

巴丹語言的分群與擬測

Subgrouping and Reconstruction  
of Batanic Languages

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Submitted to

The Graduate Program of

The Department of English Languages, Literature and Linguistics

Providence University

中華民國九十一年六月

June, 2002

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## Abstract

Tsuchida et al. (1987) collected 851 basic items of six Batanic languages: Imorod, Iraralay, Itbayat, Ivasay, Isamorong and Babuyan. Our study discussed four of those languages: Yami (based on Imorod), Itbayat, Ivatan (based on Isamorong) and Babuyan. We aim to subgroup these languages and to reconstruct proto-Batanic forms.

The WordSurv computer program was used. Phonostatistics and COMPASS helped test relationships among the languages. Subgrouping was based on results of WordSurv and phonemic changes. Reconstruction followed majority rule, which might be broken when it was more natural that A became B rather than vice versa. Results indicated Itbayat is the most conservative. Among the other three languages, Yami is separated from Ivatan and Babuyan. Twenty-three proto-Batanic phonemes were reconstructed: /p, t, k, q, b, d, g, m, n, N, s, h, l<sub>1</sub>, l<sub>2</sub>, L, r, R, w, y/ and /i, o, e, a/.

## 摘要

土田滋等人於1987年針對六個巴丹語言各蒐集了851個詞彙，這六個語言分別是Imorod、Iraralay、Itbayat、Ivasay、Isamorong以及Babuyan。本研究探討其中四個語言：Yami(以Imorod為主)、Itbayat、Ivatan(以Isamorong為主)和Babuyan，旨在釐清這四個語言彼此間的親疏遠近以及藉此四個語言進行古巴丹語的重擬。

這個研究使用的電腦程式是 WordSurv。該程式裡的「語音統計」和「COMPASS」有助於了解這些語言間的關係。WordSurv的結果和音素的演變可用於解釋這些語言的分群。古巴丹語的擬測採用「大多數規則」，當為顧及語言的本質時，可能打破此規則。

本研究結果指出 Itbayat 最存古，其他三個語言中，Ivatan 和 Babuyan 為一分群，Yami 單獨為另一分群。重擬的古巴丹語音素如下：/p, t, k, q, b, d, g, m, n, N, s, h, l<sub>1</sub>, l<sub>2</sub>, L, r, R, w, y, i, o, e, a/。

## Acknowledgements

I must offer my heartfelt thanks to my thesis advisor, Dr. Der-Hwa Victoria Rau, chair of Department of English Languages, Literature and Linguistics of Providence University, for her guidance and inspiration.

My warm thanks go to the members of my thesis committee, Dr. Elizabeth Zeitoun and Dr. Ying Cheng, for their thoughtful comments and valuable suggestions during my oral defense. I owe a special thank to Dr. Elizabeth Zeitoun. After the defense, she asked me to go to Academia Sinica to discuss my thesis with her. Her patient guidance and words of cheer encourage me a lot.

My gratitude is also extended to my best friend in graduate school, Adeline who encourages me along the way. To my family, I am indebted for their constant support over the years in my linguistics studies, especially to my dear husband, Wen-Yen.

# Chapter 1

## Introduction

### 1.1 Background Information

Tsuchida et al. (1987) list six Batanic languages: Imorod, Iraralay, Itbayat, Ivasay (Northern Ivatan), Isamorong (Southern Ivatan) and Babuyan. Imorod and Iraralay are both Yami, Ivasay and Isamorong both Ivatan. This thesis explores the word relationships of four languages: Yami (based on Imorod), Itbayat, Ivatan (based on Isamorong) and Babuyan.

Many scholars, such as Scheerer (1908), Asai (1936), Zorc (1977), McFarland (1980, 1983), Benedek (1987) and Tsuchida et al. (1987) perceive Yami as Batanic which represent the northernmost languages of the Philippines, not Formosan. Hence, whereas Lanyu (where Yami people live) belongs to the Republic of China politically, linguistically Yami is closer akin to the Batanic group.

Previous studies show Yami, Itbayat, Ivatan and Babuyan close to each other, yet neither tell which is more similar to which nor do they reconstruct proto-Batanic forms.

### 1.2 Historical Background of Batanic Languages

These four Batanic languages are spoken on islands between Taiwan and Luzon, from north to south: Lanyu (Yami), Itbayat (Itbayat), Batan (Ivatan) and Babuyan (Babuyan). In this section, we offer historical background and basic information

on these four Batanic languages.

### 1.2.1 Yami

Yami is spoken in Lanyu, which lies between Taiwan and the Philippine archipelago (Latitude 22°03' North, Longitude 121°32 East), about 49 nautical miles offshore from Taitung County. The Aboriginal Administration of Taiwan (1996) counts 3,863 Yami people; dialects of each village are mutually intelligible (Ho, 1990).

The island had various names before. In 1225 (China's Sung Dynasty), Chao Ju-Kua (趙汝适) used Tan-ma-yen (淡馬顏) to refer to Lanyu in his book, *Chu-fan-chih* (諸蕃誌). During the Ching Dynasty (1644-1911), both Hung-tou-yu (紅頭嶼) in Chinese and Kotosho in Japanese were mentioned. In the 1800s, Europeans called the island Botel Tobago; as of 1946, the Nationalist government changed the name to Orchid Island (English translation of Lanyu).

According to some Batanese legends, the people in Lanyu were called "dihami" (Yamada, 1966), meaning "people of/in the north." The name "Yami" originated from Dr. Ryuzo Torii's report in 1898. In Asai's (1936) study, natives did not call themselves Yami, but he still used the term when referring to people in Lanyu. From then on, Yami designated this ethnic group. In recent years, many Yami people have argued that tao ("man" or "person" in Yami) should replace "Yami" as their name, but "Yami" remains in official literature. In this thesis, we use "Yami" to stand for the people and/or their language.

On June 20-21, 1995, the Yami tribe promulgated "Autonomy Declaration of Tao," asking for a Yami parliament directly subordinate to the Executive Branch and for more self-rule. They demanded either to secede and join the Philippines or to

have a Republic of Lanyu, a dilemma not yet resolved. Lanyu is still part of Taitung County, lying between Taiwan and the Philippines like a bridge between them. The position of its language has become an important issue due to the location of the island where it is spoken.

### **1.2.2 Itbayat, Ivatan and Babuyan**

Itbayat and Ivatan are spoken in the Batanes Province, the smallest in the Philippines in terms of population, an area consisting of ten tiny islands and islets. Ivatan is the name of the people and their dialect. Babuyan speakers dwell on Babuyan Island.

In 1718, missionaries made an attempt to bring the Ivatan people who lived in Batanes Province under the Cross. Missionaries were sent from the Island of Calayan in the Babuyan island group to Batanes to urge its residents to resettle in the Babuyanes. Toward the end of Spanish rule 1783-1898, Batanes was made part of Cagayan. In 1909, however, American authorities organized it into an independent province. Because of its strategic location, the Batan Island group was one of the first points occupied by the invading Japanese imperial forces at the outbreak of the Pacific War. During the 1950s and 1960s the Philippine government encouraged Ivatan people there to resettle in other parts of the country. As a result of that program, some Ivatan communities were established in Mindanao.

The Batan Islands are located some 162 kilometers north of mainland Luzon. Among these, the largest and most economically important are Itbayat, Batan and Sabtang. The Babuyan Islands, about 40 to 60 kilometers north of the Luzon mainland, are part of Cagayan. The Babuyan Island is separated from Batanes by the Balintang Channel. Ohlson (1975) compares these languages and finds the

following results:

Lexical Similarity--

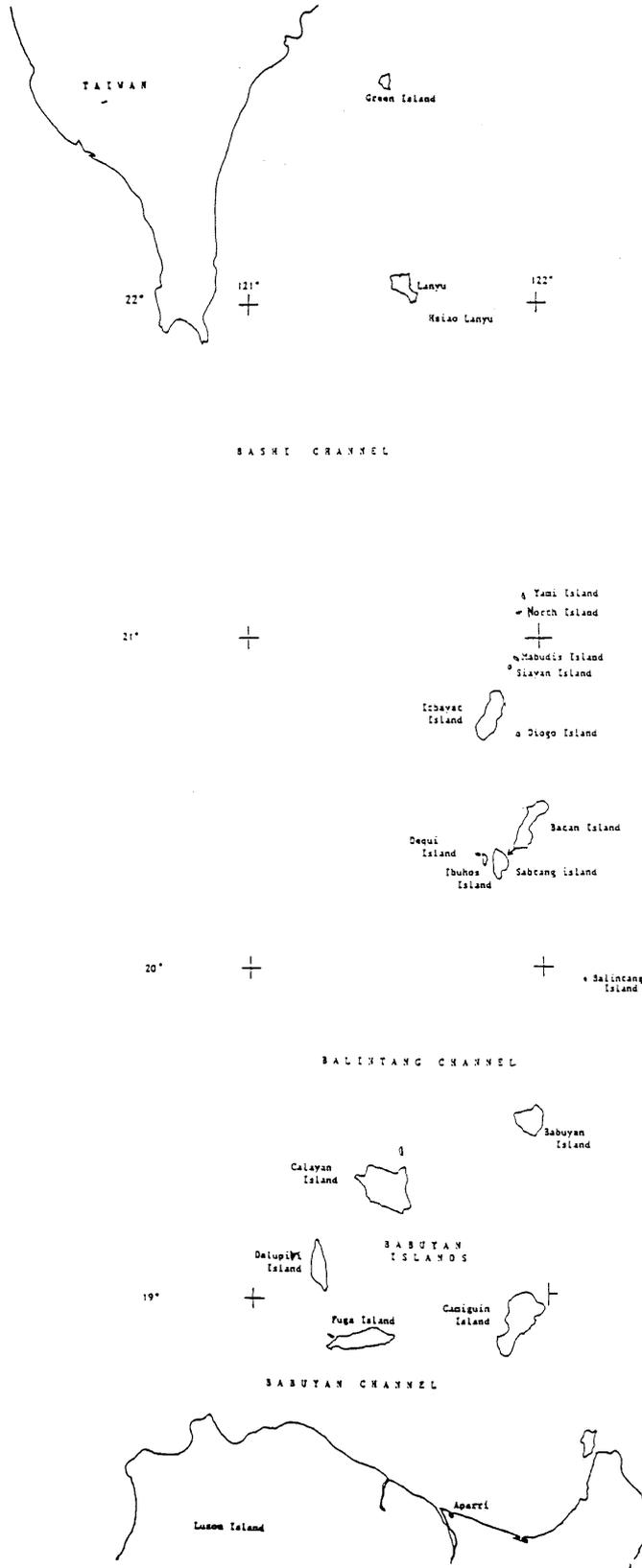
Babuyan

Itbayat 72%

Ivatan 74%

According to the numbers, the languages are similar to one another. The census lists a total of 16,977 speakers of the three languages (McFarland, 1980). For the geographic of each, see Map 1-1.





Map 1-1. Distribution of the Speakers (based on Tsuchida et al., 1987:i.)

## 1.3 Literature Review

In this section, we review previous studies on the subgrouping of the Batanic languages.

### 1.3.1 Previous Studies on Yami

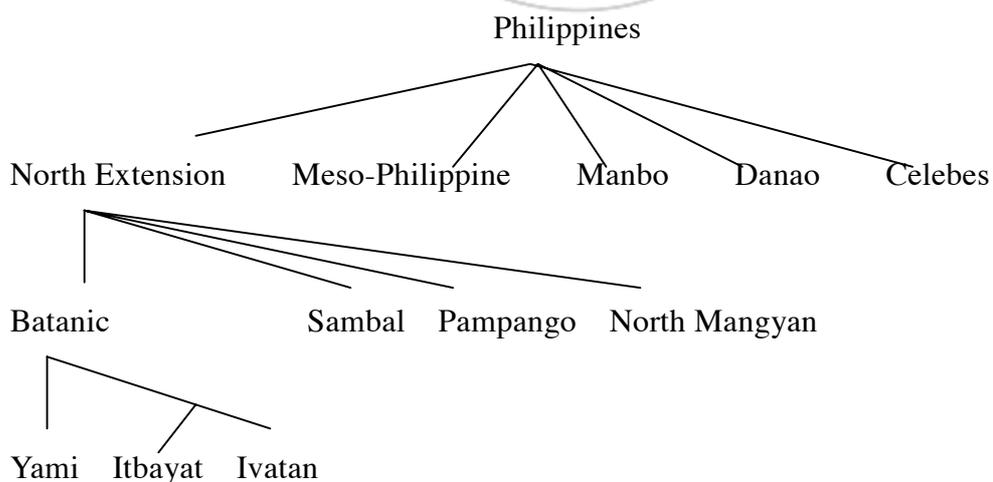
Many scholars perceive a close connection between Yami and the Batanic languages. Scheerer (1908) shows the latter's (Batanic languages) similarities to Yami. Asai (1936) not only describes Yami phonology, morphology and syntax but also compares vocabulary and affixes with Batanic languages to establish a link, concluding that Yami is a Batanic dialect.

Zorc (1977) offers a tree diagram showing genetic relationships of Philippine languages and lists Yami as a sister language of Itbayat and Ivatan.

Tree Diagram 1-1.

Zorc's Subgrouping of Southern Philippine Languages

(based on Zorc, 1977:34)



Itbayat and Ivatan are in one group, Yami the other. In this work we will try to test the validity of this.

McFarland (1980, 1983) suggests that the Batanic languages are closely akin to the Yami language of Taiwan. Benedek (1987) compares the grammar of Itbayat, Ivatan and Yami and finds that they are similar. Tsuchida et al. (1987) list Yami as a Batanic language.

### **1.3.2 Previous Studies on Itbayat, Ivatan and Babuyan**

Through lexical comparison, Scheerer (1908) demonstrates the Batanic languages are related to the Philippine languages, claiming that the Batanic languages show no special close relation with any Philippine language compared. McFarland (1983) delineates three principal groups among the Philippine languages: North, Meso- and South. The Batanic languages at present are not included in any of the three large groups and are hence considered as an isolated high-level group, a sister language of the three main Philippine groups of languages.

### **1.4 Goals of the Thesis**

This thesis aims to provide a comparative study of the Batanic languages and to reach the following goals:

1. To analyze the relationship among the four Batanic languages: Yami, Itbayat, Ivatan and Babuyan.
2. To reconstruct proto-Batanic forms.

To list the phonemic changes within the Batanic languages.

### **1.5 Research Questions**

To achieve the goals of this thesis, the following questions need answering:

1. How do Yami, Itbayat, Ivatan and Babuyan relate to one another? In this thesis, the relationship among these four is tested through results of lexical similarity.
2. What did proto-Batanic look like? Since the Batanic group comprises the four languages, proto-Batanic forms are reconstructed.
3. How did the four Batanic languages get their modern forms? Phonemic changes are provided, and it can aid subgrouping of Batanic languages.

## **1.6 Outline of the Thesis**

Chapter One introduces our aims, historic background and profiles of languages mentioned, along with literature review. Chapter Two concerns the data, theoretical framework and computer program used in the thesis. Chapter Three provides results of lexical similarity among said languages. Chapter Four reconstructs proto-Batanic forms. Chapter Five lists phonemic changes of the four Batanic languages. Chapter Six highlights significant points of this thesis.

# Chapter 2

## Methodology

### 2.0 Introduction

In order to clarify the relationships among Yami, Itbayat, Ivatan and Babuyan, we compare the basic lexicon.

### 2.1 Data

Tsuchida et al. (1987) collected 851 basic items on Imorod, Iraralay, Itbayat, Ivasay, Isamorong and Babuyan. Li (1997) reviewed the first five and made some emendation.

The 851 items are of the following categories (Tsuchida et al., 1987):

001-119: Body parts and sensations

120-24: Clothing

125-87: Food – smells and tastes

188-212: Dwelling and related subjects

213-34: Utensils and tools

235-61: Life, disease, death and daily activities

262-83: Kinship terms and related subjects

284-334: Motion and transportation

335-46: Language and communication

347-50: Games, recreational/ritual activities

351-60: Exchange— give and receive

361-479: Activities— mutual, non-mutual, general and mental

480-551: Natural world and related subjects

552-72: Plants

573-699: Animals, insects and related subjects

700-30: Perception— shapes, colors and sounds

731-757: Characteristics

758-787: Space and location

788-801: Time

802-21: Numbers and measures

822-30: Miscellaneous

831-51: Addenda

## **2.2 Phonostatic Approach**

Lexicostatistics is a technique for making quantitative comparisons between rates of change within sets of lexical items in hypothetically related languages, thus deducing length of time since the languages separated. Methods that rely on counting “shared words” assume existence and prior application of a means of ascertaining cognate forms. Such estimates of relatedness of languages clearly are only as good as means used for proving cognacy. Besides, claims Tu (1994), using only lexicostatistical methods fails to reveal how two languages share some unique sound changes.

The phonostatic function and COMPASS module of WordSurv computer program, both used in this study, implement a somewhat more sophisticated algorithm to compare frequencies of word segments in language pairs.

Grimes (1995) suggests that researchers use WordSurv and a wordlist of 200 to 500 lexical items. In this thesis, WordSurv is used; the wordlist comprises 851 lexical items covering vocabulary of ordinary life and touching nouns, verbs, adjective-like words, prepositions, adverbs and quantifiers. Hence conclusions suggested by phonostatic figures in this thesis are reliable.

## **2.3 WordSurv**

Sets of wordlists were entered into WordSurv computer program (Wimbish, 1989) for analysis. Once those wordlists are entered into the computer with the cognate decisions made by the author, the program yields the following types of information, which serves as a basis for answering research questions: (1) counting of shared vocabulary between wordlists, (2) phonostatic analysis to measure phonological divergence between languages and (3) COMPASS (Comparativist's Assistant) to measure the strength of proposed phonemic correspondences.

### **2.3.1 Shared Vocabulary Counting**

“Shared vocabulary counting” is a count of shared vocabulary (or cognates) between wordlists. A “shared” WordSurv function reckons the number of shared cognates as percentage of basic vocabulary. Four matrices associated with cognate counting emerge: Tally, N (total), Percent and Variance.

Percent matrix, which reports number of shared cognates as a percentage of basic vocabulary, is used in this thesis, figured as 100 times the corresponding value in Tally matrix (number of cognate forms) divided by the entry in N (total) matrix (number of words compared). For instance, if Tally matrix reports 25 shared

cognates between a pair of languages and N (total) matrix registers 100 words compared, then Percent matrix reports the percentage of shared cognates as 25%. The larger the number, the more similar the two languages.

### **2.3.2 Phonostatistic Analysis**

“Phonostatistic analysis” measures statistically the phonetic differences among cognate forms. A “degrees of difference”(DD) analysis is adopted for phonostatistic analysis in WordSurv; one drawback of this analysis is that it allows researchers to assign small values to potentially large sound changes. With results used for comparison, it is adequate for the purposes of our work. Phonostatistic analysis displays results in three matrices: Degrees, Correspondences and Ratio.

Ratio Matrix, average degree of difference per correspondence, is used in this thesis, figured as 100 times the degree value (summation of degrees of difference for all phonemic correspondences in all cognates) divided by the correspondence value (total number of correspondences in all cognate words). For instance, if the DD value is 125 and there are 189 correspondences in all cognate words between two wordlists, Ratio Matrix reports percentage of average degree of difference per correspondence as 66%. The lower the ratio, the more similar the two languages.

### **2.3.3 COMPASS Analysis**

“COMPASS” is an algorithm based on comparative method linguists have used to determine genetic relationship among languages and to reconstruct the proto-language. It measures degree of affiliation, using a distance metric based on degree of similarity between corresponding phonemes in diverse languages. The

COMPASS algorithm generates three tables: (1) phoneme correspondence, (2) item pairs list with cognate strength and (3) number of word pairs within given ranges of strength.

The strength index is a number ranging from +1.0 to -1.0, which represents the likelihood that a correspondence resulted from regular sound change. Strength value of +1.0 represents maximum confidence that it is regular, -1.0 that it is not. Values between extremes represent intermediate degrees of likelihood.

## **2.4 Data Entry**

Four sets (Yami, Itbayat, Ivatan and Babuyan) of wordlists were keyed into WordSurv. Shared vocabulary count, phonostatic analysis and COMPASS results aided understanding of relationship among languages. Results of COMPASS told phoneme-correspondences of the wordlists, helping to reconstruct proto-Batanic and list phonemic changes of the four Batanic languages.

## **2.5 Turning Numbers into Trees**

Percent and Ratio matrices are presented in this thesis. So as to detect relations among languages more clearly, tree diagrams from matrices are needed. For turning numbers into trees (Grimes, 1995), we merged the two most similar clusters. The total number of clusters is reduced, so that the matrix has one less row and one less column. Keep merging the two most similar clusters and list similarity values until only one row and one column are left.

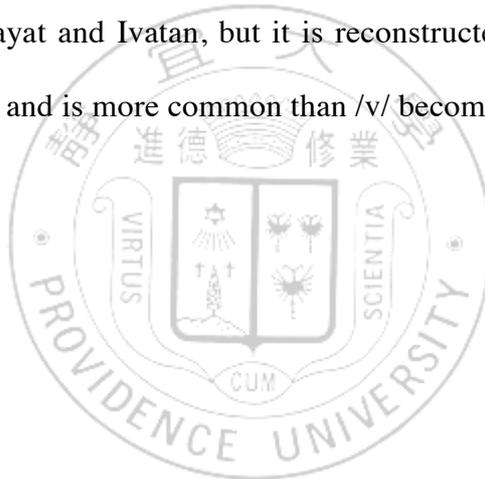
## 2.6 Subgrouping and Reconstruction

Subgrouping of Batanic languages is based on results of WordSurv. Phonemic changes of Batanic languages aid make subgrouping more accurate: two languages sharing one exclusive innovation are closer and may compose one branch.

Reconstruction of the proto-Batanic forms follows the rule of majority, which is broken when it is more natural that A became B, not vice versa. Take the item “to sneeze” for example.

PB	Yami	Itbayat	Ivatan	Babuyan
*banan	vanan	vaʔnan	vanan	banan

/v/ occurs in Yami, Itbayat and Ivatan, but it is reconstructed as \*b. Change of /b/ becoming /v/ is lenition and is more common than /v/ becomes /b/ which is fortition.



## Chapter 3

### Results of Lexical Similarity

#### 3.0 Introduction

This chapter discusses closeness between languages (Yami, Ithayat, Iyatan and Babuyan), according to results of lexical similarity provided by WordSurv.

#### 3.1 Phonemes of the Languages

Before delving into results of lexical similarity, let us see what phonemes each language has, as introduced below.

##### 3.1.1 Phonemes of Yami

Asai (1936) provides 20 sounds. Tsuchida et al. (1987); Li and Ho (1989); Tung and Rau (2000) also offer phoneme tables. For Asai (1936), there is no labio-dental fricative /v/ in Yami but a bilabial fricative /ɸ/ instead. He thinks there are two front vowels /i/ and /e/. Phoneme tables by Tsuchida et al. (1987) write the alveolar trill as /z/, retroflex fricative as /r/. Li and Ho (1989) suggest that these symbols can be exchanged in order to avoid confusion. However, Tung and Rau (2000) still use /z/ for alveolar trill and /r/ for retroflex fricative as orthography, explaining how Lanyu people habitually use /z/ for alveolar trill and /r/ for retroflex fricative. Since data in this thesis are from Tsuchida et al. (1987), we adopt their transcription. Our thesis lists nineteen consonants and four vowels. While we list no

voiceless labial fricative, most young generation of Yami pronounce the phoneme /v/ as /f/ (Li and Ho, 1989).

Yami phonemes are /p, t, k, b, d, g, m, n, N, v, s, h, r, c, j, l, z, w, y, i, o, e, a/ (Tsuchida et al., 1987). /p, t, k/ are unaspirated voiceless stops, /b, d, g/ unaspirated voiced stops. /d/ is a retroflex stop /ᵊ. Whether /ʔ/ exists or not is an issue. Asai (1936) does not list it as a sound, holding that it occurs only in word-final positions after a vowel—e.g., /koraʔ/ “cat”. Tsuchida et al. (1987) do not list it as a phoneme; according to Li and Ho (1989) and Li (1992), occurrence is unpredictable. It appears in positions such as /mianʔanan/ “to count on”. Tung and Rau (2000) also list it as a phoneme. Since data of this thesis are from Tsuchida et al. (1987), we adopt their view. /m, n, N/ are nasals; /N/, which Tsuchida et al. (1987) transcribe as /ŋ/, is a velar nasal /ŋ/. /v/ is a voiced labiodental fricative. Yami lacks voiceless labiodental fricative. /s/ is a voiceless retroflex fricative /ʂ/, /h/ a voiced uvular fricative /ʁ/. /r/ is a voiced retroflex fricative /ɻ/, /l/ a lateral fricative /ɭ/. /c/ and /j/ are palatal affricates /tʃ/ and /dʒ/. /z/ is an alveolar trill, /w/ a voiced labial glide, /y/ a voiced palatal glide. Vowels in Yami are /i, o, e, a/. Tung and Rau (2000) list /o/ as /u/. /e/ is a schwa /ə/.

### 3.1.2 Phonemes of Itbayat

Phonemes include /p, t, k, ʔ, b, d, g, m, n, M, N, s, h, v, x, c, j, l, r, w, y, i, o, e, a/ (Tsuchida et al., 1987). /p, t, k/ are unaspirated voiceless, /b, d, g/ unaspirated voiced stops. /ʔ/ is a glottal stop /ʔ/, transcribed by Tsuchida et al. (1987) as /ʔ/. /m, n, M, N/ are nasals. /M/, listed by Tsuchida et al. (1987) as /ny/ is a palatal nasal /ɲ/; /N/, written by Tsuchida et al. (1987) as /ŋ/, a velar nasal /ŋ/. /s/ is a voiceless alveolar fricative. /h/, unlike in Yami, is a glottal fricative. /v/ is a voiced labiodental,

/x/ a voiced uvular fricative /<sup>-</sup>/. /c/ and /j/ are palatal affricates /t<sup>ʃ</sup>/ and /d<sup>ʃ</sup>/. /l/ is a voiced lateral, /r/ an alveolar trill, /w/ a voiced labial and /y/ a voiced palatal glide. Vowels in Itabayat are /i, o, e, a/. /i/ and /o/, are high vowels and /e/ is a schwa /<sup>ə</sup>/.

### 3.1.3 Phonemes of Ivatan

Phonemes include /p, t, k, ʔ, b, d, g, m, n, M, N, s, h, v, c, j, l, r, w, y, i, o, e, a/ (Tsuchida et al., 1987). /p, t, k/ are unaspirated voiceless, /b, d, g/ unaspirated voiced stops. /ʔ/ is a glottal stop /<sup>ʔ</sup>/. /m, n, M, N/ are nasals: /M/ a palatal /<sup>ɲ</sup>/, /N/ a velar /<sup>ŋ</sup>/. /s/ is a voiceless alveolar fricative. /h/, like in Itabayat, is a glottal fricative. /v/ is a voiced labiodental fricative. /c/ and /j/ are palatal affricates /t<sup>ʃ</sup>/ and /d<sup>ʃ</sup>/. /l/ is a voiced lateral, /r/ an alveolar trill, /w/ a voiced labial and /y/ a voiced palatal glide. Vowels in Ivatan are /i, o, e, a/. /i/ and /o/ are high vowels, /e/ a schwa /<sup>ə</sup>/.

### 3.1.4 Phonemes of Babuyan

Phonemes are /p, t, k, b, d, g, m, n, M, N, s, h, c, j, l, r, w, y, i, o, e, a/ (Tsuchida et al., 1987). Stops are /p, t, k, b, d, g/. The first three are unaspirated voiceless, /b, d, g/ unaspirated voiced stops. /m, n, M, N/ are nasals. /M/ is a palatal /<sup>ɲ</sup>/. /N/ a velar /<sup>ŋ</sup>/. Fricatives are /s/ and /h/, /s/ a voiceless alveolar and /h/ a glottal. /c/ and /j/ are palatal affricates /t<sup>ʃ</sup>/ and /d<sup>ʃ</sup>/. /l/ a voiced lateral, /r/ an alveolar trill, /w/ a voiced labial glide and /y/ a voiced palatal glide. Vowels in Babuyan are /i, o, e, a/. /i/ and /o/ are high vowels, /e/ a schwa /<sup>ə</sup>/.

Comparing these languages: Yami does not have /M/ as a phoneme, /h/ in Yami has same phonetic value as /x/ in Itabayat. There is no /x/ in Ivatan and no /v/, /ʔ/ and

/x/ in Babuyan. In Chapter Two, we state that WordSurv depicts three types of information: shared vocabulary counting, phonostatistics and COMPASS. These results are discussed in the following sections.

### 3.2 Shared Vocabulary Counting

Table 3-1 is generated by using a “shared” function of WordSurv to calculate similarity percentages among languages—i.e., 100 times the corresponding value in Tally matrix (number of cognate forms) divided by the entry in N (total) matrix (number of words compared). Take Yami and Itbayat, for example: the Tally matrix reports 552 shared cognates; N (total) matrix reports 847 words compared.

Tally:

Yami	Itbayat	Ivatan	Babuyan
847			
552	851		
552	610	850	
449	502	543	850

N (total) :

Yami	Itbayat	Ivatan	Babuyan
847			
847	851		
847	850	850	
847	850	850	850

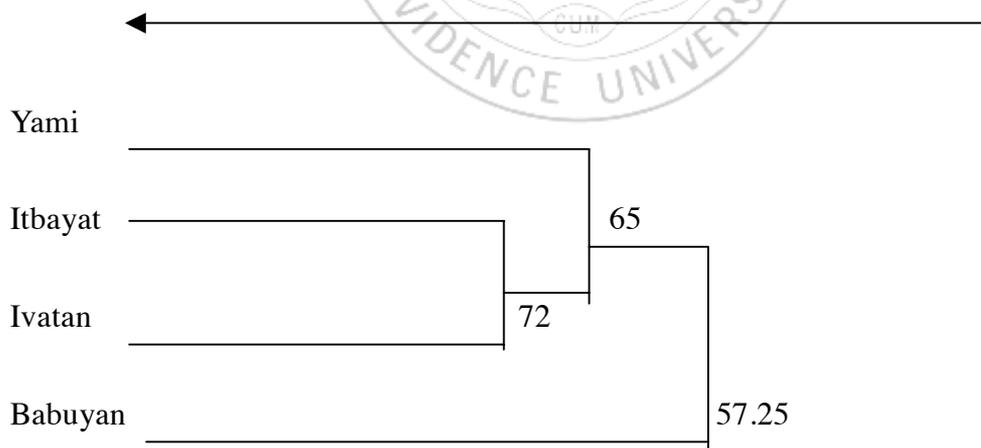
Percent matrix records the percentage of shared cognates for Yami with Itbayat as 65%  $【100 \times (552 \div 847)】$ . The larger the number is, the more similar the two languages are.

Table 3-1. Similarity Percentages among the Languages

YAMI	ITBAYAT	IVATAN	BABUYAN	
100				Yami
65	100			Itbayat
65	72	100		Ivatan
53	59	64	100	Babuyan

Since a larger number means greater similarity between languages, Itbayat and Ivatan are most similar. We merge Itbayat with Ivatan, listing the similarity value (72). The size of the new cluster is half the sum of the sizes of the clusters forming it. The value of Yami to Itbayat & Ivatan is  $(65+65)/2=65$ , Babuyan to Itbayat & Ivatan  $(59+64)/2=65$ , Yami to Babuyan still 53. Since the biggest number is 65 now, merge Yami with Itbayat & Ivatan. Similarity values are points where languages connect. This tree diagram derives from Table 3-1.

Tree Diagram 3-1. Distance among the Languages



Itbayat and Ivatan are closest relatives; the value they link with each other is 72. Yami joins them at 65. All four meet at the value of 57.25.

Shared vocabulary counting is inadequate to reveal that two languages share some exclusive sound changes (Tu, 1994), so it is not enough to tell the relationship

among languages. Phonostatistics gives us more information.

### 3.3 Phonostatistics

Table 3-2 is concocted by using the “shared” function of WordSurv to obtain difference percentages among languages: 100 times the degree value (summation of degrees of difference for all phonemic correspondences in cognate words) divided by correspondence value (total correspondences in all cognates). Again, take Yami and Itbayat for instance. Degree matrix reports summation of degrees of difference for all phonemic correspondences in cognates is 546; correspondence matrix reports total correspondences in all cognates as 2918 words.

Degree:

Yami	Itbayat	Ivatan	Babuyan
0			
546	0		
433	528	0	
398	518	220	0

Correspondence:

Yami	Itbayat	Ivatan	Babuyan
4523			
2918	4308		
2878	3198	4284	
2290	2570	2687	4106

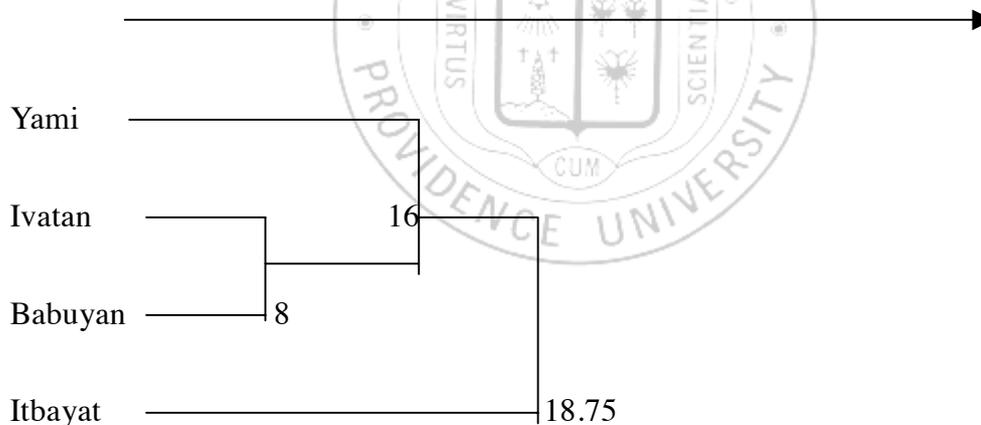
Ratio matrix thus reports average degrees of difference per correspondence for Yami with Itbayat as 19%  $【 100 \times (546 \div 2918) 】$ . The lower the number, the less different the languages.

Table 3-2. Difference Percentages among Languages

YAMI	ITBAYAT	IVATAN	BABUYAN	
0				Yami
19	0			Itbayat
15	17	0		Ivatan
17	20	8	0	Babuyan

A tree diagram identifies connections among languages more clearly. As with Tree Diagram 3-1, keep merging the two most similar clusters (remembering that the lower the number, the less different the languages) and list similarity values until only one row and one column are left. Similarity values are points where languages connect. The following tree diagram is drawn from Table 3-2.

Tree Diagram 3-2. Distance among the Languages



Ivatan and Babuyan are closest relatives; their link value is 8. Yami joins them at 16. All four meet at 18.75. The diagram differs from Tree Diagram 3-1, which showed Ivatan closer to Itbayat. The former shares more cognates with Itbayat (610) than Babuyan (543), but summation of degrees of difference for cognate correspondences is only 220 for Ivatan and Babuyan but 528 for Ivatan and Itbayat.

### 3.4 COMPASS Analysis

COMPASS do not measures phonetic similarity but frequency of correspondences. When strength for a word pair is positive and high, we can assume they are cognate with justified confidence. When strength is negative, there is insufficient evidence to justify the claim that the words are cognate (Wimbish, 1989).

Table 3-3. Comparison of Regular Correspondence among the Languages

<b>STRENGTH</b>	<b>Yam&amp;Itb</b>	<b>Yam&amp;Ivt</b>	<b>Yam&amp;Bab</b>	<b>Itb&amp;Ivt</b>	<b>Itb&amp;Bab</b>	<b>Ivt&amp;Bab</b>
<b>S=1.00</b>	340	344	249	409	332	407
<b>0.75 ≤ S &lt; 1.00</b>	156	151	133	143	101	70
<b>0.50 ≤ S &lt; 0.75</b>	45	47	51	51	52	44
<b>0.25 ≤ S &lt; 0.50</b>	7	8	13	5	12	10
<b>0.00 ≤ S &lt; 0.25</b>	3	1	1	2	0	3
<b>total word pairs</b>	552	552	449	610	497	534
<b>%</b>	62	62	55	67	67	76

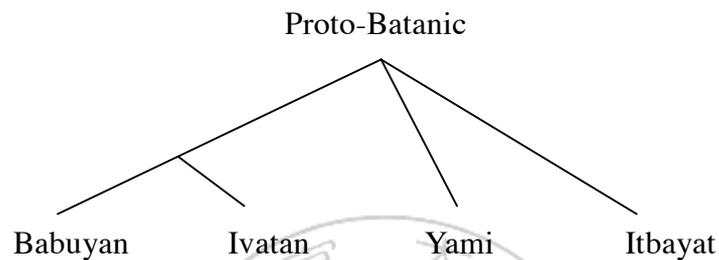
A strength value of +1.00 signifies maximum confidence that a correspondence is regular, -1.00 that it is not; values between two extremes represent intermediate degrees of likelihood. With languages so close to one another, no word pairs have a strength value less than 0. Percentage is calculated as 100 times the number of word pairs whose strength equals 1.00 divided by total word pairs. Yami and Itbayat, for example, have 340 word pairs with strength 1.00 against a total of 552 word pairs—i.e., 62%  $[100 \times (340 \div 552)]$ . According to percentages tabulated, the highest is 76%. Ivatan corresponds more regularly to Babuayn: at least 76% of the word pairs of Ivatan and Babuyan reveal orderly consistency. Table 3-3 responds to Tree Diagram 3-2: both group Ivatan with Babuyan. Phonostatistics and COMPASS Analysis both

test corresponding phonemes, so it is certain that they display the same result.

### 3.5 Summary

From §3.3 and 3.4, we know Ivatan and Babuyan are closest. When drawing Tree Diagram 3-3, we put them under one branch; Yami and Itbayat, the other two.

Tree Diagram 3-3. Possible Subgrouping of Batanic Languages



This tree diagram is very different from Zorc's (1977) where Itbayat and Ivatan are shown to be closer to each other. We shall list phonemic changes of the four languages and see if any shared exclusive sound changes exist. Then, we can test the truth of Tree Diagram 3-3.

## Chapter 4

### Reconstruction of Proto-Batanic

#### 4.0 Introduction

This chapter reconstructs proto-Batanic. First we explain how the proto-language is pieced together, then how proto-Batanic phonemes correspond in the four modern (daughter) languages: Yami, Itbayat, Ivatan and Babuyan. By observing cognates of the daughter languages and applying the comparative method, the proto-/parent language takes shape. With such a method, forms thought cognates are contrasted to detect regular sound correspondences among languages in question. The COMPASS of WordSurv reveals similar phonemes in these languages.

#### 4.1 Reconstruction of Proto-Batanic Consonants

We assume proto-Batanic had nineteen consonants and four vowels: /p, t, k, q, b, d, g, m, n, N, s, h, l<sub>1</sub>, l<sub>2</sub>, L, r, R, w, y/ and /i, o, e, a/, respectively. Below we reconstruct the former.

##### 4.1.1 Reconstruct PB \*p, \*b, \*t, \*d, \*k, \*g and \*q

In the following word list phonemes occur word-initially, -medially and -finally. Three-hyphens indicate it is not a cognate word with others, whereas zero means Tsuchida et al. (1987) do not list it in their work.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*p	*polin	poliN	poliM	podin	podin	dust in one's eye
	*pisNi	pisNi	pisMi	pisMi	pisMi	cheek
	*posed	pesed	posed	posed	posed	navel
	*Nipen	Nepen	Mipen	Mipen	Mipen	tooth
	*tipolo	cipoho	atipoxo	cipoho	cipoho	plant spp. (breadfruit)
	*kopLad	ko_zad	ko_lad	ko_lad	koplat	scar
	*taper	tapez	taper	tappel	tappel	fish spp. (butterfly fish)
	*ipet	---	ipet	ipet	ippet	intestinal worm
	*opa	oppa	opa	opa	opa	hen
	*sepsep	sepsep	sepsep	sepsep	sepsep	to suck
	*dokop	rokop	rokop	rokop	rokop	rotten (of log)
	*atep	atep	atep	atep	atep	roof

Proto-Batanic \*p remained largely the same in modern Yami, Itbayat, Ivatan and Babuyan. It was deleted when following a consonant ( *scar* ) in Yami, Itbayat and Ivatan. At times p-gemination occurred ( *butterfly fish*, *intestinal worm* and *hen* ) in Ivatan, Babuyan and Yami.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*b	*bedbed	bedbed	vedved	bedbed	bedbed	to bind into a

					bundle
*botbot	botbot	votbot	botbot	botbot	to pull out
*baka	baka	baaka	ba:ka	ba:ka	cattle, cow
*bohok	ovok	vohok	vo:ok	bo:bo:h	hair of head
*banan	vanan	va?nan	vanan	banan	to sneeze
*bolek	velek	volek	vodek	bodek	belly
*bobon	bobo	vovon	vovon	---	to bury
<hr/>					
*ablit	ablit	ablit	abdit	0	clavicle, collar
					bone
*abtes	abtes	abtes	abtes	abtes	to bear down, exert oneself
*absoy	absoy	absoy	absoy	absoy	full stomach
*oban	ovan	ovan	ovan	obban	hair (gray)
*obi	ovi	ovi	ovi	obi	plant spp. (yam)
*taba	tava	tava	tava	taba	fat, grease
<hr/>					
*takeb	takeb	takeb	takeb	takeb	lower abdomen
*alob	aob	a?xob	ahob	ahob	smoke
*orib	ozib	orib	olib	olib	to hide oneself

Proto-Batanic \*b might become /v/ in word-initial positions (*to bind into a bundle, to pull out, hair of head, to sneeze, belly and to bury*) or intervocalic positions (*hair, yam and fat/ grease*) in Yami, Itbayat and Ivatan, but stayed the same in Babuyan.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
---------	----	------	---------	--------	---------	----------

*t	*taliNa	taliNa	taliMa	tadiMa	tajiMa	ear
	*tagalah	tagala	tagalah	tagada	0	to open one's mouth unintentionally
	*tomid	tomid	tomid	tomid	tomid	chin
	*tileb	tileb	---	cideb	---	to look down (from higher)
	*tiNah	ciNa	tiMah	tiMa	tiMa	food particles between teeth
	*timoy	cimoy	timoy	cimoy	cimoy	rain
	*tiraw	ciraw	tiraw	ci:raw	0	fish spp. (dottyback)
	*tilo	cilo	tilo	cido	cido	earwax
	*lotek	etek	hotek	otek	o:tek	brain
	*mata	mata	mata	mata	mata	eye
	*bitoka	vitoka	vitoka	vitoka	bitoka	stomach
	*agtin	agcin	agtin	agcin	agcin	to descend
	*agtin	agcin	agtin	agtiM	agcin	to unload, put down
	*deket	reket	reket	reket	reket	to close one's eyes
	*kimit	cimit	cimit	cimit	kimit	to blink one's eyes
	*ablit	ablit	ablit	abdit	0	clavicle, collar bone

Proto-Batanic \*t might become /c/ when preceding the vowel /i/ (*to look down, rain, food particles between teeth, rain, dottyback, earwax, to descend and to unload/put down*) in one or all of the four modern languages.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*d	*demdem	---	remdem	demdem	demdem	cloud
	*demdem	demdem	remdem	demdem	---	cloudy
	*deket	reket	reket	reket	reket	to close one's eyes
	*daRa	rالا	raya	raya	raya	blood
	*dayem	rayom	rayem	rayem	rayem	needle
<hr/>						
	*motdel	motdeh	motdex	motdeh	motdeh	child
	*todok	---	torok	---	todok	to stab, pierce
	*nadeN	nadeN	nareN	nareN	nareN	to lean against
<hr/>						
	*tomid	tomid	tomid	tomid	tomid	chin
	*posed	pesed	posed	posed	posed	navel
	*kopLad	kozad	kolad	kolad	koplat	scar

Proto-Batanic \*d might become /r/ in word-initial (*cloud, cloudy, to close one's eyes, blood and needles*) and intervocalic positions (*to stab/ pierce or to lean against*) in Yami, Itbayat, Ivatan and Babuyan. In Babuyan \*d was devoiced in *scar*.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*k	*kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	molar tooth
	*kakamay	kakamay	kamay	kakamay	kakamay	finger, toe
		no lima				

*kokoh	koko	kokoh	koko	koko	fingernail, toenail
*kasi	kasi	<u>asi</u>	kasiyasi	<u>asi</u>	pitiful
*deket	reket	reket	reket	reket	to close one's eyes
*kimit	<u>cimit</u>	<u>cimit</u>	<u>cimit</u>	kimit	to blink one's eyes
*kikimit	<u>cicimit</u>	<u>cicimit</u>	<u>cicimit</u>	---	eyelash
toktok	toktok	---	<u>to:_tok</u>	---	hair whirl
*lotek	etek	hotek	otek	o:tek	brain
*bohok	ovok	vohok	vo:ok	<u>bo:bo:h</u>	hair of head
*bolek	velek	volek	vodek	bodek	belly

Proto-Batanic \*k stayed mostly the same in modern Yami, Itbayat, Ivatan and Babuyan. In *to blink one's eyes* and *eyelash*, it was palatalized in Yami, Itbayat and Ivatan. Sometimes it was deleted in Itbayat, Ivatan and Babuyan (*pitiful*, *hair whirl* and *hair of head*) .

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*g	*goraN	golaN	goraN	golaN	golaN	skinny, thin
	*goyon	goyon	goyon	0	goyon	to shake as a tree
	*gotor	<u>kotoz</u>	gotor	gotol	---	chickenpox
	*tagalah	tagala	tagalah	tagada	0	to open one's mouth unintentionally

*ragaw	zagaw	ragaw	lagaw	lagaw	neck
*tagraN	tagzaN	tagraN	taglaN	taglaN	ribs
*ogi	o <i>ji</i>	---	o <i>ji</i>	o <i>ji</i>	stern
*tanigi	tani <i>ji</i>	tani <i>ji</i>	tani <i>ji</i>	0	fish spp. (Spanish mackerel)
*getgetan	ketketan	getgetan	getgetan	0	fish spp. (rabbitfish)
<hr/>					
*tawag	tawag	tawag	tawag	tawag	to call
*rasag	zasag	ra?rag	lasag	lasag	to step on
*alipogpog	alipogpog	alipogpog	adipogpog	alipogpog	whirlwind, tornado

Proto-Batanic \*g remained the same in most cases. In *chickenpox* and *rabbitfish*, \*g was devoiced in Yami. In *stern* and *Spanish mackerel*, it was palatalized in modern languages.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*q	*bitoqen	---	vito_en	vitohe <i>n</i>	bitohe <i>n</i>	star
	*toqed	tehe <i>d</i>	to_e <i>d</i>	tohe <i>d</i>	tohe <i>d</i>	stump
	*baqen	va_e <i>N</i>	va_e <i>N</i>	vahe <i>N</i>	abhe <i>N</i>	black
	*qoLi	_o <i>zi</i>	---	holi	holi	left
	*raqet	rahe <i>t</i>	ra_e <i>t</i>	rahe <i>t</i>	rahe <i>t</i>	bad

Proto-Batanic \*q was deleted in Itbayat but became h in Yami ( not in *black* and *left* ) , Ivatan and Babuyan.

#### 4.1.2 Reconstruct PB \*m, \*n and \*N

In the list below these phonemes occur word-initially, -medially and –finally.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*m	*mata	mata	mata	mata	mata	eye
	*mama	mama	mama	mama	mama	to chew betel nut
	*malakay	mehakay	maxakay	mahakay	mahakay	man, male
	*kimit	cimit	cimit	cimit	kimit	to blink one's eyes
	*kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	molar tooth
	*tomid	tomid	tomid	tomid	tomid	chin
	*dayem	rayom	rayem	rayem	rayem	needle
	*danom	ranom	ranom	ranom	ranom	water
	*inom	inom	inom	inom	inom	drink

Proto-Batanic \*m remained the same in modern Yami, Itbayat, Ivatan and Babuyan.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*n	*kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	molar tooth
	*hinawa	ininawa	hinawa	inawa	---	to breathe
	*banan	vanan	va?nan	vanan	banan	to sneeze
	*oned	oNed	oned	oned	oned	young/tender pith of plant
	*tiNahroy	ciNarey	tinaroy	cinarey	cinaley	fish spp.

( snapper )

*agtin	agcin	agtin	agtiM	agcin	to unload, put down
*oban	ovan	ovan	ovan	obban	hair (gray)
*Nipen	Nepen	Mipen	Mipen	Mipen	tooth
*polin	poliN	poliM	podin	podin	dust in one's eye
*orin	oriN	---	orin	orin	soot

Proto-Batanic \*n remained the same in Babuyan but might become /N/ (velar nasal) in Yami (*young/tender pith of plant, snapper, dust in one's eye, and soot*), /M/ (palatal nasal) in Itbayat (*dust in one's eye*) or Ivatan (*to unload, put down and animal*).

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*N	*Nares	Nares	Nares	Nares	Nares	gums, palate
	*Naraw	Naraw no soso	Naraw	Naraw no soso	Naraw no soso	nipple
	*Nina	Nina	Mina	---	Ni:na	expensive
	*Nipen	Nepen	Mipen	Mipen	Mipen	tooth
	*kaboNen	kaboboNen	kabbooNen	kabo:Nen	kaboNen	bladder
	*taNara	taNara	---	taNara	---	to look upward
	*katiNlan	---	kattiMxan	katiNhan	katiNhan	waist
	*hiNen	iNen	hiMen	iMen	iMen	painful
	*tiNah	ciNa	tiMah	tiMa	tiMa	food particles

					between teeth
*saNi	saNi	saMi	saMi	saMi	jaw
*pisNi	pisNi	pisMi	pisMi	pisMi	cheek
*sooN	osoN	sooN	so:oN	soN	canine tooth, tusk
*tagraN	tagzaN	tagraN	taglaN	taglaN	ribs
*ataN	ataN	ataN	ataN	ataN	buttocks
*moyiN	moyiN	moyiM	---	moyin	face
*pariN	pareN	pariM	pariM	pariM	to make, do

Proto-Batanic \*N remained the same in Yami, becoming /M/ when juxtaposed with vowel /i/ in Itbayat. It also became /M/ in Ivatan and Babuyan when contiguous to vowel /i/ but not as predictable as in Itbayat (*expensive, waist and face*).

#### 4.1.3 Reconstruct PB \*s and \*h

In the list below these phonemes occur word-initially, -medially and -finally.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*s	*sooN	osoN	sooN	so:oN	soN	canine tooth, tusk
	*saNi	saNi	saMi	saMi	saMi	jaw
	*sigi	cigi	isigi	sigi	sigi	to sieve, sift
	*kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	kamansasaNa	molar tooth
	*asdo	asdo	asdo	asdo	asdo	to hiccup
	*pisNi	pisNi	pisMi	pisMi	pisMi	cheek
	*Nares	Nares	Nares	Nares	Nares	gums, palate

*abtes	abtes	abtes	abtes	abtes	abtes	to bear down, exert oneself
*onas	onas	onas	onas	onas	onas	sugarcane
*bimas	---	viiMas	vi:ma	0	0	fish spp. (squirrelfish)

Proto-Batanic \*s stayed the same in both Itbayat and Babuyan. For *to sieve, sift*, \*s became /c/ in Yami. For *squirrelfish*, \*s was deleted in Ivatan. The above two examples are the only two where \*s did not remain the same in modern languages.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*h	*lotek	etek	hotek	otek	o:tek	brain
*hinawa		ininawa	hinawa	inawa	---	to breathe
*haNot		---	haNot	aNot	aNot	to smell, perceive odor
*bohok		ov_ok	vohok	vo:_ok	bo:bo:h	hair of head
*loho		---	xoho	ho:_o	hoho	tears
*mohdan		momo_dan	mohdan	momo_dan	momo_dan	nose
*bibih		---	vivih	vivi_	---	mouth
*tagalah		tagala_	tagalah	tagada_	0	to open one's mouth unintentionally
*tiNah		ciNa_	tiMah	tiMa_	tiMa_	food particles between teeth

Proto-Austronesian \*S became \*h in proto--Malayo-Polynesian and proto-Batanic. It stayed the same in Itbayat but sometimes was lost in Yami, Ivatan

and Babuyan.

#### 4.1.4 Reconstruct PB \*l<sub>1</sub>, l<sub>2</sub>, \*L, \*r and \*R

In the list below these phonemes occur word-initially, -medially and -finally.

Phoneme	PB	Yami	Itabayat	Ivatan	Babuyan	Glossary
*l <sub>1</sub>	*litalit	litalit	litalit	---	---	vine (general)
	*laylay	leylay	laylay	laylay	laylay	to hang, suspend
	*balag	valag	valag	0	0	house
	*asleb	asleb	asleb	---	---	to burn
	*baNlo	---	---	baN_o	baNlo	fragrant
	*adlo	aglo	adlo	ad_o	ad_o	to spill, pour out

Proto-Batanic \*l<sub>1</sub> stayed the same in most cases. It was lost in Ivatan and Babuyan (*fragrant* or *to spill, pour out*).

Phoneme	PB	Yami	Itabayat	Ivatan	Babuyan	Glossary
*l <sub>2</sub>	*loho	---	xoho	ho:o	hoho	tears
	*laneN	aneN	xaneN	haneN	haneN	oil
	*olo	oho	oxo	oho	oho	head
	*telnan	tetehnan	texnan	tehnán	tehnán	throat
	*katiNlan	---	kattiMxan	katiNhan	katiNhan	waist
	*potol	---	potox	potohan	---	nape of

					neck
*binibel	vineveh	vinivex	viMiveh	binibeh	plant spp. ( banana )
*bolbol	bo_boh	voxbox	boo_boh	bo:_boh	hair (body)
*botol	voto_	votox	voto_	---	testicle

We reconstructed proto-Batanic \*l<sub>2</sub> because *head* in ptoto-Malayo-Polynesian is \*qulu ( Blust, 1984 ) . Proto-Batanic \*l<sub>2</sub> became /x/ in Itbayat, became /h/ or got deleted in Yami, Ivatan and Babuyan ( *oil*, or *body hair* ) .

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*L	*LiNaw	ziNaw	liMaw	li:Maw	0	fish spp. ( bigeye )
	*Liyod	ziyod	liod	liyod	liyod	carried away by current
	*LoLon	zozon	lolon	lolon	---	grasshopper
	*maLowLaw	mazowzaw	malawlaw	malawlaw	0	fish spp. (goatfish)
	*kopLad	kozad	kolad	kolad	koplat	scar
	*soLib	sozib	solib	solib	---	bright, intelligent

Proto-Batanic \*L became /z/ in Yami, /l/ in Itbayat, Ivatan and Babuyan.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*r	*ragpit	zagpit	ragpit	---	0	to get on a

					stone, etc.
*rerNaN	ze_NaN	re_NaN	rerNaN	rerNaN	bright, light
*Nares	Nares	Nares	Nares	Nares	gums, palate
*Naraw	Naraw no	Naraw	Naraw no	Naraw no	nipple
	soso		soso	soso	
*sorod	sorod	sorod	sorod	sorod	comb
*paraw	pazaw	paraw	payaw	papa:raw	hoarse
*ragaw	zagaw	ragaw	lagaw	lagaw	neck
*tagraN	tagzaN	tagraN	taglaN	taglaN	ribs

Proto-Batanic \*r stayed the same in most cases. In Yami, it might become /z/ (to get on a stone, etc., bright/light hoarse, neck and ribs). It was lost in Itbayat in bright/light. In Ivatan and Babuyan, \*r might become /l/ (neck and ribs). hoarse was the lone case where \*r became /y/ in Ivatan.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*R	*Rayoh	layo	yayoh	yayo	yayo	to run
	*daRa	rala	raya	raya	raya	blood
	*kamaRa	kamala	kamaya	kamaya	kamaya	plant spp. (Diospyros discolor)
	*inmaRa	inmala	hinmaya	inmaya	inmaya	embers, live charcoal

We reconstructed proto-Batanic \*R because *blood* in ptoto-Malayo-Polynesian is \*(d)aRaQ (Blust, 1984) . Proto-Batanic \*R became /l/ in Yami but /y/ in Itbayat, Ivatan and Babuyan.

#### 4.1.5 Reconstruct PB \*w and \*y

In the list below these phonemes occur word-initially, -medially and -finally.

Phonemes	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*w	*wakay	wakay	wakay	wakay	wakay	plant spp. (sweet potato)
	*towor	towoz	towor	towol	towol	heart (anat.)
	*bowa	avwa	vwa	vowa	bowa	plant spp. (areca nut)
	*ihwaN	iwaN	ihwaN	iwaN	iwaN	to open
	*paraw	pazaw	paraw	payaw	papa:raw	hoarse
	*ragaw	zagaw	ragaw	lagaw	lagaw	neck
	*boyaw	voyaw	voyaw	voyaw	boyaw	to drive away

Proto-Batanic \*w remained the same in Yami, Itbayat, Ivatan and Babuyan..

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*y	*yamit	yamit	yamit	yamit	yamit	pubic hair
	*yakay	yakay	yakay	yakay	yakay	to wake up
	*tinayi	cinayi	tinayi	cinayi	cinayi	intestines
	*dayem	rayom	rayem	rayem	rayem	needle
	*dayit	rayit	rayit	rayit	rayit	to sew
	*pariyok	pazi_ok	pari_o k	paliyok	paliyok	wok (Chinese pan)

*biyoda	---	bi_oda	biyoda	---	widow
*diyos	ri_es	ri_os	riyes	riyos	to bathe oneself
*lihyam	li_am	lih_am	diyam	0	to steal
*kakamay	kakamay	kamay	kakamay	kakamay	finger, toe
	no lima				
*atay	atay	atay	atay	atayi	liver
*pilay	pilay	pidoy	piday	piday	lame, crippled
*biyhay	vi_ay	vi_hay	viyay	biyay	alive

Proto-Batanic \*y remained the same in both Ivatan and Babuyan. In Yami and Itbayat, it was lost when following the vowel /i/ (*wok, widow, to bathe oneself, to steal and alive*).

## 4.2 Reconstruction of Proto-Batanic Vowels

Below we reconstruct the proto-Batanic vowels \*a, \*o, \*i and \*e. Like the four daughter languages, proto-Batanic has the same four vowels; here we list words in which those phonemes occur word-initially, -medially and -finally.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*i	*polin	poliN	poliM	podin	podin	dust in one's eye
	*kimit	cimit	cimit	cimit	kimit	to blink one's eyes
	*taliNa	taliNa	taliMa	tadiMa	tajiMa	ear
	*Nipen	Nepen	Mipen	Mipen	Mipen	tooth
	*binibel	vineveh	vinivex	viMiveh	binibeh	plant spp.

					( banana )
*pariN	pareN	pariM	pariM	pariM	to make, do
*hitkil	itkeh	hicex	icih	icih	to sleep
*yidyid	yidyid	yedyed	yedyed	---	to press
*pisagatan	pisagatan	p_sagatan	pisagatan	---	shoulder
*sidsid	sidsid	sidsid	---	sedsed	low
*saNi	saNi	saMi	saMi	saMi	jaw
*pisNi	pisNi	pisMi	pisMi	pisMi	cheek
*tinayi	cinayi	tinayi	cinayi	cinayi	intestines

Proto-Batanic \*i stayed largely the same in the four modern languages. Centralization of \*i occurred in all four languages. In Yami \*i became /e/ (schwa) in *tooth, banana, to make/do* and *to sleep*; Itbayat, *to sleep* and *to press*; Ivatan, *to press* and Babuyan, *low*. In *shoulder*, \*i was deleted in Itbayat.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*e	*lotek	etek	hotek	otek	o:tek	brain
	*deket	reket	reket	reket	reket	to close one's eyes
	*Nipen	Nepen	Mipen	Mipen	Mipen	tooth
	*miyeN	miyiN	---	miyeN	miyeN	to laugh

Proto-Batanic \*e stayed the same in most cases in the four modern languages. In *to laugh*, \*e became exactly the same as the vowel the next syllable had in Yami.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*a	*asdo	asdo	asdo	asdo	asdo	to hiccup

*aroywan	<u>roywan</u>	aroywan	aroywan	---	corner, nook
*malakay	<u>mehakay</u>	maxakay	mahakay	mahakay	man, male
*laylay	<u>leylay</u>	laylay	laylay	laylay	to hang, suspend
*oban	ovan	ovan	ovan	obban	hair (gray)
*mohdan	mo-modan	mohdan	mo-modan	mo-modan	nose
*pilay	pilay	<u>pidoy</u>	piday	piday	lame, crippled
*arday	azday	<u>ardoy</u>	<u>aldoy</u>	alday	to crumble down, collapse
*bayot	avyot	---	<u>viyot</u>	---	to blow (with breath)
*tanek	tanek	ta?nek	<u>tenek</u>	<u>tenek</u>	to stand up
*kataysa	<u>kateysa</u>	kataysa	kataysa	---	cousin
*mata	mata	mata	mata	mata	eye
*taliNa	taliNa	taliMa	tadiMa	tijiMa	ear
*dila	lila	rila	rida	rida	tongue

Proto-Batanic \*a remained the same in most cases in the four modern languages. In *corner/nook*, it was lost; *man/male*, *to hang/suspend* and *cousin*, centralized in Yami. \*a became /o/ in Itbayat (*lame, crippled* or *to crumble down/collapse*) and Ivatan (*to crumble down/collapse*). In *to stand up*, \*a became /e/ in Ivatan and Babuyan. In *to blow*, \*a became /i/ in Ivatan.

Phoneme	PB	Yami	Itbayat	Ivatan	Babuyan	Glossary
*o	*olo	oho	oxo	oho	oho	head
	*oban	ovan	ovan	ovan	obban	hair (gray)
	*owab	owab	ahwab	owab	---	to yawn

*oos	oos	oos	oos	<u>os</u>	to chew sugarcane
*bolek	<u>velek</u>	volek	vodek	bodek	belly
*bohok	ovok	vohok	vo:ok	bo:boh	hair of head
*lotek	<u>etek</u>	hotek	otek	o:tek	brain
*polin	poliN	poliM	podin	podin	dust in one's eye
*mohdan	mo-modan	mohdan	mo-modan	mo-modan	nose
*bolan	<u>vehan</u>	voxan	vohan	bohan	moon
*dokmel	<u>rekmeH</u>	rokmex	rokmeh	rokmeh	cold ( of water )
*lotek	<u>etek</u>	xotek	hotek	<u>hatek</u>	mud
*kopad	kopad	---	akpad	<u>akpad</u>	bitter
*boyas	<u>avyas</u>	voyas	voyas	boyasan	to sweep
*bowag	<u>avwag</u>	---	vowag	---	goat ( male )
*bowa	<u>avwa</u>	<u>v_wa</u>	vowa	bowa	plant spp. ( areca nut )
*tayokah	<u>tey_ka</u>	tayokah	tayoka	tayoka	to end, finish
*porak	<u>pezak</u>	<u>perak</u>	polak	<u>perak</u>	silver
*tamonoN	tamonoN	---	<u>tamoneN</u>	<u>tamoneN</u>	mosquito
*korapo	kozapo	korapo	<u>kalapo</u>	0	fish spp. ( hawkfish )
*osoN	osoN	soon	so:oN	<u>soN</u>	canine tooth, tusk
*tilo	cilo	tilo	cido	cido	earwax
*asdo	asdo	asdo	asdo	asdo	to hiccup

Proto-Batanic \*o remained largely the same in the four modern languages. In

Yami, it might become /a/ (*to sweep, goat and areca nut*), be centralized (*belly, brain, moon, cold mud and silver*) or get lost (*to end, finish*). In Itbayat, it might be centralized (*silver*) or get lost (*areca nut*). In Ivatan, it might become /a/ (*hawkfish*) or be centralized (*mosquito*). In Babuyan, it might become /a/ (*mud and bitter*), be centralized (*mosquito and silver*) or get lost (*canine tooth/tusk and to chew sugarcane*).

### 4.3 Phonemes of Proto-Batanic

By examining cognates of the four daughter languages and using comparative method, parent language proto-Batanic takes shape. The following are its phonemes, nineteen consonants and four vowels.

Table 4-1. Phonemes of Proto-Batanic (reconstructed by me)

p	t	k	q						
b	d	g							
m	n	N							
	s		h						
	l <sub>1</sub> l <sub>2</sub>	L							
	r	R							
w	y								
<hr/>									
<table border="0"> <tr> <td style="padding: 0 10px;">i</td> <td style="padding: 0 10px;">o</td> </tr> <tr> <td colspan="2" style="text-align: center;">e</td> </tr> <tr> <td colspan="2" style="text-align: center;">a</td> </tr> </table> <hr/>				i	o	e		a	
i	o								
e									
a									

## Chapter 5

# Phonemic Changes of Batanic Languages

### 5.0 Introduction

In this chapter, phonemic changes of the four Batanic languages are presented and discussed. Modern languages phonology are based on previous studies.

### 5.1 Phonology

We must know a modern language's phonology so as to compare it with proto-language. In Chapter Three we only told what phonemes each languages has; here we introduce more about phonemes and phonological rules.

#### 5.1.1 Yami

Below we only discuss such rules as they relate to reconstruction of proto-Batanic. The phoneme /k/ is realized as [q] in the position of preceding or following the vowel /a/ (Li and Ho, 1989); [q] is an allophone of the phoneme /k/, so we do not see /q/ as a phoneme of Yami. The rule and examples are as follows (Li and Ho, 1989):

/k/ → [q] / \_ a     /kanakan/ → [qanaqan] “child”

a \_

→ [k] / elsewhere     /koman/ → [koman] “eat”

The phoneme /n/ is realized as [ŋ] in the position of preceding vowel /i/. [ŋ] is an

allophone of the phoneme /n/. Therefore, we do not see /ŋ/ as a phoneme of Yami.

The rule and example are as follows (Li and Ho, 1989):

/n/ → [ŋ] / \_ i     /nirpi/ → [ŋrpi] “money”

Final syllable is not always accented; if stress falls on a penultimate syllable, the stress marker is needed—e.g., /mas azay/ *happy* (Tung and Rau, 2000).

### 5.1.2 Itbayat

Tsuchida et al. (1987) supply 26 Itbayat phonemes; /f/, not discussed in Chapter Three, is not found in the 851 basic Batanic vocabulary items in the thesis, for it just happens in loan words (Tsuchida et al., 1987).

The following provide one rule as it relates to reconstruction of Proto-Batanic. /k, g, N/ change their forms to their corresponding palatals /c, j, M/ when following /i/ or /y/. These examples are not listed in the aforementioned 851 items, but are still from Tsuchida et al. (1987).

/k/ → /c/ / i, y \_     / mikhamkam / → /michamkam/ “to clear forest”

/g/ → /j/ / i, y \_     / igolpi / → /ijolpi/ “to do abruptly”

/N/ → /M/ / i, y \_     / miNaxay / → /miMaxay/ “to salivate”

Since Tsuchida et al. (1987) treat /c, j, M/ as phonemes of Itbayat, we do so too.

The stress usually falls on the final syllable and is not spelled out.

### 5.1.3 Ivatan and Babuyan

Tsuchida et al. (1987) list 25 Ivatan and 22 Babuyan phonemes (Chapter Three). In Ivatan, again, /f/ only occurs in borrowed words. Tsuchida et al. (1987) list /c, j, M/ in Ivatan and Babuyan as phonemes, although they happen only next to /i/ in the

851 items; we say that they are phonemes of the languages too.

The accent is shown by the duration of the vowel in the penultimate syllable, as in Ivatan /ba:ka/ *cattle, cow* and Babuyan /ta:pi/ *board, plank*.

## 5.2 Phonemic Changes

Chapter Two mentioned that in COMPASS of WordSurv computer program a strength value of +1.0 represents maximum confidence that it is regular, -1.0 that it is not; values between extremes represent intermediate degrees of likelihood. This section only discusses two-different-phoneme correspondences with values greater than 0.15, for those with values less than 0.15 occur four times at most in the 851 items. Examples following are from the 851 items of the thesis.

### 5.2.1 Yami

#### A. \*b > /v/

\*b became /v/ in Yami when followed by a vowel. However, /b/ might happen in same environments.

Change	Proto-Batanic	Yami	Glossary
*b > /v/	*obi	ovi	plant spp. (yam)
	*taba	tava	fat, grease
	*banan	vanan	to sneeze
	*bolek	velek	belly
	*bowa	avwa	plant spp. (areca nut)
	*biyot	avyot	to blow (with breath)
	*boyas	avyas	to sweep

*b > /b/	*bobon	bobo	to bury
	kaboNen	kaboboNen	bladder
	*botbot	botbot	to pull out
	*baka	baka	cattle, cow

In *areca nut*, *to blow* and *to sweep*, we could say that metathesis occurred after \*b turned into /v/.

### B. \*h deletion

\*h was deleted in Yami. Two exceptions were found.

Change	Proto-Batanic	Yami	Glossary
*h > _	*lotek	_etek	brain
	*bohok	ov_ok	hair of head
	*tagalah	tagala_	to open one's mouth
			unintentionally
*h > /h/	*keleh	ke-keleh-an	armpit
	*yaheb	yaheb	thwart

### C. \*l2 deletion or > /h/

Proto--Malayo-Polynesian \*l split into \*l1 and \*l2 in proto-Batanic. \*l2 was deleted or became /h/ in Yami.

Change	Proto-Batanic	Yami	Glossary
*l2 > /h/	*lakay	ka-hakay	husband
	*olo	oho	head
	*binibel	vineveh	plant spp. ( banana )
*l2 > _	*laneN	_aneN	oil

*bolbol	bo_boh	hair (body)
*botol	voto_	testicle

D. \*r > /z/

\*r became /z/ in Yami. Some exceptions were found.

Change	Proto-Batanic	Yami	Glossary
*r > /z/	*ragaw	zagaw	neck
	*tagraN	tagzaN	ribs
	*towor	towoz	heart (anat.)

---

*r > /r/	*Nares	Nares	gums, palate
	*Naraw	Naraw no soso	nipple

E. \*t or \*k > /c/ and \*g > /j/

\*t or \*k became /c/, and \*g became /j/ in Yami when juxtaposed with vowel /i/.

Change	Proto-Batanic	Yami	Glossary
*t > /c/	*tilo	cilo	earwax
	*agtin	agcin	to unload, put down

---

*k > /c/	*kimit	cimit	to blink one's eyes
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---

*g > /j/	*ogi	oji	stern
----------	------	-----	-------

In the 851 items, palatalization of \*k only occurred 3 times and of \*g 2 times in Yami.

F. \*d > /r/

\*d became /r/ in word-initial positions in Yami. One exception was found.

Change	Proto-Batanic	Yami	Glossary
--------	---------------	------	----------

*d > /r/	*daRa	rala	blood
	*dama	rama	to have sexual intercourse
<hr/>			
*d > /d/	*deNdeN	deNdeN	to cook

G. \*o, \*i or \*a > /e/

Vowels were centralized in unstressed syllables in Yami. 5 exceptions were found.

Change	Proto-Batanic	Yami	Glossary
*o > /e/	*lotek	etek	brain
*i > /e/	*Nipen	Nepen	tooth
*a > /e/	*tayokah	teyka	to end, finish
	*diyos	ries	to bathe oneself
	*tiNahroy	ciNarey	fish spp. ( snapper )
	*hitkil	itkeh	to sleep
	*pariN	pareN	to make, do
	*adkit	adket	to stick to, adhere

H. \*L > /z/

\*L became /z/ in Yami.

Change	Proto-Batanic	Yami	Glossary
*L > /z/	*LoLon	zozon	grasshopper
	*Liyod	ziyod	carried away by current
	*soLib	sozib	bright, intelligent
	*koLad	kozad	scar

I. \*R > /l/

\*R became /l/ in Yami.

Change	Proto-Batanic	Yami	Glossary
*R > /l/	*RaRam	ia-lalam	toy
	*Rayoh	layo	to run
	*daRa	rala	blood
	*haRam	alam	to walk

J. \*a > /o/

We could not explain this change. \*a might become /o/ if the following syllable had /o/ or just happened unexplainable.

Change	Proto-Batanic	Yami	Glossary
*a > /o/	*akto	tokto	to think
	*yaboN	ovoN	wide, broad
	*bahosa	vosa	plant spp. ( <i>Solanum ferox</i> )
	*sarawsaw	sazowsaw	wind
	*maLowLaw	mazowzaw	fish spp. (goatfish)

K. \*q deletion or > /h/

In the 851 items, \*q only occurred 5 times. It might be deleted or become /h/ in Yami.

Change	Proto-Batanic	Yami	Glossary
	*bitoqen	---	star
*q > /h/	*toqed	tehed	stump
	*raqet	rahet	bad

*q > _	*baqen	va_eN	black
	*qoLi	_ozi	left

## 5.2.2 Itbayat

### A. \*b > /v/

Like in Yami, \*b became /v/ in Itbayat when followed by a vowel. However, /b/ might happen in same environments.

Change	Proto-Batanic	Itbayat	Glossary
*b > /v/	*tabayay	tavayay	plant spp. (pumpkin)
	*bohok	vohok	hair of head
	*banan	va?nan	to sneeze
	*bobo	vovo	fontanelles
*b > /b/	*tiban	tiiban	to look at
	*tabay	taabay	to dry clothes
	*biyoda	bioda	widow

### B. \*l<sub>2</sub> > /x/

\*l<sub>2</sub> became /x/ in in Itbayat.

Change	Proto-Batanic	Itbayat	Glossary
*l <sub>2</sub> > /x/	*loho	xoho	tears
	*olo	oxo	head
	*potol	potox	nape of neck

### C. /ʔ/ insertion

We could say that Itbayat preferred CVCCVC sequence. /ʔ/ was inserted to

fulfill this preference.

Change	Proto-Batanic	Itbayat	Glossary
_>/ʔ/	*ba_nan	vaʔnan	to sneeze
	*a_tot	aʔtot	fart
	*a_nid	aʔnid	fish spp. (grouper)
	*is_is	isʔis	scales

D. \*d > /r/

Like in Yami, \*d became /r/ in word-initial positions in Itbayat.

Change	Proto-Batanic	Itbayat	Glossary
*d > /r/	*daRa	rala	blood
	*dayem	rayem	needle
	*dama	rama	to have sexual intercourse

E. \*N > /M/, \*k or \*t > /c/, \*g > /j/

\*N became /M/, \*k or \*t became /c/, and \*g became /j/ in Itbayat when juxtaposed with vowel /i/.

Change	Proto-Batanic	Itbayat	Glossary
*N > /M/	*taliNa	taliMa	ear
	*Nipen	Mipen	tooth
*k > /c/	*kimit	cimit	to blink one's eyes
	*sikoh	sicoh	elbow
*t > /c/	*hitkil	hicex	to sleep
	*sitnan	sicMan	to begin
*g > /j/	*sagit	sajit	to hang, suspend

\*tanigi                      taniji      fish spp. (Spanish mackerel)

In the 851 items, palatalization of \*g only occurred 3 times in Itbayat.

F. \*L > /l/

\*L became /l/ in Itbayat.

Change	Proto-Batanic	Itbayat	Glossary
*L > /l/	*kopLad	kolad	scar
	*soLib	solib	bright, intelligent
	*Liyod	liod	carried away by current
	*LiNaw	liMaw	fish spp. ( bigeye )

G. \*n > /m/

\*n became /m/ when juxtaposed with vowel /i/ in Itbayat. In the final items, it was not next to vowel /i/ but still became /m/.

Change	Proto-Batanic	Itbayat	Glossary
*n > /m/	*polin	poliM	dust in one's eye
	*orin	oriM	charcoal
	*sitnan	sicMan	to begin
	*aknay	akMay	shiny, dazzling

H. \*R > /y/

\*R became /y/ in Itbayat.

Change	Proto-Batanic	Itbayat	Glossary
*R > /y/	*Rayoh	yayoh	to run
	*RaRam	ayam	toy

*daRa	raya	blood
*haRam	hayam	to walk

I. \*i > /e/

This change is unexplainable.

Change	Proto-Batanic	Itbayat	Glossary
*i > /e/	*yidyid	yedyed	to press
	*likey	alekey	small
	*hitkil	hicex	to sleep
	*adkit	adket	to stick to, adhere
	*ahyit	ahyet	strong

J. \*q deletion

\*q was deleted in Itbayat.

Change	Proto-Batanic	Itbayat	Glossary
*q > _	*bitoqen	vito_en	star
	*toqed	to_ed	stump
	*baqen	va_eN	black
	*raqet	ra_et	bad

### 5.2.3 Ivatan

A. \*b > /v/

Like in Yami and Itbayat, \*b became /v/ in Ivatan when followed by a vowel.

Yet some exceptions where \*b did not change in the environment were found.

Change	Proto-Batanic	Ivatan	Glossary
--------	---------------	--------	----------

*b > /v/	*bobo	vovo	fontanelles
	*oban	ovan	hair (gray)
	*batabat	vatavat	chest cavity (anat.)
	*bayot	viyot	to blow (with breath)
	*banan	vanan	to sneeze
	*bolek	vodek	belly
<hr/>			
*b > /b/	*boboh	booboh	body hair
	*tabay	tabay	to dry clothes
	*bato	bato	kidney

B. \*l<sub>2</sub> deletion or > /h/

Like in Yami, \*l<sub>2</sub> became /h/ in Ivatan. Only in two items, was it deleted.

Change	Proto-Batanic	Ivatan	Glossary
*l <sub>2</sub> > /h/	*loho	hoo	tears
	*olo	oho	head
	*potol	potohan	nape of neck
<hr/>			
*l <sub>2</sub> > _	*botol	voto	testicle
	*bolbol	boo_boh	hair (body)

C. \*h deletion

Like in Yami, \*h was deleted in Ivatan. One exception was found.

Change	Proto-Batanic	Ivatan	Glossary
*h > _	*bohok	vOok	hair of head
	*hotek	otek	brain
	*bibih	vivi	mouth

*h > /h/	*yaheb	yaheb	thwart
----------	--------	-------	--------

D. \*l<sub>1</sub> > /d/

\*l<sub>1</sub> became /d/ in Ivatan. 6 exceptions were found.

Change	Proto-Batanic	Ivatan	Glossary
*l > /d/	*likod	dicod	back (anat.)
	*polin	podin	dust in one's eye
	*taliNa	tadiMa	ear

*l > /l/	*leylay	laylay	to hang, suspend
	*sagel	sagel	to mix
	*asled	asled	fish spp (porgy)

E. \*r > /l/

\*r became /z/ in Yami, /r/ in Itbayat and /l/ in Ivatan.

correspondence	Proto-Batanic	Yami	Itbayat	Ivatan	Glossary
*r ~ z ~ r ~ l	*ragaw	zagaw	ragaw	lagaw	neck
	*tagraN	tagzaN	tagraN	taglaN	ribs
	*towor	towoz	towor	towol	heart (anat.)

F. \*t or \*k > /c/, \*N > /M/ and \*g > /j/

\*t or \*k became /c/, \*N became /M/, and \*g became /j/ in Ivatan when juxtaposed with vowel /i/.

Change	Proto-Batanic	Ivatan	Glossary
*t > /c/	*tilo	cido	earwax
	*tinayi	cinayi	intestines

*k > /c/	*kimit	cimit	to blink one's eyes
	*likod	dicod	back (anat.)
*N > /M/	*tiNah	tiMa	food particles between teeth
	*saNi	saMi	jaw
*g > /j/	*ogi	oji	stern
	*sagit	sajit	to hang, suspend

In the 851 items, palatalization of \*g only occurred 4 times in Ivatan.

#### G. \*d > /r/

Like in Yami and Itbayat, \*d became /r/ in word-initial positions in Ivatan.

Change	Proto-Batanic	Ivatan	Glossary
*d > /r/	*dakol	rakoh	big
	*dalmet	rahmet	heavy
	*dalem	rahem	deep

#### H. \*L > /l/

Like in Itbayat, \*L became /l/ in Ivatan.

Change	Proto-Batanic	Ivatan	Glossary
*L > /l/	*kopLad	kolad	scar
	*soLib	solib	bright, intelligent
	*Liyod	liyod	carried away by current
	*LoLon	lolon	grasshopper

#### I. \*R > /y/

Like in Itbayat, \*R became /y/ in Ivatan.

Change	Proto-Batanic	Ivatan	Glossary
*R > /y/	*Rayoh	yayo	to run
	*RaRam	ya:yam	toy
	*daRa	raya	blood
	*haRam	ayam	to walk

J. \*n > /M/

Like in Itbayat, \*n became /M/ when juxtaposed with vowel /i/. In the final item, it was not next to vowel /i/ but still became /M/.

Change	Proto-Batanic	Ivatan	Glossary
*n > /M/	*agtin	agtiM	to unload, put down
	*panid	paMid	wing
	*aknay	akMay	shiny, dazzling

K. \*a > /o/

This change is unexplainable.

Change	Proto-Batanic	Ivatan	Glossary
*a > /o/	*pawaw	powaw	lungs
	*arday	aldoy	to crumble down, collapse
	*takto	tokto	to think
	*yaboN	ovoN	wide, broad

L. \*q > /h/

\*q became /h/ in Ivatan.

Change	Proto-Batanic	Ivatan	Glossary
--------	---------------	--------	----------

*q > /h/	*bitoqen	vitoheh	star
	*toqed	tohed	stump
	*raqet	rahet	bad
	*baqen	vahen	black
	*qoLi	holi	left

M. \*i > /e/

This change is unexplainable.

Change	Proto-Batanic	Ivatan	Glossary
*i > /e/	*adkit	adket	to stick to, adhere
	*yidyid	yedyed	to press
	*olbit	ohbet	to go out
	*miNin	mi:Men	beard

### 5.2.4 Babuyan

A. \*l<sub>2</sub> deletion or > /h/

Like in Yami and Ivatan, \*l<sub>2</sub> became /h/ in Babuyan. Only in one item, was it deleted.

Change	Proto-Batanic	Babuyan	Glossary
*l <sub>2</sub> > /h/	*loho	hoho	tears
	*olo	oho	head
	*binibel	binibeh	plant spp. ( banana )
*l <sub>2</sub> > _	*bolbol	bo:_boh	hair (body)

B. \*h deletion

Like in Yami and Ivatan, \*h was deleted in Babuyan.

Change	Proto-Batanic	Babuyan	Glossary
*h > _	*bohok	bo:_boh	hair of head
	*hotek	_o:tek	brain
	*tiNah	tiMa_	food particles between teeth

C. \*l<sub>1</sub> > /d/

Like in Ivatan, \*l<sub>1</sub> became /d/ in Babuyan. 5 exceptions were found.

Change	Proto-Batanic	Babuyan	Glossary
*l <sub>1</sub> > /d/	*likod	dicod	back (anat.)
	*polin	podin	dust in one's eye
<hr/>			
*l <sub>1</sub> > /l/	*leylay	laylay	to hang, suspend
	*bilad	bilad	sail
	*sagel	sagel	to mix

D. \*r > /l/

\*r became /z/ in Yami, /r/ in Itbayat, /l/ in Ivatan and Babuyan.

correspondence	Proto-Batanic	Yami	Itbayat	Ivatan	Babuyan	Glossary
*r~z~r~l~l	*ragaw	zagaw	ragaw	lagaw	lagaw	neck
	*tagraN	tagzaN	tagraN	taglaN	taglaN	ribs
	*towor	towoz	towor	towol	towol	heart (anat.)

E. \*d > /r/

Like in other three languages, \*d became /r/ in word-initial positions in Babuyan.

Change	Proto-Batanic	Babuyan	Glossary
*d > /r/	*dakol	rakoh	big
	*dalmet	rahmet	heavy
	*dalem	rahem	deep

F. \*t or \*k > /c/, \*N > /M/ and \*g > /j/

\*t or \*k became /c/, \*N became /M/, and \*g became /j/ in Babuyan when juxtaposed with vowel /i/.

Change	Proto-Batanic	Babuyan	Glossary
*t > /c/	*tilo	cido	earwax
	*tinayi	cinayi	intestines
*k > /c/	*likod	dicod	back
	*likod	dicod	back (anat.)
*N > /M/	*tiNah	tiMa	food particles between teeth
	*saNi	saMi	jaw
*g > /j/	*ogi	oji	stern
	*sagit	sajit	to hang, suspend

In the 851 items, palatalization of \*k only occurred 2 times and of \*g, 3 times in Babuyan.

G. \*R > /y/

Like in Itbayat and Ivatan, \*R became /y/ in Babuyan.

Change	Proto-Batanic	Babuyan	Glossary
*R > /y/	*Rayoh	yayo	to run
	*RaRam	ya:yam	toy

*daRa	raya	blood
*haRam	ayam	to walk

H. \*q > /h/

Like in Ivatan, \*q became /h/ in Babuyan.

Change	Proto-Batanic	Babuyan	Glossary
*q > /h/	*bitoqen	bitohen	star
	*toqed	tohed	stump
	*raqet	rahet	bad
	*baqen	abhen	black
	*qoLi	holi	left

I. \*L > /l/

Like in Itbayat and Ivatan, \*L became /l/ in Babuyan. This change only occurred 3 times in Babuyan.

Change	Proto-Batanic	Babuyan	Glossary
*L > /l/	*kopLad	koplat	scar
	*Liyod	liyod	carried away by current
	*qoLi	holi	left

J. \*n > /M/

Like in Itbayat and Ivatan, \*n became /M/ when juxtaposed with vowel /i/. This change only occurred 2 times in Babuyan.

Change	Proto-Batanic	Babuyan	Glossary
*n > /M/	*ganit	gaMit	sick

### 5.3 Summary

We list eleven phonemic changes of Yami, ten of Itbayat, thirteen of Ivatan and ten of Babuyan. Some changes occurred in all four languages, others did not. We summarize the changes as follows and provide a consonants-correspondence table.

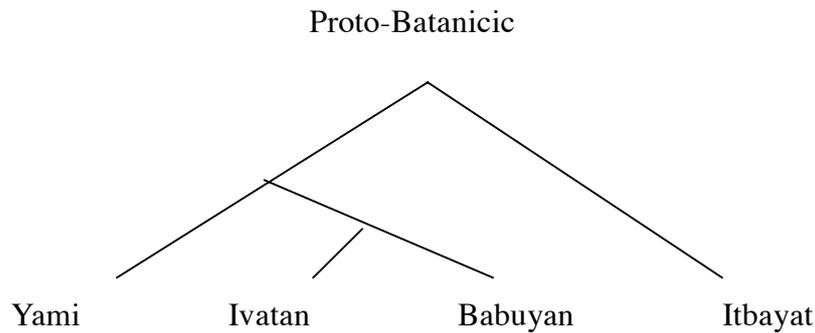
1. \*b became /v/ in Itbayat, Ivatan and Babuyan.
2. \*h was deleted in Yami, Ivatan and Babuyan.
3. \*l<sub>2</sub> was deleted or became /h/ in Yami, Ivatan and Babuyan but became /x/ in Itbayat.
4. \*r became /z/ in Yami but /l/ in Ivatan and Babuyan.
5. \*t or \*k became /c/ and \*g became /j/ in all four languages. \*N or \*n became /M/ in Itbayat, Ivatan and Babuyan.
6. \*d became /r/ in all four languages.
7. \*o, \*i or \*a became /e/ in Yami. \*I became /e/ in Itbayat and Ivatan. \*a became /o/ in Yami and Ivatan.
8. \*L became /z/ in Yami but /l/ in Itbayat, Ivatan and Babuyan.
9. \*R became /l/ in Yami, but /y/ in Itbayat, Ivatan and Babuyan.
10. \*q was deleted or became /h/ in Yami. It was deleted in Itbayat but became /h/ in Ivatan and Babuyan.
11. /ʔ/ was inserted in Itbayat.
12. \*l<sub>1</sub> became /d/ in Ivatan and Babuyan.

Table 5-1. Consonants Correspondences

Proto-Batanic	Yami	Itbayat	Ivatan	Babuyan
*p	p	p	p	p
*b	b/v	b/v	b/v	b
*t	t/c	t/c	t/c	t/c
*d	d/r	d/r	d/r	d/r
*k	k/c	k/c	k/c	k/c
*g	g/j	g/j	g/j	g/j
*q	h/0	0	h	h
*m	m	m	m	m
*n	n	n/M	n/M	n/M
*N	N	N/M	N/M	N/M
*s	s	s	s	s
*h	0	h	0	0
*l <sub>1</sub>	l	l	d	d
*l <sub>2</sub>	h/0	x	h/0	h/0
*L	z	l	l	l
*r	z	r	l	l
*R	l	y	y	y
*w	w	w	w	w
*y	y	y	y	y

From these phonemic changes, we draw the following tree diagram.

Tree Diagram 5-1. Possible Subgrouping of Batanic Languages



Itbayat is the only language that preserved proto-Batanic \*h. \*q might become /h/ in the other three languages but was always deleted in Itbayat. We separate it from others. Among the other three languages, \*q was deleted or became /h/ in Yami, but always became /h/ in Ivatan and Babuyan. Besides, changes where \*r became /l/ and \*l<sub>1</sub> became /d/ are innovations exclusively shared by Ivatan and Babuyan. We separate Yami from Ivatan and Babuyan.

This diagram fails to respond to Zorc's subgrouping of southern Philippine languages (Tree Diagram 1-1) with Ivatan and Itbayat are under one branch. Tree Diagram 5-1 responds to Tree Diagram 3-3, putting Babuyan and Ivatan under one branch. In addition, it draws exactly the same inference as Tree Diagram 3-2, which tells Yami, Ivatan and Babuyan are in one branch; among them Ivatan and Babuyan are the closet relatives.

## Chapter 6

### Conclusion

#### 6.0 Introduction

This final chapter summarizes the results of this study and describes limitations as well as conclusions.

#### 6.1 Main Findings

This thesis describes relationships among Yami, Itbayat, Ivatan and Babuyan. Results hinge on phonostatistics and phonemic changes; wordlists are mainly based on data collected by Tsuchida et al. (1987) and summarized as follows:

The first research question is “How do Yami, Itbayat, Ivatan and Babuyan relate to one another?” Phonostatistics and COMPASS analysis indicate Ivatan and Babuyan are closest related; some same phonemic changes are found. Yami shares two exclusive innovations (\*q > /h/ and \*h deletion) with both languages, so we separate them from Itbayat. Ivatan shares two exclusive innovations with Babuyan (\*l<sub>1</sub> > /d/ and \*r > /l/), are separate from Yami (Tree Diagram 5-1).

In order to answer the second research question, “What did proto-Batanic look like?” we reconstruct 23 proto-Batanic phonemes: / p, t, k, q, b, d, g, m, n, N, s, h, l<sub>1</sub>, l<sub>2</sub>, L, r, R, w, y/ and /i, o, e, a/ (Table 4-1).

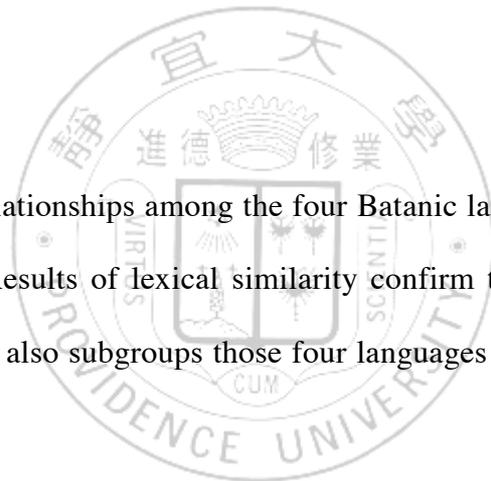
The third question is “How did Batanic languages get their modern forms?” We list 11 phonemic changes of Yami, 10 of Itbayat, 13 of Ivatan and 10 of Babuyan.

## 6.2 Remaining Questions

A number of gaps still need filling. First, the phonostatistic approach is limited to lexicons, which provide only an incomplete perspective on degree of relatedness. To clarify relations among Batanic languages precisely, a comprehensive picture must survey a wider gamut of linguistic structure—e.g., morphology, syntax and semantics. Second, while our thesis provides phonemic changes within specific environments of Batanic languages, some exceptions exist. More data on Batanic languages are needed to explain these exceptions.

## 6.3 Conclusions

This work tests relationships among the four Batanic languages: Yami, Itbayat, Ivatan and Babuyan. Results of lexical similarity confirm they are really close to one another. Our thesis also subgroups those four languages and reconstructs proto-Batanic forms.



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## Appendix

### 851 Proto-Batanic Forms

RECORD	Proto-Batanic		
1 head	olo	26 mouth	bibih
2 fontanelles	bobo	27 open one's mouth intentionally ( to )	---
3 dandruff	kaLab kab	28 open one' mouth unintentionally ( to )	tagalah
4 hair of head	bohok	29lip	---
5 hair (gray)	oban	30 tongue	dila
6 hair whir	toktok	31 tooth	Nipen
7 brain	hotek	32 molar tooth	kamansasaNa
8 forehead	---	33 canine tooth, tusk	osoN
9 eye	mata	34 food particles between teeth	tiNah
10 dust in one's eye	polin	35 gums, palate	Nares
11 mucus ( eye )	---	36 saliva	---
12 close one's eyes ( to )	deket	37 drivel, drool	Nalay
13 open one's eyes ( to )	---	38 breathe (to)	hinawa
14 blink one's eyes ( to )	kimit	39 gasp (to), pant	---
15 stye	bobotan	40 blow (to) ( with breath )	biyot
16 eyelash	kikimit	41blow (to) (of wind)	---
17 eyebrow	---	42 hoarse	paraw
18 tears	loho	43 sneeze (to)	banan
19 blind	bota	44 yawn (to)	ohwab
20 nose	mohdan	45 hiccup (to)	asdo
21 mucus( runny nasal )	---	46 jaw	saNi
22 ear	taliNa	47 chin	tomid
23 ear ( inside )	---	48 face	moyiN
24 earwax	tilo	49 cheek	pisNi
25 deaf	koteN	50 beard	miNin

51 neck	ragaw	76 gall bladder, bile	apdo
52 nape of neck	potol	77 kidney	bato
53 throat	telnan	78 navel	posed
54 shoulder	pisagatan	79 back (anat.)	likod
55 clavicle, collar bone	ablit	80 spinal colum	bokit
56 armpit	kelehan	81 waist	kat iNlan
57 tickle (to)	---	82 buttocks	ataN
58 arm	---	83 excrement, faeces	---
59 elbow	sikoh	84 bear down (to), exert oneself	abtes
60 hand	---	85 bladder	kaboNen
61 palm of hand	rapan	86 urine	opis
62 finger, toe	kakamay	87 fart	atot
63 little finger	---	88 penis	---
64 fingernail, toenail	kokoh	89 testicle	botol
65 chest cavity (anat.)	batabat	90 vulva, vagina	---
66 breasts	soso	91 pubic hair	yamit
67 nipple	Naraw	92 sexual intercourse (to have)	dama
68 ribs	tagraN	93 thigh	paa
69 lungs	pawaw	94 knee	tohod
70 heart (anat.)	towor	95 leg, foot	ayi
71 belly	bolek	96 calf of leg	artek
72 lower abdomen	takeb	97 lame, crippled	pilay
73 intestines	tinayi	98 hair (body)	bo lbol
74 stomach	bitoka	99 hairy appendages of plant (as of millet or bamboo)	---
75 liver	atay	100 skin	kolit

101 peelings of cooked tubers	---	126 grain	---
102 wrinkled (person)	---	127 chaff (of grain)	tahep
103 wart	tilan	128 plant spp. (millet)	rawot
104 tumor	noka	129 plant spp. (job's tears)	---
105 pus	nana	130 dish eaten along with rice, a side dish	---
106 sweat, perspiration	anNet	131 plant spp. (pumpkin)	tabayay
107 dirt, grime (on person)	dolit	132 plant spp. (cucumber)	---
108 blood	daRa	133 plant spp. (gourd)	---
109 blood vessel, sinew	oyat	134 plant spp. (ginger)	ahnala
110 bone	tolan	135 plant spp. (Solanum nigrum)	homti
111 see (to)	---	136 plant spp. (taro)	solu
112 look at (to)	tiban	137 plant spp. (Alocasia macrorrhiza)	obi
113 look upward (to)	taNara	138 plant spp. (yam)	obi
114 look down (from higher) (to)	tileb	139 plant spp. (sweet potato)	wakay
115 smell (to), perceive odor	haNot	140 meat	asi
116 hear (to)	adNey	141 fruit	asi
117 laugh (to)	miyeN	142 plant spp. (coconut)	Niyoy
118 weep (to)	taNis	143 plant spp. (coconut shell)	doyoy
119 shout loudly (to)	rolos	144 plant spp. (banana)	binibel
120 clothing, dress	---	145 plant spp. (Diospyros discolor)	kamaRa
121 comb	sorod	146 plant spp. (breadfruit)	tipolo
122 needle	dayem	147 seed, kernel	botol
123 string beads (to)	tohay	148 egg	---
124 sew (to)	dayit	149 roe	---
125 plant spp. (rice)	paray	150 salt	asin

151 sugarcane	onas	176 full of stomach	absoy
152 oil	laneN	177 thirsty	ahwaw
153 fat, grease	taba	178 taste (to)	talam
154 water	danom	179 tasty	aslep
155 soup	asoy	180 tasteless, inspid	tabaN
156 sap of a tree	---	181 sweet	onas
157 drunk	bohok	182 salty	payit
158 plant spp. (areca nut)	bowa	183 bitter	kopad
159 plant spp. (betel pepper) (Piper betel)	gawod	184 sour	---
160 plant spp. (betel pepper) (Piper fenix)	samol	185 ill-smelling, stinkling	boyok
161 lime	amed	186fragrant	---
162 chew 'betelnut' (to)	mama	187 rotten (of log)	dokop
163 cook (to)	dotoN	188 house	balay
164 cook (to)	deNdeN	189 house	balag
165 roast (to), broil	paso	190 wall	---
166 expose to fire (to)	daNdaN	191 roof	atep
167 uncooked, raw	mhata	192 plant spp. (cogon) (Imperata cylindrica)	botid
168 ripe	hinoy	193 plant spp. (miscanthus) (Miscanthus sinensis)	biyawo
169 eat (to)	kan	194 fireplace	dapoyan
170 chew sugarcane (to)	oos	195 fire	hapoy
171 drink (to)	inom	196 smoke	alob
172 swallow (to)	atlen	197 soot	ariw
173 suck (to)	sepsep	198 soot	orin
174 vomit (to)	ota	199 ashes	abo
175 hungry	apteN	200 charcoal	orin

201 embers, live	hinmaRa	226 wipe off with a	---
------------------	---------	---------------------	-----

charcoal		cloth (to)	
202 burn (to)	---	227 wipe off with hand (to)	ponas
203 sit down (to)	disna	228 sweep (to)	boyas
204 lie down (to)	---	229 winnowing basket	---
205 sleep (to)	hitkil	230 sieve (to), sift	sigi
206 snore (to)	ahreN	231 string, cord	lobid
207 dream	taynep	232 stick (walking), cane	sikod
208 wake up (to)	yakay	233 board, plank	tapi
209 get up (to)	baNon	234 torch	solo
210 stand up (to)	ta nek	235 alive	biyhay
211 lean against (to)	nadeN	236 fat	taba
212 fence (of wood, bamboo)	alad	237 skinny, thin	goraN
213 close (to)	aneb	238 sick	ganit
214 open (to)	ihwaN	239 scar	kopLad
215 cover (to)	toloN	240 painful	hiNen
216 leak (to)	toro	241 itchy	katel
217 wok (Chinese pan)	pariyok	242 scratch (to)	kadkad
218 spill (to), pour out	adlo	243 kill (to)	---
219 mortar	losoN	244 die (to)	liman
220 pestle	ahlo	245 bury (to)	bobon
221 pound for husking (to)	asad	246 ghost, spirit of dead	anito
222 nail	pasek	247 fight (to)	liman
223 saw	---	248 win (to)	lomis
224 whet (to)	tarem	249 defeated (to be)	dasay
225 dust	albek	250 escape (to)	otap

251 drive away	boyaw	276 cousin	kataysa
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252 pursue (to), run after	---	277 spouse	kobot
253 overtake (to)	dakep	278 husband	lakay
254 bolo, machete	---	279 wife	bakes
255 spear	---	280 widow	biyoda
256 spear for fishing	gayaN	281 name	Naran
257 arrow/bow	pana	282 foreigner	---
258 swell (to)	yatek	283 relatives, kin	ripos
259 ringworm	boni	284 village	ili
260 chickenpox	gotor	285 hunt with dogs (to)	anop
261 heat rashes	hima	286 trap for wild game	batiN
262 person	tao	287 trap for coco-crab	kateb
263 man, male	malakay	288 steal (to)	takaw
264 woman, female	mabakes	289 steal (to)	lihyam
265 child	motdel	290 field (in general, including wet-taro field)	takey
266 child (own)	anak	291 farm (to)	lakaw
267 old (person)	arkem	292 sow (to)	tokos
268 father	ama	293 sow (to)	mola
269 mother	ina	294 winnow (to)	tahap
270 grandfather	---	295 weave (to)	tinon
271 grandmother	---	296 weaver's sword	barila
272 grandchild	apo	297 go (to)	aNay
273 sibling	katel	298 come (to)	mayi
274 sibling (older)	kaka	299 come back (to)	bili
275 sibling (younger)	wari	300 remain (to)	bilin

301 follow (to)	onot	326 keel	---
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302 go out (to)	olbit	327 stern	ogi
303 enter (to)	asdep	328 bow	moroN
304 change one's direction (to)	---	329 thwart	yaheb
305 arrive (to)	---	330 rudder	ag osan
306 leave (to), depart	karo	331 oar	abat
307 jump over (to)	---	332 sail	bilad
308 go to the other side (to)	sopo	333 pass by (to)	labas
309 walk (to)	haRam	334 get off the course (to)	sala
310 run (to)	Rayoh	335 word, speech	---
311 speedy, swift	---	336 speak (to)	---
312 slow	---	337 whisper (to)	---
313 crawl (to)	---	338 joke (to)	---
314 ride (to), get on a boat	sakay	339 ask (to), question	ales
315 get on a stone, etc. (to)	ragpit	340 answer (to)	atbay
316 climb (a tree, ladder) (to)	kaRat	341 tell a lie (to)	---
317 climb up (the mountain, hill) (to)	taNar	342 true	oyod
318 descend the mountain (to)	osok	343 write (to)	toras
319 descend (to)	agtin	344 read (to)	---
320 carry (to), transport	hakot	345 point to (to)	toNdo
321 road, path	dalan	346 call (to)	tawag
322 bridge	toLay	347 play (to)	---
323 boat	taRa	348 song	kanta
324 boat (big)	abaN	349 dance (native folkdance) (to)	ganam
325 big boat	---	350 toy	RaRam

351 give (to)	torol	376 see off (to)	---
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352 sell (to)	---	377 caress (to), stroke	---
353 buy (to)	saliw	378 lead by hand/rope (to)	onot
354 borrow (to)	bolod	379 bite (to)	soNit
355 lend (to)	bolod	380 take (to)	alap
356 share, portion	bonoN	381 snatch away (to)	poles
357 exchange (to)	---	382 hold (to), grasp	lapet
358 expensive	Nina	383 grasp (to)	kemkem
359 cheap	lomis	384 catch (to)	dakep
360 money	karitos	385 throw (to)	agsid
361 meet each other (to)	bayat	386 throw away (to)	polah
362 wait (to)	naRa	387 pick up (to)	akpel
363 imitate (to)	tala	388 touch (to)	adnet
364 cheat (to), deceive	---	389 rub (to)	opas
365 hit with fist (to)	---	390 shake (to) (as a bottle with something in)	koyon
366 beat with a club (to)	siprot	391 shake something so that the dirt comes out (to)	paspas
367 slap (to)	siplaN	392 shake as a tree (to)	goyon
368 help (to), assist	si doN	393 shake as a tree (to)	goyon
369 save (to), rescue	---	394 push (to)	---
370 carry a baby on the back (to)	baba	395 press (to)	yidyid
371 embrace (to)	kepkep	396 pull (to)	paraN
372 embrace a baby (to)	---	397 drag along (to)	gorogod
373 take care of child (to)	yan	398 squeeze (to)	pitos
374 greet (to)	---	399 carry on shoulder (to)	sablay
375 kiss (to)	harek	400 carry on the back (to)	apid

401 carry on the head	son	426 split (to)	albak
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(to)			
402 carry in hand (to)	labit	427 bend (to)	---
403 kick (to)	sadsad	428 break off (to) (as bones)	potot
404 step on (to)	rasag	429 wash clothes (to)	basa
405 use up (to), consume	---	430 wash utensils (to)	oyas
406 hide (to), conceal	tayo	431 wash hands (to)	banaw
407 hide oneself (to)	orib	432 wash one's face (to)	da mon
408 seek (to), look for	---	433 wash one's hair (to)	ketket
409 group (to), fumble in the bag	apiyas	434 bathe oneself (to)	diyos
410 group (to) (in the dark)	kararap	435 dry clothes (to)	ta bay
411 put (to)	paNay	436 dry (to)	koray
412 load (to)	loran	437 roll up (to) (mat, paper)	---
413 unload (to), put down	agtin	438 unfold (to), unfurl	boray
414 keep in proper/safe place (to)	konokon	439 bind (to), fasten, tie	kedked
415 wrap (to)	poNos	440 knot (to make a)	tanoN
416 hang (to), suspend	leylay	441 tighten a knot (to)	---
417 hang (to), suspend	sagit	442 bind into a bundle (to)	bedbed
418 gather (to)	akpel	443 untie (to), unbind	hobay
419 make (to), do	pariN	444 stick to (to), adhere	adkit
420 break (to)	kaba	445 pull out (to)	botbot
421 cut down (to)	rasa	446 pull out (to)	bornot
422 break (to) (glass, earthenwares)	apsa	447 stab (to), pierce	todok
423 break open (to) (as pods)	baltak	448 cut (to)	tabar
424 crumble down (to), collapse	arday	449 snapped	kortod
425 tear off (cloth, paper) (to)	pirit	450 mix (to)	sagel

451 stir up (to)	---	476 ashamed	asnek
452 dig (to)	kali	477 reserved	---
453 begin (to)	sitnan	478 bright, intelligent	soLib
454 end (to), finish	tayokah	479 pitiful	kasi
455 stop (to), halt	ables	480 sky, heaven	laNit
456 move (to)	gonay	481 cloud	demdem
457 slide (to), slip	---	482 cloudy	demdem
458 jump (to)	lokton	483 mist, fog	---
459 jump down (to)	loksoh	484 rain	timoy
460 fall (to), drop	asday	485 drizzle (to)	---
461 wet	basa	486 dew	hapon
462 dry	---	487 drop of water	---
463 dried up (pond, etc.)	---	488 thunder	adey
464 choose (to), select	pili	489 thunder (to)	adey
465 think (to)	takto	490 lightning	---
466 know (to)	patak	491 rainbow	na yNiraN
467 forget (to)	wayak	492 melt (to) (as salt)	ahna
468 recall (to), remember	nakem	493 melt (to) (as lard, oil)	yokay
469 teach (to)	nanao	494 sun	araw
470 fear (to), afraid	hamo	495 moon	bolan
471 surprised	aknin	496 star	bitoqen
472 like (to), love	hake	497 ray, beam	---
473 desire (to)	lolo	498 shine (to)	---
474 happy, glad	soyot	499 shine (to)	---
475 sad	aNsal	500 shiny, dazzling	aknay

501 shade	haboN	526 landslide	royoroy
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502 shadow	anino	527 ledge (overhung)	---
503 bright, light	rerNaN	528 sea	---
504 dark	sarih	529 land (as opposed to sea)	tana
505 wind	sarawsaw	530 salt water	---
506 typhoon, storm	haNin	531 offing	lawod
507 whirlwind, tornado	alipogpog	532 high tide (to have)	alnep
508 calm, quiet	---	533 low tide (to have)	rawaN
509 hot (of weather)	hinanNet	534 interval of tide	ala
510 hot (of water)	kolat	535 current	ries
511 cold (of weather)	ahlen	536 waves	abkas
512 cold (of water)	dokmel	537 island	poNso
513 mountain	tokon	538 stone	bato
514 forest, woods	kalasan	539 sand	anay
515 pond, puddle	albeN	540 earth, soil	tana
516 spring	atbod	541 mud	lotek
517 river	ayo	542 iron	balaRaN
518 foam, bubble	asboh	543 rust	---
519 sink (to)	ahned	544 gold	bolawan
520 float (to)	lataw	545 silver	porak
521 flow (to)	boyog	546 copper	tanso
522 carried away by current	Liyod	547 brass	---
523 waterfall	torah	548 lead	lobay
524 seashore, coast	---	549 muddy, murky	parek
525 cliff	kawah	550 clear (of water)	atnaw

551 earthquake	ninih	576 bird spp. (Pacific)	---
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552 tree, wood	kayoh	swallow)	
553 grass	tamek	577 owl (barn owl)	totolo
554 base of the tree	atNel	578 hawk	koyab
555 branch	yaNaw	579 crow	owak
556 branch	saNa	580 dove (green)	boyit
557 leaf	boloN	581 fish	amoN
		582 fish spp. (Spanish mackerel)	tanigi
558 young/tender pith of plant	one	583 fish spp. (triggerfish)	soNo
559 vine (general)	litalit	584 fish spp. (filefish)	ponayo
560 thorn	---	585 fish spp. (scorpion fish)	---
561 splinter	soNad	586 shark	iyo
562 flower	saboN	587 stingray	---
563 root	yamot	588 eel	tona
564 stump	toqed	589 fish spp. (halfbeak, needlefish)	lalay
565 plant spp. (bamboo)	kawaRan	590 fish spp. (flying fish)	---
566 plant spp. (bamboo) (Slender type)	kawoy	591 fish spp. (sardine)	---
567 bamboo shoot	tobo	592 fish spp. (mullet)	aknasay
568 internode	bi tas	593 fish spp. (barracuda)	tanigi
569 plant (to)	mola	594 fish spp. (threadfin)	koyaw
570 plant ovi (to)	sobeN	595 fish spp. (squirrelfish)	bimas
571 driftwood	yabat	596 fish spp. (sweeper)	ibay
572 moss	lomot	597 fish spp. (goatfish)	maLawLaw
573 animal	biniyay	598 fish spp. (bigeye)	LiNaw
574 bird	manomanok	599 fish spp. (kuhlia)	kosikosi
575 bird spp. (Chinese white-eye)	latiw	600 fish spp. (sea bass)	kayiN

601 fish spp. (sea bass)	rapaw	626 fish spp.	getgetan
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602 fish spp. (grouper)	---	(rabbitfish)	
603 fish spp. (grouper)	anid	627 worm	oled
604 fish spp. (longfin)	---	628 butterfly	koliba baN
605 fish spp. (dottyback)	tiraw	629 hornet	tapipi
606 fish spp. (rudderfish)	hilek	630 wasp spp. (mud dauber)	daboNan
607 fish spp. (porgy)	---	631 spider, cobweb, arachnid	lawa
608 fish spp. (porgy)	---	632 spider spp.	kakamaw
609 fish spp. (porgy)	asled	633 termite, white ant	anay
610 fish spp. (caesio)	---	634 ant spp.	balaho
611 fish spp. (snapper)	tinaroy	635 mosquito	tamonoN
612 fish spp. (grunt)	tiratirawan	636 tick on chicken	kaRaw
613 fish spp. (hawkfish)	korapo	637 louse (head)	koto
614 fish spp. (jack)	---	638 louse (body)	toma
615 fish spp. (dolphinfish)	arayo	639 nit, egg og louse	lisa
616 fish spp. (tuna)	baloyo	640 bedbug	tatomok
617 fish spp. (Spanish mackerel)	---	641 mite, chigger	---
618 fish spp. (blenny)	lokton	642 fly (small), house fly	naned
619 fish spp. (wrasse)	gagaraw	643 fly (big), bluebottle	---
620 fish spp. (wrasse)	---	644 cockroach	ipes
621 fish spp. (wrasse)	tagarit	645 leech	linta
622 fish spp. (wrasse)	boras	646 earthworm	---
623 fish spp. (parrotfish)	arawa	647 intestinal worm	ippet
624 fish spp. (butterfly fish)	tapper	648 dragonfly	doyon
625 fish spp. (surgeonfish)	laNsa	649 grasshopper	LoLon
		650 centipede	lipwan

651 dog	tito	676 octopus	koyta
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652 cat	posak	677 squid	anos
653 cattle, cow	ba ka	678 squid	taNis
654 goat	kaddiN	679 jellyfish	latok
655 goat (male)	bowag	680 sea urchin	onot
656 earmark (for cattle, goat)	apreN	681 snake	boday
657 pig	---	682 molt (to)	alos
658 pig (male for breeding)	---	683 lizard (on ground)	---
659 pig (female)	koraN	684 lizard (on tree)	---
660 chicken	manok	685 house lizard	geget
661 rooster	saboNan	686 horn	oroN
662 hen	oppa	687 tail	ipos
663 cockscomb	taroyin	688 beak	toktok
664 cockspur	palot	689 peck (to)	toktok
665 deer	ogsa	690 wing	panid
666 monkey	---	691 flap the wings (to)	paralapad
667 rat	karam	692 fin	siyit
668 bat	---	693 scales	isis
669 whale	royoN	694 gills of fish	haraN
670 crab	kaRaN	695 nest	balay
671 hermit crab	omaN	696 fly (to)	saRap
672 shrimp	hipon	697 swim (to)	awat
673 lobster	payi	698 dive (to)	soneb
674 turtle, tortoise	iraN	699 drown (to)	alomes
675 frog	---	700 round	---

701 round	---	726 blue	asoL
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702 sharp	tarem	727 green	harem
703 dull	Narel	728 yellow	haray
704 notch	---	729 white	hilak
705 flat	tapi	730 black	baqeN
706 hole	toLyaN	731 coward	talaw
707 hole	toNa	732 lazy	---
708 cave, grotto	---	733 strong	ahyit
709 hollow	---	734 durable	lani
710 straight	tarineN	735 weak	kala
711 crooked, bent	---	736 correct, right	sonoN
712 line	bolit	737 wrong	---
713 big	dakol	738 good	piya
714 small	likey	739 bad	raquet
715 fine (of particles)	lomek	740 tight	imet
716 coarse (of particles)	---	741 loose	lawos
717 fine (of mesh)	asen	742 smooth	---
718 coarse (of mesh)	ayway	743 slippery	raples
719 long	naro	744 rough (not smooth)	poroh
720 short	---	745 old (things)	adan
721 thick	tokpol	746 new	bayo
722 thin	taripis	747 beautiful	abid
723 thick (as of a log)	taba	748 clean	wadwad
724 thin (as of a branch)	---	749 dirty	rapos
725 red	baRah	750 hard (not soft)	kelnet

751 soft	alma	776 wide, broad	aboN
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752 soft	yogyog	777 narrow	hilid
753 heavy	dalmet	778 full	apno
754 light (no heavy)	ahpaw	779 east	dadan
755 stable, firm (up right)	agen	780 east wind	paNalitan
756 unstable (as tooth)	---	781 east wind	kobih
757 unstable	---	782 west	asdepan
758 front	sarap	783 west wind	habayat
759 back	likod	784 south	---
760 side	sirih	785 north	---
761 corner, nook	aroywan	786 slanting	rahik
762 middle, center	habak	787 boundary	penda n
763 up, above	tolos	788 morning	---
764 down, below	hiralem	789 noon	araw
765 inside	salad	790 daytime	araw
766 outside	pagan	791 evening	koyab
767 right	wanan	792 night	alep
768 left	qoLi	793 early	kayih
769 near	asNen	794 late	halay
770 far	rayi	795 now	---
771 high	karaN	796 today	---
772 low	sissid	797 yesterday	kakoyab
773 equal in height	tariN	798 tomorrow	---
774 deep	dalem	799 year	hawan
775 shallow	babaw	800 winter	amiyan

801 for a long time	---	826 none, non-exist	abo
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802 count (to)	---	827 not	---
803 one	asa	828 not	---
804 two	doha	829 yes	oon
805 three	atlo	830 no	eNga
806 four	apat	831 plant spp. (pandan) ( <i>Pandanus tectorius</i> )	laNo
807 five	lima	832 plant spp. (rattan)	barit
808 six	anem	833 plant spp. (mulberry)	---
809 seven	pito	834 plant spp. (palm spp.) ( <i>Phoenix hanceana</i> )	boyaboy
810 eight	walo	835 plant spp. (lily)	boNitan
811 nine	siyam	836 plant spp. ( <i>Crinum asiaticum</i> )	bakoN
812 ten	polo	837 plant spp. ( <i>Donax cannaeformis</i> )	nini
813 twenty	---	838 plant spp. ( <i>Ficus hauili</i> )	yabnoy
814 hundred	yatos	839 plant spp. ( <i>Ficus retusa</i> )	tapah
815 thousand	---	840 plant spp. ( <i>Ficus stipulosa</i> )	baliti
816 sufficient, enough	kanet	841 plant spp. ( <i>Ficus tinctoria</i> )	nonok
817 many	aro	842 plant spp. ( <i>Zanthoxylum integrifolium</i> )	barok
818 few	pere	843 plant spp. ( <i>Citrus kotoensis</i> )	baratinok
819 all	taboh	844 plant spp. ( <i>Pometia pinnata</i> )	---
820 fathom	adpa	845 plant spp. ( <i>Calophyllum inophyllum</i> )	bota raw
821 span	raNan	846 plant spp. ( <i>Terminalia catappa</i> )	sabilog
822 and	kano	847 plant spp. ( <i>Solanum ferox</i> )	balosa
823 if	an	848 plant spp. ( <i>Neonauclea reticulata</i> )	aytap
824 because	ta	849 fight (to)	arap
825 exist	mian	850 support	---
		851 scratch	---