                   | abcde |
| 171 | to tie          | <i>te?</i>                 | <i>tinnak</i>              | <i>kdə?</i>                | <i>kot</i>                | <i>to?</i>                   | aabca |
| 172 | tongue          | <i>t<sup>h</sup>illieṅ</i> | <i>t<sup>h</sup>illoʔt</i> | <i>t<sup>h</sup>lleṅ</i>   | <i>khɪt</i>               | <i>kərtə?</i>                | aaaab |
| 173 | tooth           | <i>bniat</i>               | <i>moʔn</i>                | <i>lameṅ</i>               | <i>ləmen</i>              | <i>hraiṅ</i>                 | abbbc |
| 174 | tree            | <i>dieṅ</i>                | <i>diəṅ</i>                | <i>deṅ</i>                 | <i>tvɪa</i>               | <i>he</i>                    | aaabc |
| 175 | to turn         | <i>killa</i>               | <i>killa</i>               | <i>dəṅ</i>                 | <i>khərvi</i>             | <i>pən</i>                   | a*bcd |
| 176 | two             | <i>a:r</i>                 | <i>ar</i>                  | <i>ar</i>                  | <i>ʔə?</i>                | <i>ʔar</i>                   | aaaaa |
| 177 | to vomit        | <i>prei</i>                | <i>pirraw</i>              | <i>prai</i>                | <i>hərvə?</i>             | <i>hur</i>                   | aaabc |
| 178 | to walk         | <i>ja:ɔd</i>               | <i>dinni?</i>              | <i>lai kdʒat</i>           | <i>liə</i>                | <i>p<sup>h</sup>ət</i>       | abcd* |
| 179 | warm            | <i>sʔa:ɔd</i>              | <i>infit</i>               | <i>cit</i>                 | <i>dət</i>                | <i>kəɟur</i>                 | abbcd |
| 180 | to wash         | <i>sait</i>                | <i>sait</i>                | <i>sait</i>                | <i>ksi</i>                | <i>k<sup>h</sup>oj, kəta</i> | a*aab |
| 181 | water           | <i>um</i>                  | <i>gum</i>                 | <i>um</i>                  | <i>ʔam</i>                | <i>ʔom</i>                   | aaaaa |
| 182 | we              | <i>ɟi</i>                  | <i>jew</i>                 | <i>i</i>                   | <i>ʔə</i>                 | <i>ʔe</i>                    | abccc |
| 183 | wet             | <i>ɟ<sup>h</sup>ie?</i>    | <i>ɟimbaʔt</i>             | <i>dʒhei?</i>              | <i>tjəriə?</i>            | <i>om pjo pjo</i>            | abaac |
| 184 | what            | <i>-ej</i>                 | <i>umet</i>                | <i>ile?</i>                | <i>i a</i>                | <i>mə</i>                    | abcad |
| 185 | when            | <i>lano</i>                | <i>minnet</i>              | <i>ɲnu</i>                 | <i>daṅ nja?</i>           | <i>jam</i>                   | abac* |
| 186 | where           | <i>haej</i>                | <i>hanet</i>               | <i>tfeiwən</i>             | <i>ti nja?</i>            | <i>mə</i>                    | ab*cd |
| 187 | white           | <i>lie?</i>                | <i>əlli?</i>               | <i>lei?</i>                | <i>slaṅ</i>               | <i>blə?</i>                  | aaabc |
| 188 | who             | <i>-no</i>                 | <i>ɟət</i>                 | <i>u/ka ɟi</i>             | <i>u/ke ʔa:</i>           | <i>paj</i>                   | abbcd |
| 189 | wide            | <i>jar</i>                 | <i>iniər</i>               | <i>jar</i>                 | <i>hiəṅ</i>               | <i>vah</i>                   | abcde |
| 190 | wife            | <i>tɟa</i>                 | <i>kont<sup>h</sup>aw</i>  | <i>lək</i>                 | <i>kə lək</i>             | <i>pənle</i>                 | abcde |

|     |                |                 |                |                 |                 |                    |       |
|-----|----------------|-----------------|----------------|-----------------|-----------------|--------------------|-------|
| 191 | wind           | <i>lʔer</i>     | <i>lʔier</i>   | <i>lʔer</i>     | <i>sroə</i>     | <i>kur</i>         | aaaab |
| 192 | wing           | <i>tʰapɲiaŋ</i> | <i>tʰapnir</i> | <i>tʰawaner</i> | <i>θəbəɲiar</i> | <i>peəŋ</i>        | aaaab |
| 193 | to wipe        | <i>ɲiad</i>     | <i>innat</i>   | <i>ɲiam</i>     | <i>ʃɲəʔ</i>     | <i>kʰut, kʰuit</i> | abcde |
| 194 | with           | <i>bad</i>      | <i>nam</i>     | <i>wa</i>       | <i>bəʔ</i>      | --                 | abca* |
| 195 | women          | <i>kintʰej</i>  | <i>rawkmaw</i> | <i>kɲtʰai</i>   | <i>hənθa</i>    | <i>ipən</i>        | abaac |
| 196 | woods, forest  | <i>kʰlaw</i>    | <i>ləwtəp</i>  | <i>kʰlo</i>     | <i>kərmia</i>   | <i>bri</i>         | abacd |
| 197 | worm           | <i>wieʔ</i>     | <i>wiak</i>    | <i>weiʔ</i>     | <i>khvi</i>     | <i>riər</i>        | aaaab |
| 198 | ye > you (pl.) | <i>pʰi</i>      | <i>pʰjaw</i>   | <i>pʰi</i>      | <i>hi</i>       | <i>pɛ</i>          | aaaaa |
| 199 | year           | <i>snem</i>     | <i>snim</i>    | <i>snem</i>     | <i>snem</i>     | <i>sənəm</i>       | aaaaa |
| 200 | yellow         | <i>stem</i>     | <i>sintim</i>  | <i>stəm</i>     | <i>tɲoə</i>     | <i>teŋ</i>         | aaabc |