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## CHAPTER 4 A Sketch of the Mammal Terms of Muang Sing Lolopho with Reference to Dialectal Comparison

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## CHAPTER 4

A Sketch of the Mammal Terms of Muang Sing Lolopho  
with Reference to Dialectal Comparison

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## [要旨]

本稿はラオス・ルアンナムター県で話されるロロポ語[チベット・ビルマ語派ロロ・ビルマ語支]の哺乳類語彙を共時的に記述した。また中国雲南省で話されるロロポ語の方言との比較言語学的分析も行なった。

ロロポ語の哺乳類語彙では/xe<sup>33</sup>/という形態素が多く見られる。これはあたかもロロポ語の動物接頭辞のように見える。しかし、その形態素の位置関係や歴史的な音対応から動物接頭辞ではなく、典型的には齧歯類を指示する形態素であり、本言語が独自にサルグループまで意味を拡張したと分析する。

## 1. Introduction

## 1.1 Lolopho

The Lolopho language<sup>1</sup> [Glottocode: lolo1259; ISO 639-3: ycl] is genetically affiliated with the Central Loloish (Ngwi) languages of the Lolo-Burmese branch of the Tibeto-Burman family (Bradley 1997). It is spoken mainly in Nanhua County 南华县 and Yao'an County 姚安县 of Yunnan Province of China and the Phongsaly and Luang Namtha Provinces of Laos. This paper focuses on the Muang Sing variety of the Lolopho language (henceforth “MS Lolopho”), collected in the author’s linguistic fieldwork.<sup>2</sup>

## 1.2 Previous Works on the Lolopho Language

As briefly summarized in Hayashi (2015), the Lolopho language has been described since the first decade of the 20<sup>th</sup> century.<sup>3</sup> One of the earliest descriptions is Liétard (1913), an ethnographical monograph on the Lolopho people in Yunnan. Liétard (1913) includes some basic words and a grammatical sketch of Lolopho in Yunnan from a contrastive viewpoint with French.

<sup>1</sup> The Lolopho language is also called Lolopo, e.g. in Glottolog 4.5 [Last accessed on February 12, 2022]. The autonym of the Lolopho people is /lo<sup>31</sup>lo<sup>33</sup>pho<sup>31</sup>/.

<sup>2</sup> The linguistic fieldwork on the Muang Sing dialect of Lolopho has been conducted three times since 2014. The author’s main linguistic consultants are: Mr. SVLL (born in 1967), Mr. LXLL (born around 1950), and Mr. LPE (born in 1948).

<sup>3</sup> Hayashi (2015) cited Liétard (1909), which is not relevant; Liétard (1913) should have been cited.

Benedict (1972) and Shafer (1974) are milestone works on Sino-Tibetan comparative linguistics, and both cite Lolopho data. Benedict (1972) clearly cited Lolopho data from Liétard (1913).

In China, there are two primary sources of lexical data on Lolopho from the Nanhua County of Yunnan, compiled by Sun et al. (1991) and Huang et al. (1992) For detailed information and related issues, see Section 6.

The variety spoken in Laos has been reported by Kato (2008), who presents phonological inventories and basic wordlists (around 300 items). However, there has not been any other linguistic material published by Prof. Takashi Kato. Hayashi (2015) provides further linguistic data on Lolopho in Laos, more precisely, the variety spoken in Muang Sing of Luang Namtha Province of Laos, and presents a phonological sketch and basic wordlists (around 500 items).

Kato (2008) and Hayashi (2015) both include a certain number of Lolopho mammal terms in Laos, but there are fewer items than listed in this paper. Up to now, there has been no detailed linguistic analysis of MS Lolopho mammal terms.

1.3 Aim and Organization of This Paper

This study compiles MS Lolopho mammal terms utilizing data collected by the author, and explores their historical and areal linguistic aspects.

The organization of this paper is as follows: Section 2 summarizes the phonological inventory of MS Lolopho. Section 3 explains the description scheme and framework of analysis. Section 4 exemplifies the mammal terms in MS Lolopho and describes their morphology. Section 5 analyzes the morpho-semantic aspects of MS Lolopho mammal terms. Section 6 investigates the historical development of MS Lolopho mammal terms by comparing two main Lolopho dialects of the Yunnan and Lolo-Burmese languages. Section 7 concludes the paper.

The author cites the MS Lolopho data from his own fieldnotes and those of Hayashi (2015) unless otherwise indicated. For other data sources, see the Data Sources Section.

2. MS Lolopho Phonology

Before describing the mammal terms, this section summarizes the MS Lolopho phonological inventories, as discussed in Hayashi (2015). The consonants, vowels, and tones of MS Lolopho can be described as follows:

Table 1: Phonological Inventories of MS Lolopho (Hayashi 2015)

[consonants]	p b	t d	k g	
	ph	th	kh	
	tɕ dz		tɕ	dʑ
	tɕh		tɕh	
	m	n	ɲ	ŋ
	f v	ɕ z	ɕ	j x y
	(w)	l		

	[plain]			[nasalized]			[creaky]		
[vowels]	i	u	u	ĩ		ũ	ĩ	u	u
	e	ɤ	o	ẽ	ɣ	õ	ẽ	ɣ	õ
	ɛ		ɔ	ẽ		õ	ẽ		õ
	a		ɐ			ẽ	a		ẽ
[tones]	55, 33, 31 (, 35)								

The syllable structure of MS Lolopho is C<sub>1</sub>C<sub>2</sub>V/T or C<sub>1</sub>/T. All consonants can be placed in the C<sub>1</sub> slot, while only /-j-/ can occur in C<sub>2</sub>. There are words with syllabic nasal sounds, like /n<sup>31</sup>/ ‘negative’ (Hayashi 2015: 177).

There are three types of vowels, plain, nasalized, and creaky. The cognate words have all three types, whereas loanwords from Lao/Tai and Chinese generally do not have creaky vowels. There are nine diphthongs in the fieldnotes: /ie, iẽ, iɐ, iẽ, ɛi, ɐo, ui, uɐ, uẽ/.

The tone-bearing unit is the syllable, and there are three main tonemes, namely 55, 33, and 31. A few words denoting directions and some grammatical functions have the 35 tone, which needs further analysis.

### 3. Description Scheme and Framework of Analysis

The description schema this paper adopts is basically the same as Hayashi (2019, 2020). During fieldwork on this language, the author showed a picture book (Francis 2001) to the linguistic consultants and asked them to translate the mammal terms into MS Lolopho. This type of elicitation is effective, although there are a few methodological problems, as stated in Hayashi (2019, 2020).

This paper focuses on the mammal terms of MS Lolopho. It documents 76 mammal terms in Section 4. The following chapter examines the linguistic and cultural viewpoints from descriptive and historical linguistic perspectives.

### 4. Mammals Terms in MS Lolopho

This section examines the MS Lolopho mammal terms from the author’s field notes, as illustrated in the following table:

Table 2: Mammals in MS Lolopho

Item no.	Gloss	Hayashi’s fieldnotes
[4-1]	Elephant	xo <sup>33</sup> mɛ <sup>31</sup>
[4-2]	Common tree shrew	xɛ <sup>33</sup> mɛ <sup>55</sup> bɛ <sup>31</sup>
[4-3]	Flying Lemur (“Colugo”) <sup>4</sup>	xɛ <sup>33</sup> fu <sup>31</sup>
[4-4]	Monkey, macaque	xɛ <sup>33</sup> mɔ <sup>31</sup>

<sup>4</sup> The linguistic consultants answered /xɛ<sup>33</sup>fu<sup>31</sup>/ when the author showed the picture of colugos, although it should be noted that colugos or flying lemurs are normally “reported from southern Myanmar and Thailand, south Cambodia and Vietnam, peninsular Malaysia, Sumatra, Java and Borneo” (Francis 2001: 18). This word is identical to the word for ‘arrowed-tailed flying squirrels’ [4-17].

[4-5]	A kind of monkey ("Proboscis monkey") <sup>5</sup>	ŋe <sup>55</sup> mi <sup>31</sup> to <sup>33</sup> xɛ <sup>33</sup>
[4-6]	A kind of monkey ("Western Tarsier") <sup>6</sup>	xɛ <sup>33</sup> ɕe <sup>33</sup> pɾ <sup>33</sup>
[4-7]	White-handed gibbon	ljo <sup>55</sup> xɾ <sup>31</sup> ɕe <sup>33</sup> pɾ <sup>33</sup>
[4-8]	A kind of monkey ("Javan gibbon") <sup>7</sup>	xɛ <sup>33</sup> mɔ <sup>31</sup> ti <sup>55</sup> mɛ <sup>31</sup>
[4-9]	A kind of monkey ("Orangutan") <sup>8</sup>	ljo <sup>55</sup> xɾ <sup>31</sup> nɪ <sup>33</sup> pu <sup>33</sup>
[4-10]	Slow loris	fɿ <sup>33</sup> xɾ <sup>31</sup> (< Ch. ?)
[4-11]	Long-tailed macaque	xɛ <sup>33</sup> mɔ <sup>31</sup> lo <sup>31</sup> phɛ <sup>33</sup>
[4-12]	Assamese macaque	mi <sup>55</sup> dɛ <sup>31</sup> xɛ <sup>33</sup> mɔ <sup>31</sup>
[4-13]	Pig-tailed macaque	xɛ <sup>33</sup> mɔ <sup>31</sup> ɕe <sup>33</sup> pɾ <sup>33</sup>
[4-14]	Stump-tailed macaque	mi <sup>55</sup> dɛ <sup>31</sup> xɛ <sup>33</sup> mɔ <sup>31</sup> nɪ <sup>33</sup> pɾ <sup>33</sup>
[4-15]	A kind of monkey ("Douc") <sup>9</sup>	ljo <sup>55</sup> xɾ <sup>31</sup> (< Ch. ?)
[4-16]	Langur	xɛ <sup>33</sup> mɔ <sup>31</sup> lo <sup>31</sup> phɛ <sup>33</sup> bɔ <sup>31</sup> gja <sup>31</sup>
[4-17]	Arrowed-tailed flying squirrels	xɛ <sup>33</sup> fu <sup>31</sup>
[4-18]	Beautiful tree squirrels	xɛ <sup>33</sup> nɯ <sup>33</sup>
[4-19]	Bornean Mountain Ground Squirrel	xɛ <sup>33</sup> bɔ <sup>31</sup> ɕe <sup>33</sup>
[4-20]	Giant Flying Squirrel	xɛ <sup>33</sup> fu <sup>31</sup> ɕe <sup>33</sup> tɕi <sup>33</sup>
[4-21]	Giant squirrels	xɛ <sup>33</sup> mɔ <sup>33</sup> nɛ <sup>33</sup>
[4-22]	Himalayan striped squirrel	xɛ <sup>33</sup> mɔ <sup>33</sup> bɔ <sup>33</sup>
[4-23]	Mouse	xɛ <sup>33</sup> mɛ <sup>31</sup>
[4-24]	House rat	e <sup>55</sup> khe <sup>33</sup> xɛ <sup>33</sup>
[4-25]	Large bamboo rat	mɔ <sup>33</sup> xɛ <sup>33</sup>
[4-26]	Porcupine	xɛ <sup>33</sup> pu <sup>33</sup>
[4-27]	Brush-tailed porcupine	xɛ <sup>33</sup> khɔ <sup>31</sup>

<sup>5</sup> The proboscis monkey is generally found only in Borneo (Francis 2001: 56-57). However, the consultants answered /ŋe<sup>55</sup>mi<sup>31</sup>to<sup>33</sup>xɛ<sup>33</sup>/ when they were shown the pictures. /ŋe<sup>55</sup>mi<sup>31</sup>to<sup>33</sup>xɛ<sup>33</sup>/ is considered a kind of monkey in MS Lolopho.

<sup>6</sup> The consultants answered /xɛ<sup>33</sup>ɕe<sup>33</sup>pɾ<sup>33</sup>/ when the author showed the picture of the Western Tarsier, although it should be noted that they are normally "found only in southern Sumatra, Borneo and a few small offshore islands" (Francis 2001: 46).

<sup>7</sup> The consultants answered /xɛ<sup>33</sup>mɔ<sup>31</sup>ti<sup>55</sup>mɛ<sup>31</sup>/ when the author showed the picture of Javan gibbon, although it is "the only species of gibbon in its restricted range in western Java" (Francis 2001: 60). Francis (2001: 60) also noted that "it is considered endangered." The word /xɛ<sup>33</sup>mɔ<sup>31</sup>ti<sup>55</sup>mɛ<sup>31</sup>/ means "a kind of monkey" in MS Lolopho.

<sup>8</sup> The Orangutan is "found only in Sumatra and Borneo" (Francis 2001: 65), and is not found in Laos. The word /ljo<sup>55</sup>xɾ<sup>31</sup>nɪ<sup>33</sup>pu<sup>33</sup>/ also means a kind of monkey in MS Lolopho.

<sup>9</sup> Douc or douc langurs are found mainly in the southern part of mainland southeast Asia. Francis (2001: 55) noted that they are "found only in central and south Vietnam, Laos and north-east Cambodia with Red-shanked [doucs] in the north, Grey-shanked [doucs] in the middle, and Black-shanked [doucs] to the south." /ljo<sup>55</sup>xɾ<sup>31</sup>/ may denote a kind of monkey in MS Lolopho.

[4-28]	Rabbit	the <sup>31</sup> lo <sup>33</sup> zo <sup>31</sup>
[4-29]	Savi's pygmy shrew	xe <sup>33</sup> tɕi <sup>55</sup>
[4-30]	Lesser gymnure	xe <sup>33</sup> le <sup>31</sup> pho <sup>33</sup>
[4-31]	Moonrat	xe <sup>33</sup> me <sup>31</sup>
[4-32]	Bat	xe <sup>33</sup> le <sup>33</sup> bjo <sup>33</sup>
[4-33]	Short-nosed fruit bat	xe <sup>33</sup> fu <sup>31</sup> ce <sup>33</sup> tci <sup>33</sup>
[4-34]	Cave nectar bat	xe <sup>33</sup> fu <sup>31</sup> je <sup>31</sup> me <sup>31</sup>
[4-35]	Sheath-tailed bat	xe <sup>33</sup> le <sup>33</sup> bjo <sup>33</sup> ce <sup>33</sup> tci <sup>33</sup>
[4-36]	False vampire	u <sup>33</sup> mi <sup>55</sup> xe <sup>33</sup> le <sup>33</sup> bjo <sup>33</sup>
[4-37]	Mouse-eared bat	ɲe <sup>33</sup> zo <sup>31</sup> xe <sup>33</sup> le <sup>33</sup> bjo <sup>33</sup>
[4-38]	Wooly bat	xe <sup>33</sup> me <sup>31</sup> xe <sup>33</sup> le <sup>33</sup> bjo <sup>33</sup>
[4-39]	Horseshoe bat	xe <sup>33</sup> le <sup>33</sup> bjo <sup>33</sup> ce <sup>33</sup> pɣ <sup>33</sup>
[4-40]	Sunda pangolin	the <sup>31</sup> khɛ <sup>31</sup>
[4-41]	Cat	u <sup>33</sup> mi <sup>55</sup>
[4-42]	Marbled cat	ji <sup>31</sup> pju <sup>33</sup>
[4-43]	Asian golden cat	lo <sup>31</sup> pju <sup>33</sup>
[4-44]	Flat-headed cat <sup>10</sup>	u <sup>33</sup> mi <sup>55</sup> ce <sup>33</sup> pɣ <sup>33</sup>
[4-45]	Jungle cat	u <sup>33</sup> mi <sup>55</sup> vu <sup>31</sup> je <sup>31</sup>
[4-46]	Leopard	ji <sup>31</sup> me <sup>31</sup>
[4-47]	Clouded Leopard	si <sup>55</sup> ji <sup>31</sup>
[4-48]	Tiger	lo <sup>31</sup> me <sup>31</sup>
[4-49]	Large Indian civet	le <sup>33</sup> ke <sup>31</sup> dɔ <sup>31</sup> vɣ <sup>33</sup> me <sup>31</sup>
[4-50]	Little civet	ci <sup>33</sup> dzu <sup>33</sup> u <sup>33</sup> mi <sup>55</sup>
[4-51]	Malay civet	vɣ <sup>33</sup> me <sup>31</sup> ɣe <sup>31</sup> me <sup>31</sup>
[4-52]	Banded linsang	vɣ <sup>33</sup> ce <sup>33</sup> ne <sup>33</sup>
[4-53]	Small-toothed Palm Civet	xe <sup>33</sup> ce <sup>33</sup> pɣ <sup>33</sup>
[4-54]	Masked Palm Civet	e <sup>33</sup> no <sup>55</sup> pho <sup>55</sup> le <sup>31</sup>
[4-55]	Banded Palm Civet	ciɛ <sup>33</sup> meo <sup>33</sup> (<Ch.)
[4-56]	Binturong	ce <sup>31</sup> no <sup>33</sup> vɣ <sup>31</sup> me <sup>31</sup>
[4-57]	Dog	e <sup>33</sup> no <sup>55</sup>
[4-58]	Jackal, Dhole	vɛ <sup>33</sup> me <sup>31</sup>
[4-59]	Bear, black bear	ɣu <sup>55</sup> me <sup>31</sup>
[4-60]	Hog badger, Marten	the <sup>31</sup> mo <sup>33</sup> (<Ch.?)
[4-61]	Ferret badger	le <sup>33</sup> ke <sup>31</sup> dɔ <sup>31</sup> u <sup>33</sup> mi <sup>55</sup>
[4-62]	Otter	the <sup>31</sup> mo <sup>33</sup> ce <sup>33</sup> tci <sup>33</sup>
[4-63]	Rhinoceros	tu <sup>31</sup> ko <sup>31</sup> ciɛ <sup>55</sup>
[4-64]	Horse	the <sup>33</sup> mɤ <sup>31</sup>
[4-65]	Buffalo	u <sup>33</sup> n <sup>u</sup> <sup>55</sup>
[4-66]	Cattle	e <sup>55</sup> n <sup>u</sup> <sup>31</sup>
[4-67]	Gaur	n <sup>u</sup> <sup>31</sup> ke <sup>55</sup>

<sup>10</sup> The consultants answered /u<sup>33</sup>mi<sup>55</sup>ce<sup>33</sup>pɣ<sup>33</sup>/ when the author showed the picture of a flat-headed cat, although it should be noted that flat-headed cats are normally “found only in peninsular Malaysia and adjacent Thailand, Sumatra and Borneo” (Francis 2001: 88).

[4-68]	Banteng	n <sup>31</sup> u <sup>31</sup> ke <sup>55</sup> ɕe <sup>33</sup> p <sup>33</sup> r <sup>33</sup>
[4-69]	Saola <sup>11</sup>	xɛ <sup>31</sup> mɛ <sup>31</sup> ɕe <sup>33</sup> p <sup>33</sup> r <sup>33</sup>
[4-70]	Pig	p <sup>55</sup> vɛ <sup>31</sup>
[4-71]	Eurasian wild pig	n <sup>55</sup> vɛ <sup>31</sup>
[4-72]	Lesser mousedeer	jɛ <sup>33</sup> ph <sup>33</sup> r <sup>33</sup> mɛ <sup>31</sup> tʃhi <sup>33</sup> mɛ <sup>31</sup>
[4-73]	(Red) Muntjac	tʃhi <sup>33</sup> mɛ <sup>31</sup>
[4-74]	Sambar (deer)	tɕhɛ <sup>33</sup> mɛ <sup>31</sup>
[4-75]	Southern serow <sup>12</sup>	xɛ <sup>31</sup> mɛ <sup>31</sup>
[4-76]	Goat	p <sup>33</sup> tʃhu <sup>55</sup>

#### 4.1 Monkeys, Gibbons, and Macaques

The generic term for monkeys in MS Lolopho is /xɛ<sup>33</sup>mɔ<sup>31</sup>/ [4-4]. The lexical data for monkeys, gibbons, and macaques are listed in Table 1 (from [4-4] to [4-16]), and some of them include /xɛ<sup>33</sup>mɔ<sup>31</sup>/ in their morphological construction. However, the order of /xɛ<sup>33</sup>mɔ<sup>31</sup>/ and the other morpheme(s) varies.

The word for monkeys like “Javan Gibbon” [4-8] is /xɛ<sup>33</sup>mɔ<sup>31</sup>ti<sup>55</sup>mɛ<sup>31</sup>/, the first two syllables of which denote ‘monkey’ and the remaining syllables modify the preceding morpheme. The meaning of /ti<sup>55</sup>/ is unknown, but /mɛ<sup>31</sup>/ denotes ‘big’.

The words for ‘long-tailed macaque’ [4-11], ‘pig-tailed macaque’ [4-13] and ‘langur’ [4-16] also have the same construction as the word for monkeys like ‘Javan gibbon’ [4-8]. The first two syllables of these words are /xɛ<sup>33</sup>mɔ<sup>31</sup>/ ‘monkey’. The word for ‘long-tailed macaque’ [4-11] shares /xɛ<sup>33</sup>mɔ<sup>31</sup>lo<sup>31</sup>phɛ<sup>33</sup>/ with the word for ‘langur’ [4-16]; therefore, these two words can be viewed as referring to the same subgroup of macaque in MS Lolopho.<sup>13</sup> The word for ‘pig-tailed macaque’ [4-13] contains the morphemes /ɕe<sup>33</sup>/ and /p<sup>33</sup>r<sup>33</sup>/, the former denoting ‘yellow’ and the latter possibly functioning as a relativizer.

The words for ‘Assamese macaque’ [4-12] and ‘stump-tailed macaque’ [4-14] both contain /mi<sup>55</sup>dɛ<sup>31</sup>xɛ<sup>33</sup>mɔ<sup>31</sup>/. The first two syllables /mi<sup>55</sup>dɛ<sup>31</sup>/ mean ‘ground’ and thus both names signal the place of habitation. Morphologically, the word for ‘stump-tailed macaque’ seems to be a type of ‘Assamese macaque’, and includes /n<sup>33</sup>i<sup>33</sup>-p<sup>33</sup>r<sup>33</sup>/, which can be glossed as ‘red-relativizer’.

There are two loanwords for macaques in the list of mammal terms of MS Lolopho, namely /fɔ<sup>33</sup>xɔ<sup>31</sup>/ and /ljɔ<sup>55</sup>xɔ<sup>31</sup>/, the former of which can be transcribed

<sup>11</sup> Saolas are found mainly in “dense moist forests in the Annamite mountains in central Laos and Vietnam” (Francis 2001: 112). The consultants answered /xɛ<sup>31</sup>mɛ<sup>31</sup>ɕe<sup>33</sup>p<sup>33</sup>r<sup>33</sup>/ when they were shown the photo in Francis (2001).

<sup>12</sup> Southern Serows are mainly found “from Peninsular Thailand to Sumatra” (Francis 2001: 110). The consultants answered /xɛ<sup>31</sup>mɛ<sup>31</sup>/ when they were shown the photo in Francis (2001). Dr. James Chamberlain (p.c.) pointed out that it could be a “Goral.”

<sup>13</sup> In the Loloish languages, a syllable often copies the rhyme and tone of the previous syllable and places /l-/ at the onset, which is called ‘l-reduplication’ by the present author, for example, /a<sup>33</sup>nɔ<sup>55</sup>-lɔ<sup>55</sup>/ ‘red’, in Youle Jino (Hayashi 2009). In Sida [Loloish; Luang Namtha, Laos], some animal names have this type of morphology (Badenoch 2019: 54). /xɛ<sup>33</sup>mɔ<sup>31</sup>lo<sup>31</sup>phɛ<sup>33</sup>/ in MS Lolopho may be related to this phenomenon, which should be studied in more detail.

in Chinese characters as 蜂猴 fēnghóu. /fɿ<sup>33</sup>xɿ<sup>31</sup>/ denotes ‘slow loris’ [4-10]. /ljɔ<sup>55</sup>xɿ<sup>31</sup>/ may be transcribed as 獠猴 liáohóu, which is a type of monkey resembling a douc and the base for the words /ljɔ<sup>55</sup>xɿ<sup>31</sup>ɕɛ<sup>33</sup>pɿ<sup>33</sup>/ ‘white-handed gibbon’ [4-7] and /ljɔ<sup>55</sup>xɿ<sup>31</sup>nɿ<sup>33</sup>pu<sup>33</sup>/ ‘a kind of monkey resembling an orangutan’ [4-9]. Note that /ɕɛ<sup>33</sup>pɿ<sup>33</sup>/ means ‘yellow’.

## 4.2 Squirrels, Rats, and Shrews: Glires and Eulipotyphla

Rodents, including squirrels and rats, and the order Eulipotyphla, including the gymnures and shrews (from [4-17] to [4-31] in Table 2) are mostly denoted by the morpheme /xɛ<sup>33</sup>/.

Table 1 lists two terms for flying squirrels, namely the words for ‘arrowed-tailed flying squirrels’ [4-17] and for ‘giant flying squirrels’ [4-20], which contain the word /xɛ<sup>33</sup>fu<sup>31</sup>/.

The word for ‘giant flying squirrels’ includes the morphemes /ɕɛ<sup>33</sup>/ ‘yellow’ and /tɕi<sup>33</sup>/ ‘diminutive’, and thus is literally construed as ‘small yellow flying squirrel’.

The words for ‘giant squirrels’ [4-21] and ‘Himalayan striped squirrel’ [4-22] share the morphemes /xɛ<sup>33</sup>mɔ<sup>33</sup>/, which may denote a generic term for squirrels. /nɛ<sup>33</sup>/ of the word for ‘giant squirrels’ means ‘black’, while the meaning of /bɔ<sup>33</sup>/ in the word for ‘Himalayan striped squirrel’ remains uncertain.

The generic word for ‘rats/ mice’ is /xɛ<sup>33</sup>mɛ<sup>31</sup>/ [4-23]. This word also covers ‘moonrat’ [4-31].<sup>14</sup> The word for ‘common tree shrew’ /xɛ<sup>33</sup>mɛ<sup>55</sup>bɛ<sup>31</sup>/ [4-2] may be related to this word, though the tone of the second syllable is different.<sup>15</sup>

The words relating to rats and porcupines all share /xɛ<sup>33</sup>/, but the other elements are different. Table 2 lists two types of the morpheme order: [A] /xɛ<sup>33</sup> + X/ and [B] /X + xɛ<sup>33</sup>/.

There are many examples of Type [A], such as /xɛ<sup>33</sup>mɛ<sup>31</sup>/ ‘mouse, moonrat’, /xɛ<sup>33</sup>pu<sup>33</sup>/ ‘porcupine’, /xɛ<sup>33</sup>tɕi<sup>55</sup>/ ‘Savy’s pygmy shrew’, and /xɛ<sup>33</sup>lɛ<sup>31</sup>phɔ<sup>33</sup>/ ‘lesser gymnure’. Conversely, the words of Type [B] are rare. Table 2 lists only two examples, the words for ‘house rat’ /ɐ<sup>55</sup>kɛ<sup>33</sup>xɛ<sup>33</sup>/ [4-24] and ‘large bamboo rat’ /mɔ<sup>33</sup>xɛ<sup>33</sup>/ [4-25]. /ɐ<sup>55</sup>kɛ<sup>33</sup>/ means ‘the place where the human beings live’. The semantics of /mɔ<sup>33</sup>/ needs further analysis.

Rabbits belong to the order Lagomorpha, and therefore they are differently described as: /thɐ<sup>31</sup>lo<sup>33</sup>zɔ<sup>31</sup>/ [4-28]. The word-final morpheme /zɔ<sup>31</sup>/ functions as a diminutive, and /thɐ<sup>31</sup>lo<sup>33</sup>/ should be the proper name for ‘rabbits’, which will be compared in Lolo-Burmese historical linguistics in Section 6.2.4

<sup>14</sup> The linguistic consultants give /xɛ<sup>33</sup>mɛ<sup>31</sup>/ as the word for ‘moonrat’, although the moonrat normally occurs in peninsular Thailand, Malaysia, Sumatra and Borneo (Francis 2001: 13). Note that the moonrat also belongs to Eulipotyphla (James Chamberlain p.c.).

<sup>15</sup> The tonal difference of this word may be related to the zoological difference. Despite its common English name, tree shrews are not shrews, and belong to the order Scandentia (James Chamberlain p.c.). Its Lao word ນະຮຸ່ນ /ká te:/, which is often transcribed as “a rodent of squirrel type” (Kerr 1992[1972]: 12), but James Chamberlain (p.c.) points out that it is never confused with rats and squirrels, even though it outwardly resembles them.



### 4.3 Bats

The generic term for bats in MS Lolopho is /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>/ [4-32]. There are eight words relating to bats in Table 2, and we have five words for types of bats involving /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>/, which are divided into two sets, namely /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup> + X/ and /X + xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>/.

The first set is constructed as /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup> + X/. /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>/ seems to function as the head, and X is the modifier, and these are exemplified as /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>ɕɛ<sup>33</sup>tɕi<sup>33</sup>/ ‘Sheath-tailed bat’<sup>16</sup> [4-35] and /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>ɕɛ<sup>33</sup>pɾ<sup>33</sup>/ ‘Horseshoe bat’ [4-39]. /ɕɛ<sup>33</sup>/ denotes ‘yellow’ and /tɕi<sup>33</sup>/ functions as a diminutive. Therefore, /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>ɕɛ<sup>33</sup>tɕi<sup>33</sup>/ and /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>ɕɛ<sup>33</sup>pɾ<sup>33</sup>/ literally mean ‘little yellow bat’ and ‘yellow bat’, respectively. The color of horseshoe bats is yellow, though that of sheath-tailed bats is not yellow in Francis (2001: 26). Sheath-tailed bats are smaller than horseshoe bats on average<sup>17</sup>; therefore, MS Lolopho’s description seems plausible.

The second set has the reverse order, that is, /X + xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>/. It is interesting to note that the X of this set is also a faunal term. X of the word for ‘false vampire’ [4-36] is /u<sup>33</sup>mi<sup>55</sup>/ which denotes ‘cat’. There are two other words of this set in Table 2, namely the words for ‘mouse-eared bat’ [4-37] and ‘wooly bat’ [4-38] whose Xs are /ŋɛ<sup>33</sup>zɔ<sup>31</sup>/ ‘bird’ and /xɛ<sup>33</sup>mɛ<sup>31</sup>/ ‘rat’, respectively.

The remaining words for bats, such as ‘short-nosed fruit bats’ and ‘cave nectar bat’ are denoted by /xɛ<sup>33</sup>fu<sup>31</sup>/, which means ‘flying squirrel’ in MS Lolopho (cf. [4-17]).

### 4.4 Cats, Tigers, and Leopards: Felidae

The generic term for cats in MS Lolopho is /u<sup>33</sup>mi<sup>55</sup>/ [4-41]. Some words for cats contain the morpheme /u<sup>33</sup>mi<sup>55</sup>/, such as ‘flat-headed cat’, ‘little civet’, etc., which are divided into two sets, /u<sup>33</sup>mi<sup>55</sup> + X/ and /X + u<sup>33</sup>mi<sup>55</sup>/.

The first set is constructed like /u<sup>33</sup>mi<sup>55</sup> + X/. /u<sup>33</sup>mi<sup>55</sup>/ of this set is the head of the word, and X functions as a modifier. The word for ‘flat-headed cat’ [4-44] is /u<sup>33</sup>mi<sup>55</sup>ɕɛ<sup>33</sup>pɾ<sup>33</sup>/, and as in the word for ‘horseshoe bat’ [4-39], this word can be literally translated as ‘yellow cat’. The word for ‘jungle cat’ /u<sup>33</sup>mi<sup>55</sup>vu<sup>31</sup>je<sup>31</sup>/ [4-45] also has the same construction, but the meaning of /vu<sup>31</sup>/ is unknown. /je<sup>31</sup>/ denotes an augmentative.

The second set is constructed like /X + u<sup>33</sup>mi<sup>55</sup>/. Table 2 lists only one example, namely /ɕi<sup>33</sup>dzu<sup>33</sup>u<sup>33</sup>mi<sup>55</sup>/ ‘little civet’ [4-50], the first morpheme /ɕi<sup>33</sup>dzu<sup>33</sup>/ of which denotes ‘tree’.

The other words for cats contain /pju<sup>33</sup>/, such as /ji<sup>31</sup>pju<sup>33</sup>/ ‘marbled cat’ [4-42] and /lɔ<sup>31</sup>pju<sup>33</sup>/ ‘Asian golden cat’ [4-43], both of which are compounds. /pju<sup>33</sup>/ should be a different type than the generic word for cats. The origin of /pju<sup>33</sup>/ needs

<sup>16</sup> Francis (2001: 26) explains that “lesser sheath-tailed bats” range from peninsular Thailand to Borneo, and “greater sheath-tailed bats” from Borneo through Moluccas. Therefore, it is safe to say that they are rarely found in Laos. This word in MS Lolopho means “a kind of bat”.

<sup>17</sup> Francis (2001) describes that forearm length of ‘sheath-tailed bats’ is around 41-48mm [ibid, p.26], while that of ‘horseshoe bats’ is around 37-72mm [ibid, p.30].

further analysis, but Chamberlain (p.c.) points out that it may be borrowed from Chinese 彪 *biāo* ‘small tiger’.

The first syllable of ‘marbled cat’ [4-42], is /jɿ<sup>31</sup>/, construed as ‘leopard’, because the word for leopard is /jɿ<sup>31</sup>mɛ<sup>31</sup>/ [4-46], which should be literally read as ‘big leopard’.<sup>18</sup> The word for ‘clouded leopard’ /ʃi<sup>55</sup>jɿ<sup>31</sup>/ [4-47] also contains /jɿ<sup>31</sup>/, although the meaning of the first element /ʃi<sup>55</sup>/ is unknown.

The first syllable of ‘Asian golden cat’ [4-43], /lɔ<sup>31</sup>/, is construed as ‘tiger’, because the word for ‘tiger’ is /lɔ<sup>31</sup>mɛ<sup>31</sup>/ [4-48], which should be literally read as ‘big tiger’.<sup>19</sup>

/jɿ<sup>31</sup>pju<sup>33</sup>/ [4-42] and /lɔ<sup>31</sup>pju<sup>33</sup>/ [4-43] are compounds made from /jɿ<sup>31</sup>/ or /lɔ<sup>31</sup>/ + /pju<sup>33</sup>/, and /jɿ<sup>31</sup>mɛ<sup>31</sup>/ [4-46] and /lɔ<sup>31</sup>mɛ<sup>31</sup>/ [4-48] are compounds made from /jɿ<sup>31</sup>/ or /lɔ<sup>31</sup>/ + /mɛ<sup>31</sup>/ . If we posit /pju<sup>33</sup>/ as a kind of ‘small tiger’, the ranking of the size should be /jɿ<sup>31</sup>pju<sup>33</sup>/ [smaller] < /lɔ<sup>31</sup>pju<sup>33</sup>/ < /jɿ<sup>31</sup>mɛ<sup>31</sup>/ < /lɔ<sup>31</sup>mɛ<sup>31</sup>/ [bigger], which fits the description of Francis (2001).<sup>20</sup>

#### 4.5 Civets: Viverridae

Civets and cats are in different subgroups in zoological classification, though they are under the same category, “Feliformia.”

Some terms for civets in MS Lolopho are indicated in the morpheme /vɤ<sup>33</sup>/, such as, the words for ‘large Indian civet’ [4-49], ‘Malay civet’ [4-51], ‘banded linsang’ [4-52]. The words for ‘Malay civet’ and ‘banded linsang’ share the same construction, namely /vɤ<sup>33</sup> + X/. X is a modifier in these words, and /ɕɛ<sup>33</sup>/ and /nɛ<sup>33</sup>/ of ‘banded linsang’ mean ‘yellow’ and ‘black’, respectively.<sup>21</sup>

The word for ‘Malay civet’ /vɤ<sup>33</sup>mɛ<sup>31</sup>ɣɛ<sup>31</sup>mɛ<sup>31</sup>/ is, however, involved with a more complex morphology. /mɛ<sup>31</sup>/ and /ɣɛ<sup>31</sup>mɛ<sup>31</sup>/ both denote ‘big’, which may be redundant in describing the size. It might be argued that /vɤ<sup>33</sup>mɛ<sup>31</sup>ɣɛ<sup>31</sup>mɛ<sup>31</sup>/ has an internal structure like {vɤ<sup>33</sup>-mɛ<sup>31</sup>}<sub>[A]</sub> + {ɣɛ<sup>31</sup>-mɛ<sup>31</sup>}<sub>[B]</sub>, [A] which is a generic term for civets and [B] which is the full form for ‘big’. The word for ‘large Indian civet’ [4-49] is a compound word containing /lɛ<sup>33</sup>kɛ<sup>31</sup>dɔ<sup>31</sup>/ and /vɤ<sup>33</sup>mɛ<sup>31</sup>/, the former of which can be construed as ‘living in the mountain area’.

The word for ‘little civet’ is /ɕi<sup>33</sup>dzu<sup>33</sup>u<sup>33</sup>mi<sup>55</sup>/ [4-50], as mentioned in 4.4, and is construed as a type of cat. However, the word for ‘masked palm civet’ is /ɛ<sup>33</sup>no<sup>55</sup>phɔ<sup>55</sup>lɛ<sup>31</sup>/ [4-54], which includes the word for ‘dog’ /ɛ<sup>33</sup>no<sup>55</sup>/ . At the moment, the meaning of the last two syllables is unknown. The word for ‘banded palm civet’ is /ɕiɛ<sup>33</sup>mɛo<sup>33</sup>/, which is a loanword from Chinese (麝) 香猫 (shè)xiāngmāo.

The consultants of this paper call the ‘small-toothed palm civet’ /xɛ<sup>33</sup>ɕɛ<sup>33</sup>pɤ<sup>33</sup>/ [4-53], which can be analyzed as /xɛ<sup>33</sup>/ ‘monkey or squirrel’ + /ɕɛ<sup>33</sup>-pɤ<sup>33</sup>/ ‘yellow-REL’. This word also needs further investigation.

<sup>18</sup> /mɛ<sup>31</sup>/ in this word functions augmentative.

<sup>19</sup> /mɛ<sup>31</sup>/ in this word functions augmentative.

<sup>20</sup> Francis (2001) describes that the total lengths of ‘marbled cat’, ‘Asian golden cat’, ‘leopard’, and ‘tiger’ are 90-110cm, 120-130cm, 180-220cm, and 240-290cm, respectively.

<sup>21</sup> The ‘banded linsang’ has a tail with banded colors of yellow and black, which can be seen in the photo in Francis (2001: 75).

## 4.6 Dogs, Jackals, and Dhole

MS Lolopho clearly differentiates the words for ‘dog’ and for ‘jackal/ dhole’,<sup>22</sup> the former of which is /ɛ<sup>33</sup>no<sup>55</sup>/ [4-57] and the latter /vɛ<sup>33</sup>mɛ<sup>31</sup>/ [4-58]. Chamberlain (p.c.) pointed out that the jackal is easily distinguished from the dhole, and therefore there could be different names for each species, but at the moment, the consultants refer to them by the same term.

## 4.7 Hog Badgers, Ferret Badgers, Martens, and Otters

Interestingly, the consultants have the same word for ‘hog badger’ and ‘marten’ /tɕɛ<sup>31</sup>mɔ<sup>33</sup>/ [4-60]. The word for otter is /tɕɛ<sup>31</sup>mɔ<sup>33</sup>ɕɛ<sup>33</sup>tɕi<sup>33</sup>/ [4-62], which is literally construed as ‘small yellow marten’, as seen in the word for ‘giant flying squirrel’ [4-20].

The word for ‘ferret badger’ should be related to the word for ‘hog badger’, but it is /lɛ<sup>33</sup>kɛ<sup>31</sup>dɔ<sup>31</sup>u<sup>33</sup>mi<sup>55</sup>/ [4-61], which is totally different. The first two syllables /lɛ<sup>33</sup>kɛ<sup>31</sup>/ denote ‘the mountain area’ and the last two syllables /u<sup>33</sup>mi<sup>55</sup>/ ‘cat’, so this word can be literally construed as ‘mountain cat’.

## 4.8 Elephants and Rhinoceros

The word for ‘elephants’ is /xo<sup>33</sup>mɛ<sup>31</sup>/ [4-1], which can be divided into two morphemes /xo<sup>33</sup>-mɛ<sup>31</sup>/. The first morpheme is the root of this word, and the second is an augmentative suffix.

The word for ‘rhinoceros’ is /tu<sup>31</sup>kɔ<sup>31</sup>ɕiɛ̃<sup>55</sup>/ [4-63]. The morphological structure of this word is still obscure, but the word-final /ɕiɛ̃<sup>55</sup>/ may be borrowed from Chinese 象 *xiàng* ‘elephants’, which can possibly be recognized as a group of elephants.<sup>23</sup>

## 4.9 Cattles, Gaurs, Buffalos, and Pigs

The words for ‘buffalo’, ‘cattle’, and ‘gaur’ are generally related to each other, which also may hold true in MS Lolopho. The words for ‘cattle’ [4-66] and ‘gaur’ [4-67] are clearly related, as they both share the morpheme /nɔ<sup>31</sup>/. /ɐ<sup>55</sup>nɔ<sup>31</sup>/ for ‘cattle’ contains /ɐ<sup>55</sup>/, which is a prefix marking nominals, and denotes domesticated cows in this language. The second element of the word for ‘gaur’, namely /kɐ<sup>55</sup>/, which may be a modifier, still needs further investigation.

The word for ‘buffalo’ is /u<sup>33</sup>nɔ<sup>55</sup>/ [4-65], the second syllable of which is similar to /nɔ<sup>31</sup>/ in ‘cattle’, though its tone is different. The historical development of this word will be analyzed in Section 6.2.3. The first syllable /u<sup>33</sup>/ probably denotes ‘water’, the full form of which is /ɐ<sup>31</sup>vu<sup>55</sup>/.

The word for ‘pig’ is /ɐ<sup>55</sup>vɛ̃<sup>31</sup>/ [4-70], which can also be divided into two morphemes, /ɐ<sup>55</sup>-vɛ̃<sup>31</sup>/. /ɐ<sup>55</sup>/ is the same prefix as in the word for ‘cattle’, and /vɛ̃<sup>31</sup>/ is the root. /ɐ<sup>55</sup>vɛ̃<sup>31</sup>/ denotes domesticated pig, while /nɔ<sup>55</sup>vɛ̃<sup>31</sup>/ [4-71] denotes

<sup>22</sup> James Chamberlain personally commented to the author that the word for ‘dog’ may be differentiated as ‘domestic dog’, which needs further investigation.

<sup>23</sup> This idea is paradoxical, because the word for ‘rhinoceros’ could also employ the morpheme /xo<sup>33</sup>/ if they are viewed as a type of elephant. The entire word /tu<sup>31</sup>kɔ<sup>31</sup>ɕiɛ̃<sup>55</sup>/ may be borrowed from Chinese, although this still needs further analysis.

‘(Eurasian) wild pig’, which contains the morpheme /*n̥u*<sup>55</sup>/. /*n̥u*<sup>55</sup>/ in this word is the same as in the word for ‘buffalo’ [4-65]; therefore, /*n̥u*<sup>55</sup>*vɛ*<sup>31</sup>/ can be literally construed as ‘buffalo-like pig’.

#### 4.10 Deer, Muntjacs, and Goats

In MS Lolopho, the generic word for deer is /*tɕhe*<sup>33</sup>*mɛ*<sup>31</sup>/ [4-74], to which an augmentative suffix /*mɛ*<sup>31</sup>/ is attached. As noted, the word for ‘muntjac’ /*tɕhi*<sup>33</sup>*mɛ*<sup>31</sup>/ [4-73] is different, although the form is phonetically similar to the word for ‘deer’. The word for ‘lesser mousedeer’ /*je*<sup>33</sup>*phɤ*<sup>33</sup>*mɛ*<sup>31</sup>*tɕhi*<sup>33</sup>*mɛ*<sup>31</sup>/ [4-72] is affiliated with a different family, but its morphology in MS Lolopho implies a type of muntjac.

The word for ‘goat’ /*e*<sup>33</sup>*tɕhu*<sup>55</sup>/ [4-76] is also phonetically similar to that for ‘muntjac’, but the vowel of the root /*tɕhu*<sup>55</sup>/ is different. This word has the prefix /*e*<sup>33</sup>/, as seen in the word for ‘cattle’ [4-66] and ‘pig’ [4-70].

### 5. Morphological and Semantic Analysis of Mammal Terms in MS Lolopho

This section will describe the morphology of mammal terms in MS Lolopho and analyze their semantics.

#### 5.1 Morphology

MS Lolopho mammal terms are morphologically involved in compounding and affixation. Each morphological operation will be investigated in this subsection.

##### 5.1.1 Compounding

There are several types of compounding in MS Lolopho mammal terms. First, we will discuss the compounding of two faunal terms. See Table 3.

Table 3: Compounding: Faunal + Faunal

No.	A		B		AB	No. in Sec.4
[5-1]	<i>u</i> <sup>33</sup> <i>mi</i> <sup>55</sup> ‘cat’	+	<i>xe</i> <sup>33</sup> <i>lɛ</i> <sup>33</sup> <i>bjo</i> <sup>33</sup> ‘bat’	→	<i>u</i> <sup>33</sup> <i>mi</i> <sup>55</sup> <i>xe</i> <sup>33</sup> <i>lɛ</i> <sup>33</sup> <i>bjo</i> <sup>33</sup> ‘False vampire’	[4-36]
[5-2]	<i>ɲe</i> <sup>33</sup> <i>zo</i> <sup>31</sup> ‘bird’	+	<i>xe</i> <sup>33</sup> <i>lɛ</i> <sup>33</sup> <i>bjo</i> <sup>33</sup> ‘bat’	→	<i>ɲe</i> <sup>33</sup> <i>zo</i> <sup>31</sup> <i>xe</i> <sup>33</sup> <i>lɛ</i> <sup>33</sup> <i>bjo</i> <sup>33</sup> ‘Mouse-eared bat’	[4-37]
[5-3]	<i>xe</i> <sup>33</sup> <i>mɛ</i> <sup>31</sup> ‘rat’	+	<i>xe</i> <sup>33</sup> <i>lɛ</i> <sup>33</sup> <i>bjo</i> <sup>33</sup> ‘bat’	→	<i>xe</i> <sup>33</sup> <i>mɛ</i> <sup>31</sup> <i>xe</i> <sup>33</sup> <i>lɛ</i> <sup>33</sup> <i>bjo</i> <sup>33</sup> ‘Wooly bat’	[4-38]
[5-4]	<i>ɲe</i> <sup>55</sup> <i>mi</i> <sup>31</sup> <i>to</i> <sup>33</sup> ‘great hornbill’	+	<i>xe</i> <sup>33</sup> ‘squirrel/ monkey?’	→	<i>ɲe</i> <sup>55</sup> <i>mi</i> <sup>31</sup> <i>to</i> <sup>33</sup> <i>xe</i> <sup>33</sup> ‘A kind of monkey (“Proboscis monkey”)’	[4-5]
[5-5]	<i>n̥u</i> <sup>55</sup> ‘cattle’	+	<i>vɛ</i> <sup>31</sup> ‘pig’	→	<i>n̥u</i> <sup>55</sup> <i>vɛ</i> <sup>31</sup> ‘(Eurasian) wild pig’	[4-71]

Table 3 lists examples where two faunal terms are compounded. These compounds are often called “faunafaunic” compounds (Matisoff 2011, Kurabe 2020). Kurabe (2020) lists many faunafaunic compounds in Burmese zoonyms, containing head-

initial and head-final types. However, faunafaunic compounds of MS Lolopho mammal terms are generally head-final.

The first three examples, [5-1], [5-2] and [5-3], are all related to the word for ‘bat’, which is placed as the B element. The A elements of these three words are different life forms or generic taxa.<sup>24</sup> However, the word for a kind of monkey resembling a proboscis monkey [5-4] contains the word for ‘great hornbill’ /ŋe<sup>55</sup>mi<sup>31</sup>to<sup>33</sup>/, a kind of varietal taxa, as the A element, and /xɛ<sup>33</sup>/ ‘squirrel/monkey?’, a kind of life forms, as the B element. The word for ‘(Eurasian) wild pig’ [5-5] includes /nɯ<sup>55</sup>/ ‘cattle’ and /vɛ<sup>31</sup>/ ‘pig’ as the A and B elements, respectively, both of which can be construed as generic taxa.

The compounding zoonyms of the B element, which contains color and size, can be found in Burmese as well, such as /ɛ̃n-nì-gǎlé/ [squirrel-red-DIM] ‘Finlayson’s squirrel’, /bé-byà-gǎlé/ [duck-blue-DIM] ‘garganey’ (Kurabe 2020: 76-77, [glosses] adapted by the author). The morpheme order of these terms is ‘animal term-color-size’, which is the same as MS Lolopho mammal terms.

The second type of compounding is related to place names or inhabitation, which is expressed by the A element. See the examples in Table 4.

Table 4: Compounding: Place + Faunal

No.	A		B		AB	No. in Sec.4
[5-6]	mi <sup>55</sup> dɛ <sup>31</sup> ‘ground’	+	xɛ <sup>33</sup> mɔ <sup>31</sup> ‘monkey’	→	mi <sup>55</sup> dɛ <sup>31</sup> xɛ <sup>33</sup> mɔ <sup>31</sup> ‘Assamese macaque’	[4-12]
[5-7]	ɕi <sup>33</sup> dzu <sup>33</sup> ‘tree’	+	u <sup>33</sup> mi <sup>55</sup> ‘cat’	→	ɕi <sup>33</sup> dzu <sup>33</sup> u <sup>33</sup> mi <sup>55</sup> ‘Little civet’	[4-50]
[5-8]	e <sup>55</sup> khe <sup>33</sup> ‘place of human’	+	xɛ <sup>33</sup> ‘squirrel/monkey?’	→	e <sup>55</sup> khe <sup>33</sup> xɛ <sup>33</sup> ‘house rat’	[4-24]
[5-9]	lɛ <sup>33</sup> kɛ <sup>31</sup> dɔ̃ <sup>31</sup> ‘mountain area’	+	vɣ <sup>33</sup> mɛ <sup>31</sup> ‘civet’	→	lɛ <sup>33</sup> kɛ <sup>31</sup> dɔ̃ <sup>31</sup> vɣ <sup>33</sup> mɛ <sup>31</sup> ‘Large Indian civet’	[4-49]
[5-10]	lɛ <sup>33</sup> kɛ <sup>31</sup> dɔ̃ <sup>31</sup> ‘mountain area’	+	u <sup>33</sup> mi <sup>55</sup> ‘cat’	→	lɛ <sup>33</sup> kɛ <sup>31</sup> dɔ̃ <sup>31</sup> u <sup>33</sup> mi <sup>55</sup> ‘Ferret badger’	[4-61]

This type is also head-final compounding. The places of habitation are expressed by the A elements, such as ‘ground’, ‘tree’, ‘place of humans’, and ‘mountain area’. MS Lolopho refers to ‘the animal’ as /dʒɛ<sup>31</sup>/, which has two categories, ‘the animal inhabiting the place of human’ and ‘the animal living in the mountain’. The former is called /e<sup>55</sup>khe<sup>33</sup>dʒɛ<sup>31</sup>/ and the latter /lɛ<sup>33</sup>kɛ<sup>31</sup>dʒɛ<sup>31</sup>/.

This type is, of course, found in other Tibeto-Burman languages, like Burmese /myè-cwɛʔ/ [ground-rat] ‘Dsinezumi shrew’ (Kurabe 2020: 74, [glosses] adapted by the author), which is also head-final compounding.

<sup>24</sup> For the nomenclature and the terminology (life forms, genetic taxa, varietal taxa, etc.) in folk biology, see Berlin et al. (1973) and Chamberlain (1977), among others.

The third type of compounding is involved with a faunal term plus a color term, as shown in in Table 5.

Table 5: Compounding: Faunal + Color

No.	A	B	AB	No. in Sec.4
[5-11]	mi <sup>55</sup> de <sup>31</sup> xe <sup>33</sup> mo <sup>31</sup> 'Assamese macaque'	+ ni <sup>33</sup> -pɾ <sup>33</sup> 'red-REL'	→ mi <sup>55</sup> de <sup>31</sup> xe <sup>33</sup> mo <sup>31</sup> ni <sup>33</sup> pɾ <sup>33</sup> 'Stump-tailed macaque'	[4-14]
[5-12]	xe <sup>33</sup> mo <sup>33</sup> 'type of squirrel'	+ ne <sup>33</sup> 'black'	→ xe <sup>33</sup> mo <sup>33</sup> ne <sup>33</sup> 'Giant squirrel'	[4-21]
[5-13]	xe <sup>31</sup> me <sup>31</sup> 'serow'	+ ɕe <sup>33</sup> -pɾ <sup>33</sup> 'yellow- REL'	→ xe <sup>31</sup> me <sup>31</sup> ɕe <sup>33</sup> pɾ <sup>33</sup> 'Saola'	[4-69]
[5-14]	xe <sup>33</sup> fu <sup>31</sup> 'colugo'	+ ɕe <sup>33</sup> -tei <sup>33</sup> 'yellow- diminutive'	→ xe <sup>33</sup> fu <sup>31</sup> ɕe <sup>33</sup> tei <sup>33</sup> 'Short-nosed fruit bat'	[4-33]

The mammal terms listed in Table 5 are also compounds, although the A element should be analyzed as the head. The B element of this group contains color terms, like /ni<sup>33</sup>/ 'red', /ne<sup>33</sup>/ 'black', /ɕe<sup>33</sup>/ 'yellow', etc. The word for 'giant squirrel' [5-12] places the word for 'black' /ne<sup>33</sup>/ without any relational markings, while the word for 'stump-tailed macaque' [5-11] places the word for 'red' /ni<sup>33</sup>/ suffixed by the relativizer /-pɾ<sup>33</sup>/.

Kurabe (2020: 76, [glosses] adapted by the author) lists the Burmese zoonyms with color terms, like /cweʔ-phyù/ [rat-white] 'house mouse', /myauʔ-pò/ [monkey-brown] 'tarsiers', etc., which are all without relational markings. A similar thing can be found in animal names of Sida [Loloish; Luang Namtha, Laos], for example, /pòlɥ=ènglɥ/ [butterfly=black] 'black butterfly', /pjàjòjò-nɛ/ [civet-black] 'fragrant civet', etc. (Badenoch 2019: 54-55, phonemic notations and glosses adapted by the author). MS Lolopho mammal terms mostly make the relativizer /-pɾ<sup>33</sup>/ occur, which differs from Burmese and Sida.

### 5.1.2 Affixation

Affixation is another morphological operation frequently found in MS Lolopho mammal terms. First, the mammal terms with the prefix /v-/ are exemplified in Table 6.

The tone of /v-/ varies due to the surrounding morphemes, such as /v<sup>55</sup>-, /v<sup>33</sup>-/ and /v<sup>31</sup>-, and therefore it is unmarked when it is morphologically explained. /v-/ occurs in many nouns in MS Lolopho, for instance, /v<sup>55</sup>-khu<sup>31</sup>/ 'tobacco', /v<sup>33</sup>-do<sup>31</sup>/ 'door', /v<sup>31</sup>-vu<sup>33</sup>/ 'water', etc. The noun class of MS Lolopho can be generally defined from a syntactic viewpoint, but it is morphologically marked by the prefix /v-/. /v-/ and means semantically null<sup>25</sup>; therefore, it can be glossed 'nominal marker'.

<sup>25</sup> For example, /v<sup>55</sup>khu<sup>31</sup>/ 'tobacco' can be divided into two morphemes, namely /v<sup>55</sup>/ and /khu<sup>31</sup>/, the latter of which is the root of this word and expresses the core meaning of

Table 6: 'nominal marker' /e-/

No.	A-B	AB	No. in Sec.4
[5-15]	e <sup>33</sup> -no <sup>55</sup> NM-dog	→ e <sup>33</sup> no <sup>55</sup> 'dog'	[4-57]
[5-16]	e <sup>55</sup> -ŋu <sup>31</sup> NM-cattle	→ e <sup>55</sup> ŋu <sup>31</sup> 'cattle'	[4-66]
[5-17]	e <sup>55</sup> -vɛ <sup>31</sup> NM-pig	→ e <sup>55</sup> vɛ <sup>31</sup> 'pig'	[4-70]
[5-18]	e <sup>33</sup> -tʂhu <sup>55</sup> NM-goat	→ e <sup>33</sup> tʂhu <sup>55</sup> 'goat'	[4-76]

The mammal terms in Table 6 are also prefixed by /e-/, although this morphological operation seems to have no semantic function. However, as James Chamberlain (p.c.) pointed out to me, it is interesting to note that these terms in Table 6 are all domestic animals.

Tables 7 and 8 illustrate the terms with the augmentative suffix /-mɛ<sup>31</sup>/ and the diminutive suffixes /-tɛi<sup>33</sup>/ and /-zɔ<sup>31</sup>/, each of which is explored below.

Table 7: Augmentative

No.	A-B	AB	No. in Sec.4
[5-19]	ji <sup>31</sup> -mɛ <sup>31</sup> type of leopard-augmentative	→ ji <sup>31</sup> mɛ <sup>31</sup> 'leopard'	[4-46]
[5-20]	lɔ <sup>31</sup> -mɛ <sup>31</sup> type of tiger-augmentative	→ lɔ <sup>31</sup> mɛ <sup>31</sup> 'tiger'	[4-48]
[5-21]	vɛ <sup>33</sup> -mɛ <sup>31</sup> ?-augmentative	→ vɛ <sup>33</sup> mɛ <sup>31</sup> 'dhole, Jackal'	[4-58]
[5-22]	ɣu <sup>55</sup> -mɛ <sup>31</sup> bear-augmentative	→ ɣu <sup>55</sup> mɛ <sup>31</sup> 'bear'	[4-59]
[5-23]	tʂhi <sup>33</sup> -mɛ <sup>31</sup> type of deer-augmentative	→ tʂhi <sup>33</sup> mɛ <sup>31</sup> 'muntjac'	[4-73]

Some MS Lolopho mammal terms are suffixed by /-mɛ<sup>31</sup>/ or /-mɛ<sup>31</sup>/, listed in Table 7. The above terms are not listed without the suffix /-mɛ<sup>31</sup>/, All of the mammal terms with this suffix are relatively large. /-mɛ<sup>31</sup>/ may be shortened from the word /jɛ<sup>31</sup>mɛ<sup>31</sup>/ or /ɣɛ<sup>31</sup>mɛ<sup>31</sup>/ 'big', which are also attested in mammal terms, like /xɛ<sup>33</sup>fɯ<sup>31</sup>jɛ<sup>31</sup>mɛ<sup>31</sup>/ 'cave nectar bat' [4-34], /vɤ<sup>33</sup>mɛ<sup>31</sup>ɣɛ<sup>31</sup>mɛ<sup>31</sup>/ 'Malay civet' [4-51], etc. The origin of the creakiness of the suffix /-mɛ/ still needs further analysis.

Table 8 lists the mammal terms with the suffixes /-tɛi<sup>33</sup>/ and /-zɔ<sup>31</sup>/.

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'tobacco'. /e<sup>55</sup>/ functions as the morphological marker of nominals, and expresses nothing semantically.



Table 8: Diminutive

No.	[A]-B	AB	No. in Sec.4
[5-24]	[xɛ <sup>33</sup> fu <sup>31</sup> +ɛɛ <sup>33</sup> ]-tɛi <sup>33</sup> [colugo+yellow]-diminutive	→ xɛ <sup>33</sup> fu <sup>31</sup> ɛɛ <sup>33</sup> tɛi <sup>33</sup> ‘Short-nosed fruit bat’	[4-33]
[5-25]	[xɛ <sup>33</sup> lɛ <sup>33</sup> bjo <sup>33</sup> +ɛɛ <sup>33</sup> ]-tɛi <sup>33</sup> [bat+yellow]-diminutive	→ xɛ <sup>33</sup> lɛ <sup>33</sup> bjo <sup>33</sup> ɛɛ <sup>33</sup> tɛi <sup>33</sup> ‘Sheath-tailed bat’	[4-35]
[5-26]	[tɰ <sup>31</sup> mɔ <sup>33</sup> +ɛɛ <sup>33</sup> ]-tɛi <sup>33</sup> [marten+yellow]-diminutive	→ tɰ <sup>31</sup> mɔ <sup>33</sup> ɛɛ <sup>33</sup> tɛi <sup>33</sup> ‘otter’	[4-62]
[5-27]	[ŋu <sup>55</sup> vɛ <sup>31</sup> ]-zɔ <sup>31</sup> [wild pig]-diminutive	→ ŋu <sup>55</sup> vɛ <sup>31</sup> zɔ <sup>31</sup> ‘wild piglet’	cf. [4-71]
[5-28]	[tɰ <sup>31</sup> lo <sup>33</sup> ]-zɔ <sup>31</sup> [rabbit]-diminutive	→ tɰ <sup>31</sup> lo <sup>33</sup> zɔ <sup>31</sup> ‘rabbit’	[4-28]

/-tɛi<sup>33</sup>/ occurs infrequently in the MS Lolopho lexicon, although it can be construed as a diminutive suffix. As mentioned in Section 4, the word for ‘sheath-tailed bat’ /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>ɛɛ<sup>33</sup>tɛi<sup>33</sup>/ has a morphological minimal pair with the word for ‘horseshoe bat’ /xɛ<sup>33</sup>lɛ<sup>33</sup>bjo<sup>33</sup>ɛɛ<sup>33</sup>pɣ<sup>33</sup>/ [4-39]. Generally, sheath-tailed bats are relatively smaller than horseshoe bats (Francis 2001). Interestingly, this suffix is, in principle, found only in mammal terms in MS Lolopho.

However, the suffix /-zɔ<sup>31</sup>/ is widely found in the MS Lolopho lexicon, basically denoting two meanings. One is ‘offspring’, exemplified in [5-27]. The word /ŋu<sup>55</sup>vɛ<sup>31</sup>/ means ‘wild pig’, whereas the word /ŋu<sup>55</sup>vɛ<sup>31</sup>zɔ<sup>31</sup>/ means its offspring. This type can be found in human nouns as well, like /zɔ<sup>31</sup>mɛ<sup>31</sup>/ ‘woman’ and /zɔ<sup>31</sup>mɛ<sup>31</sup>zɔ<sup>31</sup>/ ‘girl’, etc. The other meaning of /-zɔ<sup>31</sup>/ is diminutive, which is presented in the word for ‘rabbit’ [5-28]. In MS Lolopho, /-zɔ<sup>31</sup>/ is indispensable for the word for ‘rabbit’, as in the word for ‘fish’ /ŋɔ<sup>55</sup>zɔ<sup>31</sup>/, the /-zɔ<sup>31</sup>/ of which occurs obligatorily.

## 5.2 Semantic Analysis

This subsection will investigate the relationship between semantics and morphology in MS Lolopho mammal terms. We will focus on two topics: ‘cats and tigers’ and ‘words with /xɛ<sup>33</sup>/’.

### 5.2.1 Cats and Tigers

MS Lolopho has many terms relating to cats, leopards, and tigers, whose semantic map can be depicted below.

Figure 1 is a semantic map relating to the words for cats, civets, leopards and tigers in MS Lolopho.

The prototype of cats is called /u<sup>33</sup>mi<sup>55</sup>/ in this language, but some kinds of cats belong to different categories; for example, the words for ‘marbled cat’ and ‘Asian golden cat’ are viewed as a type of ‘leopard’ and ‘tiger’, respectively. The word for ‘ferret badger’ is, despite its being a kind of ‘Mustelidae’, called a type of cat.

The prototype of civet can be /vɣ<sup>33</sup>mɛ<sup>31</sup>/, although the word for ‘little civet’ is recognized as a type of cat. Table 2 lists other terms relating to civets, but those do not have /vɣ<sup>33</sup>/; therefore, they are not mapped in Figure 1.



The prototypes of ‘leopard’ and ‘tiger’ are expressed as /jɿ<sup>31</sup>/ and /lɔ<sup>31</sup>/, respectively. These morphemes overlap with some terms for cats, but are clearly distinguished from the terms for civets.

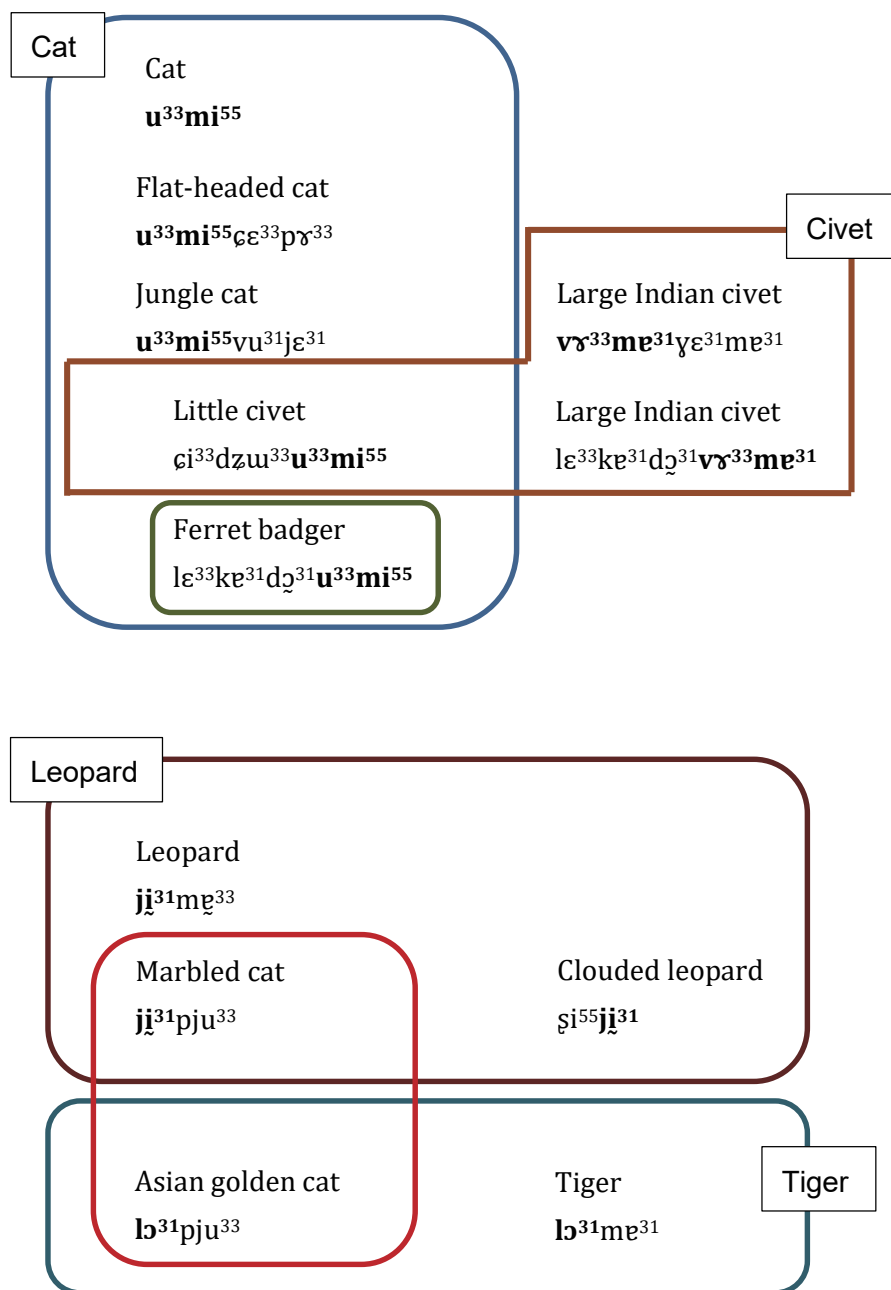


Figure 1: Cat, Leopard and Tiger in MS Lolopho

### 5.2.2 $\text{x}\epsilon^{33}$ 's field of meaning

This subsection will investigate the semantic map of the morpheme  $\text{x}\epsilon^{33}$ , depicted in Figure 2.

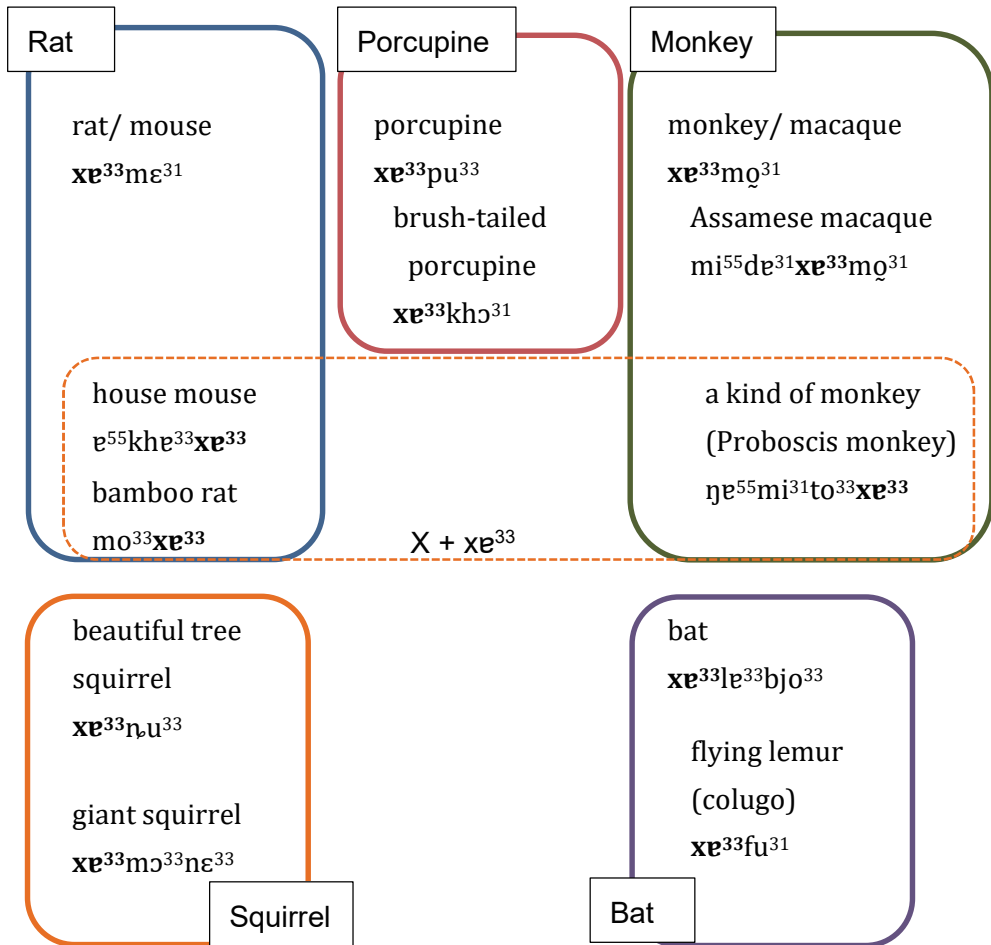


Figure 2:  $\text{x}\epsilon^{33}$ 's field

As shown in Figure 2, the mammal terms with  $\text{x}\epsilon^{33}$  are related to the words for 'rat', 'porcupine', 'monkey', 'squirrel', and 'bat'. Many of them place  $\text{x}\epsilon^{33}$  word-initially ( $\text{x}\epsilon^{33}/\text{X}$ ), while some words word-finally ( $\text{X}/\text{x}\epsilon^{33}$ ), as in the word for 'house mouse'  $\text{p}\epsilon^{55}\text{khe}^{33}\text{x}\epsilon^{33}$ , 'bamboo rat'  $\text{mo}^{33}\text{x}\epsilon^{33}$ , and 'a kind of monkey (resembling Proboscis monkey)'  $\text{ŋ}\epsilon^{55}\text{mi}^{31}\text{to}^{33}\text{x}\epsilon^{33}$ .

Rats/mice, squirrels, and porcupines are biologically classified into the same order (Order Rodentia) (Kaneko 1998, etc.); therefore, it is safe to state that  $\text{x}\epsilon^{33}$  prototypically denotes 'rodent-like'.

As is widely known, the group of bats has been recognized as 'rats with wings' by a Roman naturalist Gaius Plinius Secundus [Pliny the Elder] (Kaneko 1998: 30),

and MS Lolopho also classifies it into the same category /xɐ<sup>33</sup>/. Interestingly, the group of monkeys/ macaques, in the order Primates, has been considered similar to the group of rats by French naturalists Georges-Lois Leclerc Comte de Buffon and Baron Georges Léopold Chrétien Frédéric Dagobert Cuvier (Kaneko 1998: 31-32), and they are recognized in the same manner by MS Lolopho. Therefore, /xɐ<sup>33</sup>/ has been semantically extended to the group of monkeys/ macaques.

6. Historical Development of Mammal Terms in MS Lolopho

This section will investigate the historical development of the mammal terms in MS Lolopho through comparison with the Lolopho dialects of Yunnan and Lolo-Burmese languages.

6.1 Two Sources of Lolopho Data in Yunnan

As explained in Section 1, there are two main sources of descriptive data on Lolopho dialects in Yunnan Province of China. This subsection will introduce each of them.

6.1.1 Nanhua A Dialect: Sun Et Al. (1991)

Sun et al. (1991) compiled many lexicons of the Tibeto-Burman languages spoken in China, including a type of Lolopho in Yunnan. The Lolopho dialect described in Sun et al. (1991) is the one spoken in the Xuying township (徐营镇) of Nanhua County of Yunnan Province. Henceforth, this paper calls this variety “Nanhua A” (abbreviated “Nan-A”). The phonological inventories are shown as follows:

Table 9: Phonological Inventories of Nanhua A (Sun et al. 1991)									
[Consonants]									
p ph b	t th d						k kh g		
	ts tsh dz	tʂ tʂh dzʂ	ɬ ɬh ɬʂ	ɕ ɕh ɕʂ					
m	n			ɳ			ŋ		
f v	s z	ʃ ʒ		ɕ ʒ			x ɣ	h	
	l								
[Vowels]									
[plain]					[creaky]				
i	u	u			ĩ	ũ	ũ		
e		o			ẽ		õ		
ɛ	ʌ				ɛ̰	ʌ̰			
[Tones] 55, 33, 21 (31 with creaky vowels)									

6.1.2 Nanhua B Dialect: Huang Et Al. (1992)

Huang et al. (1992) compiled another Tibeto-Burman lexicon of China, also including a variety of Lolopho in Yunnan. The Lolopho dialect described in Huang et al. (1992) is the one spoken in the Wujie township (五街镇) of Nanhua County

of Yunnan Province. Henceforth, this paper calls this variety “Nanhua B” (abbreviated “Nan-B”). The phonological inventories are shown as follows:

Table 10: Phonological Inventories of Nanhua B (Huang et al. 1992)

[Consonants]											
p	ph	b	t	th	d				k	kh	g
			ts	tsh	dz	tɕ	tɕh	dʑ			
m			n					ɳ			ŋ
f	v		s	z		ʃ	ʒ		x		ɣ
			l								

[Vowels]

[plain]

i	y	ɿ	u	u
e		ə		o
æ			a	

[creaky]

ĩ	ɿ̤	ṳ	ṳ
ẽ		ə̤	
æ̤			ɑ̤

[Tones] 55, 33, 21 (13)

## 6.2 Historical Comparison

This subsection will explore the historical development of Lolopho mammal terms by comparing Lolopho dialects and Lolo-Burmese.

Table 11 compares the mammal terms of MS Lolopho with two Nanhua dialects of Yunnan, Nan-A and Nan-B. The data of Nan-A and Nan-B are cited from the same sources in 6.1, namely Sun et al. (1991) and Huang et al. (1992), respectively. The rightmost column lists the Proto-Loloish forms (PL) reconstructed by Bradley (1979).

Table 11: Mammal terms comparison among Lolopho dialects

No.	gloss	MS	Nan-A	Nan-B	PL
[6-1]	cat	u <sup>33</sup> mi <sup>55</sup>	o <sup>55</sup> mi <sup>55</sup>	ɣu <sup>33</sup> mi <sup>21</sup> / ɣu <sup>33</sup> mə <sup>21</sup>	*k-roŋ <sup>1</sup>
[6-2]	elephant	xo <sup>33</sup> mɛ <sup>31</sup>	xo <sup>33</sup>	xo <sup>33</sup>	*ʔ-ya <sup>3</sup>
[6-3]	muntjac	tɕhi <sup>33</sup> mɛ <sup>31</sup>	tshu <sup>33</sup> ma <sup>21</sup>	tshɿ <sup>33</sup> ma <sup>33</sup> (deer/ muntjac)	*kye <sup>1</sup> (barking deer)
[6-4]	bear	ɣu <sup>55</sup> mɛ <sup>31</sup>	ɣu <sup>33</sup> ma <sup>21</sup>	ɣɛ <sup>33</sup>	*k-d-wam <sup>1</sup>
[6-5]	tiger	lo <sup>31</sup> mɛ <sup>31</sup>	lo <sup>21</sup>	lo <sup>21</sup>	*k-la <sup>2</sup>
[6-6]	leopard	ji <sup>31</sup> mɛ <sup>33</sup>	zi <sup>21</sup>	zi <sup>33</sup>	*k-zik <sup>L</sup>
[6-7]	goat	ɛ <sup>33</sup> tɕhu <sup>55</sup>	A <sup>33</sup> tɕhi <sup>55</sup>	ɑ <sup>55</sup> tɕhɿ <sup>55</sup>	*(k)-cit <sup>L</sup>
[6-8]	mouse	xɛ <sup>33</sup> mɛ <sup>31</sup>	hɑ <sup>33</sup> ; xɛ <sup>33</sup>	xɑɛ <sup>33</sup>	*(k)-rwak <sup>H</sup>

[6-9]	squirrel	xɐ <sup>33</sup> n̥u <sup>33</sup>	-----	xæ <sup>33</sup> mu <sup>33</sup> be <sup>21</sup>	*tok <sup>H</sup>
[6-10]	bats	xɐ <sup>33</sup> lɐ <sup>33</sup> bjo <sup>33</sup>	ma <sup>21</sup> h̥a <sup>33</sup> ; ma <sup>21</sup> lɛ <sup>21</sup> hɛ <sup>33</sup>	mæ <sup>21</sup> læ <sup>21</sup> xæ <sup>33</sup>	*bo <sup>1</sup>
[6-11]	porcupine	xɐ <sup>33</sup> pu <sup>33</sup>	-----	pɯ <sup>33</sup>	*ʔ-plu <sup>2</sup>
[6-12]	monkey	xɐ <sup>33</sup> mɔ <sup>31</sup>	li <sup>33</sup> ka <sup>33</sup> bo <sup>21</sup> ; a <sup>55</sup> miɔ <sup>21</sup>	le <sup>21</sup> və <sup>55</sup>	*myok <sup>L</sup>
[6-13]	buffalo	u <sup>33</sup> n̥u <sup>55</sup>	ɣu <sup>55</sup> n̥i <sup>21</sup>	ɾu <sup>33</sup> n̥i <sup>21</sup>	*ɲya <sup>2</sup>
[6-14]	cattle	ɐ <sup>55</sup> n̥u <sup>31</sup>	lo <sup>21</sup> n̥i <sup>21</sup>	n̥i <sup>21</sup>	*nwa <sup>2</sup>
[6-15]	pig	ɐ <sup>55</sup> vɛ <sup>31</sup>	vɛ <sup>21</sup>	vɛ <sup>21</sup>	*wak <sup>L</sup>
[6-16]	dog	ɐ <sup>33</sup> no <sup>55</sup>	a <sup>33</sup> nu <sup>55</sup>	a <sup>55</sup> nu <sup>55</sup> dzæ <sup>21</sup>	*kwe <sup>2</sup>
[6-17]	rabbit	thɐ <sup>31</sup> lo <sup>33</sup> zɔ <sup>31</sup>	thA <sup>21</sup> lo <sup>33</sup>	tha <sup>21</sup> lo <sup>33</sup>	*taŋ <sup>2</sup> , loŋ <sup>2/1</sup>
[6-18]	horse	thɐ <sup>33</sup> m̥ɔ̃ <sup>31</sup>	mu <sup>21</sup>	mu <sup>21</sup>	*mraŋ <sup>2</sup>

### 6.2.1 Onomatopoeia

The MS Lolopho word for ‘cat’ is /u<sup>33</sup>mi<sup>55</sup>/, as shown in [6-1], and has two syllables. Nan-A and B dialects also share the second syllable /mi/, which may have been derived from the cat’s call. Many Tibeto-Burman languages employ the cat’s call for naming cats; for example, Konyak /ami/ (Marrison 1967), Tangkhul /lami/ (Marrison 1967), Wancho /mia/ (Marrison 1967), Phuza /a<sup>33</sup>mi<sup>55</sup>/ (Pelkey 2011), etc.

The remaining issue concerns the first syllable, /u<sup>33</sup>/ in MS Lolopho, /o<sup>55</sup>/ in Nan-A, and /y<sup>33</sup>/ in Nan-B, which might be derived from the root of the PL form \*roŋ. This subject needs further investigation.

### 6.2.2 Affixation

Affixation is an important morphological operation as described in 5.1.2. It concerns the nominal marker /ɐ-/ , augmentative /-mɛ<sup>31</sup>/, and the diminutive /-zɔ<sup>31</sup>/, etc.

The augmentative suffix /-mɛ<sup>31</sup>/ or /-mɐ<sup>31</sup>/ can be found in the word for ‘elephant’ [6-2], ‘muntjac’ [6-3], ‘bear’ [6-4], ‘tiger’ [6-5], ‘leopard’ [6-6] in MS Lolopho. However, the augmentative suffix is often not attested in Nan-A or Nan-B. The word for ‘muntjac’ [6-3] has augmentative suffixes in both Nan-A (/ma<sup>21</sup>/) and Nan-B (/ma<sup>33</sup>/), while the word for ‘bear’ [6-4] has in Nan-A, but not in Nan-B. The words for ‘tiger’ and ‘leopard’ contain the augmentative suffix only in MS Lolopho. We can therefore argue that the augmentative was suffixed to these forms after the dialectic divergence.

Table 11 lists only one example with the diminutive suffix /-zɔ<sup>31</sup>/, namely the word for ‘rabbit’ [6-17] in MS Lolopho, although the Nan-A and -B dialects do not

have the diminutive suffix. This suffix has also been attached to the root after the dialectic divergence.

The nominal marker /ɐ-/ occurs in some words of MS Lolopho, such as the words for ‘goat’ [6-7], ‘cattle’ [6-14], ‘pig’ [6-15], and ‘dog’ [6-16]. Nan-A and -B dialects share the corresponding prefix in the words for ‘goat’ [6-7] and ‘dog’ [6-16] only. These words can be reconstructed with this prefix at the Proto-Lolopho stage, while the words for ‘cattle’ and ‘pig’ cannot. /ɐ-/ in the words for ‘cattle’ and ‘pig’ is likely to have been prefixed to the root after the dialectal divergence.<sup>26</sup>

### 6.2.2 Animal Prefixes \*k- and /xɐ<sup>33</sup>/

Many Southeast Asian languages share the prefix corresponding to \*k- prefix at the proto-language stage, called the ‘animal prefix’ (Benedict 1972, among others). Some words for mammals are reconstructed with this prefix at the Proto-Loloish stage (Bradley 1979). For example, the words for ‘cat’ [6-1], ‘bear’ [6-4], ‘tiger’ [6-5], ‘leopard’ [6-6], ‘goat’ [6-7], ‘mouse’ [6-8], etc. However, Table 12 illustrates that the animal prefix \*k- has been lost at the Proto-Lolopho stage, and the modern Lolopho dialects do not have any reflex to it.

Arguably, /xɐ<sup>33</sup>/ in MS Lolopho is the reflex of the animal prefix \*k-, but this paper does not accept this view. There are three main reasons.

First, the modern Lolopho dialects do not have any forms corresponding to the animal prefix \*k- at the Proto-Loloish stage, such as ‘tiger’ [6-5], ‘leopard’ [6-6], etc., whereas the MS Lolopho words with /xɐ<sup>33</sup>/ like ‘squirrel’ [6-9], ‘bats’ [6-10], etc., do not correspond to \*k-. Additionally, if \*k- is reflexed as /xɐ<sup>33</sup>/ in MS Lolopho, it could be found in other faunal terms, like \*k-rak<sup>H</sup> ‘chicken’, \*k-ʔ-pa<sup>2</sup> ‘frog’, etc., but the Lolopho dialects do not have corresponding forms, as seen in Table 12.

Table 12: Animal Prefix \*k-

Language	‘chicken’	‘frog’	‘tiger’ <sup>27</sup>
PL	*k-rak <sup>H</sup>	*k-ʔ-pa <sup>2</sup>	*k-la <sup>2</sup>
MS	ɐ <sup>55</sup> jɛ <sup>33</sup>	kɔ <sup>33</sup> ta <sup>33</sup> na <sup>33</sup>	lɔ <sup>31</sup> mɐ <sup>31</sup>
Nan-A	zɛ <sup>33</sup>	ku <sup>55</sup> lu <sup>21</sup>	lo <sup>21</sup>
Nan-B	zɪ <sup>33</sup>	ku <sup>55</sup> li <sup>55</sup>	lo <sup>21</sup>
Akha Buli	ɣa <sup>21</sup> tɕi <sup>33</sup>	xa <sup>21</sup> pha <sup>21</sup>	xa <sup>21</sup> la <sup>21</sup>

Hayashi (2020) analyzed the faunal terms in Akha Buli, another Loloish language spoken in Muang Sing of Luang Namtha, Laos, which also has a phonetically very similar morpheme to /xɐ<sup>33</sup>/ in MS Lolopho, namely /xa<sup>21</sup>/. /xa<sup>21</sup>/ in Akha Buli is a reflex of the animal prefix \*k- at the Proto-Loloish (Hayashi 2020: 129), as seen in the words for ‘frog’ and ‘tiger’. The Lolopho dialects, on the other hand, totally lost \*k- at the Proto-Lolopho stage and no traces remain.

<sup>26</sup> The nominal prefix can be reconstructed as \*a- at the Proto-Lolopho stage, or even at the Proto-Loloish stage, which is reflexed at the various nouns in every Loloish language. Therefore, the affixation of this prefix may be a kind of language drift (Sapir 1921).

<sup>27</sup> Note that the word for ‘tiger’ is reconstructed as \*klaʔ at Proto-Austroasiatic (Shorto 2006: 114), which also contains the animal prefix \*k-.

Second, the onset of /x-/ in MS Lolopho is generally derived from \*x- or \*r- at the Proto-Loloish stage, as demonstrated in Table 13.

Table 13: MS Lolopho Onset /x-/

Language	'iron'	'meat'	'(to) rain'	'front'	'hundred'
PL	* <i>xam</i> <sup>1</sup>	* <i>xa</i> <sup>2</sup>	* <i>r-ywa/we</i> <sup>1</sup>	* <i>ʔ-ru</i> <sup>2</sup>	* <i>C-ra</i> <sup>1</sup>
MS	<b>xɤ</b> <sup>33</sup>	<b>xo</b> <sup>31</sup>	<b>xo</b> <sup>33</sup>	<b>xu</b> <sup>55</sup> <b>mi</b> <sup>31</sup> <b>bej</b> <sup>35</sup>	<b>xo</b> <sup>33</sup>
Nan-A	<b>xu</b> <sup>33</sup>	<b>xo</b> <sup>21</sup>	<b>xo</b> <sup>33</sup>	<b>xu</b> <sup>55</sup> <b>mɛ</b> <sup>21</sup>	<b>xo</b> <sup>33</sup>
Nan-B	<b>xu</b> <sup>33</sup>	<b>xo</b> <sup>21</sup>	<b>xo</b> <sup>33</sup>	<b>ɣu</b> <sup>21</sup> <b>lu</b> <sup>33</sup>	<b>ɕyo</b> <sup>33</sup>

MS Lolopho words exemplified in Table 13 all have /x-/ onsets, which are derived from \*x- or \*r- at the Proto-Loloish stage. However, Proto-Loloish \*k- became /kh-/ in modern Lolopho dialects, as illustrated in Table 14.

Table 14. PL \*k-

Language	'bitter'	'(to) steal'	'expensive'	'(to) bite'
PL	* <i>ka</i> <sup>2</sup>	* <i>ko</i> <sup>2</sup>	* <i>kak</i> <sup>H</sup> ( <i>oŋ</i> <sup>1</sup> )	* <i>C-kuk</i> <sup>L</sup>
MS	<b>khɛ</b> <sup>33</sup>	<b>khɯ</b> <sup>31</sup>	<b>phɤ</b> <sup>31</sup> <b>khɛ</b> <sup>33</sup>	<b>khɤ</b> <sup>55</sup>
Nan-A	<b>khɑ</b> <sup>33</sup>	<b>khɯ</b> <sup>21</sup>	<b>phɯ</b> <sup>21</sup> <b>khɑ</b> <sup>33</sup>	<b>khɯ</b> <sup>55</sup>
Nan-B	<b>khɑ</b> <sup>21</sup>	<b>khɯ</b> <sup>21</sup>	<b>phæ</b> <sup>21</sup> <b>khæ</b> <sup>33</sup>	<b>khɑ</b> <sup>55</sup>

This leads us to argue that the animal prefix \*k- is not reflected by the morpheme /xɛ<sup>33</sup>/ in MS Lolopho.

The third reason concerns morphology. As mentioned in 5.2.2, the morpheme /xɛ<sup>33</sup>/ occurs word-finally. If /xɛ<sup>33</sup>/ is the reflex of the animal prefix \*k-, its modern morphological position is incompatible with the prefix at the proto-language stage.

This paper suggests that /xɛ<sup>33</sup>/ is derived from the word for 'mouse' \*(k)-*rwak*<sup>H</sup>, which is considered to have undergone the following change:

PL. \*(k)-*rwak*<sup>H</sup> > \**rwak*<sup>H</sup> > \**xwak*<sup>H</sup> > MS Lolopho. *xɛ*<sup>33</sup>

### 6.2.3 Buffalo and Cattle

Tibeto-Burman languages, in general, have several classification types of the words for 'buffalo' and 'cattle', shown in Table 15.

Table 15: Morphological Types of 'buffalo' and 'cattle' in Tibeto-Burman

	'buffalo'	'cattle'
Type A	/X/	/Y/
Type B	/X/	/X+Z/
Type C	/X+Z/	/X/
Type D	/X+Z/	/X+W/
Type E	/Z+X/	/W+X/

Table 16 Sample Data of ‘buffalo’ and ‘cattle’ in Tibeto-Burman

	‘buffalo’	‘cattle’
Type A: Lisu	hi <sup>33</sup> ɲaɭ <sup>21</sup>	la <sup>21</sup> dzu <sup>44</sup>
Type B: Achang (Longchuan)	no <sup>31</sup> , ɲo <sup>31</sup>	no <sup>31</sup> tɕoŋ <sup>35</sup>
Type C: Zaiwa	nɔ̃ <sup>21</sup> lui <sup>21</sup>	no <sup>21</sup>
Type D: Langsu	nũŋ <sup>35</sup> ɭi <sup>35</sup>	nũŋ <sup>35</sup> tʃauŋ <sup>31</sup>
Type E: Hani (Caiyuan)	ɣ <sup>55</sup> ny <sup>31</sup>	mu <sup>55</sup> ny <sup>31</sup>
Proto-Loloish (PL)	*o <sup>2</sup> / *ɲya <sup>2</sup>	*nwa <sup>2</sup> / *ʔ-myan <sup>1</sup>
Proto-Tibeto-Burman (PTB)	*lwa:y	*ɲwa

NB: Lisu [Thailand, Myanmar, China; Loloish; Bradley (1994)],  
 Achang [China; Burmish; Sun et al. (1991)],  
 Zaiwa [China; Burmish; Huang et al. (1992)]  
 Langsu [China; Burmish; Sun et al. (1991)]  
 Hani (Caiyuan) [China; Loloish; Sun et al. (1991)]  
 PL: Bradley (1979), PTB: Matisoff (2003)

Table 16 illustrates morphological structures of the words for ‘buffalo’ and ‘cattle’ in Tibeto-Burman languages. In Type A, the roots for ‘buffalo’ and ‘cattle’ are different, while in Type B, C, D and E, they are partially shared. In Type B, the word for ‘cattle’ is based on the word for ‘buffalo’, whereas in Type C, the word for ‘buffalo’ is based on the word for ‘cattle’. Type C is found relatively more than Type B. Types D and E both share the same root in the words for ‘buffalo’ and ‘cattle’. Type D is head-initial, while Type E is head-final. Proto-Loloish and Proto-Tibeto-Burman for both words can be considered as Type A in Table 16.

As shown in Table 11, the words for ‘buffalo’ in Nan-A and -B dialects, namely /ɣu<sup>55</sup>ɲi<sup>21</sup>/ and /ɣu<sup>33</sup>ɲi<sup>21</sup>/, are based on the ones for ‘cattle’, /ɲi<sup>21</sup>/ and /ɲi<sup>21</sup>/, respectively, which leads us to think that they are affiliated with Type C. The meaning of the first syllable of the word for ‘buffalo’ in Nan-A and -B is unknown.

The MS Lolopho words for ‘buffalo’ and ‘cattle’ are /u<sup>33</sup>ɲu<sup>55</sup>/ and /e<sup>55</sup>ɲu<sup>31</sup>/, respectively. This type seems different from any of the types mentioned above, but it could be argued that it looks like Type C, because /e<sup>55</sup>/ is a nominal prefix which seems to have been added after the dialectal divergence and the tonal difference between /ɲu<sup>55</sup>/ in ‘buffalo’ and /ɲu<sup>31</sup>/ in ‘cattle’ which may have emerged due to a sandhi process in MS Lolopho.<sup>28</sup>

## 6.2.4 Rabbits and Horses

The words for ‘rabbit’ and ‘horse’ in Lolopho dialects are also problematic.

The word for ‘rabbit’ in Proto-Loloish is reconstructed as \*taŋ<sup>2</sup> or \*loŋ<sup>2/1</sup> by Bradley (1979). The MS Lolopho word for ‘rabbit’ is /tɕe<sup>31</sup>lo<sup>33</sup>zo<sup>31</sup>/ [6-17], which includes both \*taŋ<sup>2</sup> and \*loŋ<sup>2/1</sup>, as in the Nan-A and B dialects. This is better

<sup>28</sup> In the Mile dialect of the Yi language, the words for ‘water buffalo’ and ‘cattle’ are /A<sup>33</sup>ni<sup>55</sup>/ and /ni<sup>21</sup>/ or /ni<sup>21</sup> ni<sup>33</sup>/, respectively, which could come from a sandhi process. The data of the Mile dialect of Yi are cited from Sun et al. (1991: 480-481).



analyzed as compounds at the Proto-Lolopho stage, which were compounds even at the Proto-Northern-Loloish stage.<sup>29</sup>

The word for ‘horse’ in MS Lolopho also consists of two syllables, namely /tʰe<sup>33</sup>m̃<sup>31</sup>/, although the other two dialects Nan-A and -B, both contain only one syllable /mu<sup>21</sup>/ for this word. /m̃<sup>31</sup>/ in MS Lolopho and /mu<sup>21</sup>/ in Nan-A/B are derived from Proto-Loloish \**mraŋ*<sup>2</sup>.

Then, what is the origin of the first syllable of this word in MS Lolopho, /tʰe<sup>33</sup>/? A plausible origin is Proto-Tibeto-Burman \**r-ta*, which is reconstructed from Written Tibetan *rta* རྟ (Jäschke 1881) and is also reflected as /ta<sup>55</sup>/ in Trung (Nujiang dialect; Sun 1982), /tʰe rke/ ‘mule’ in rGyalrong (Maerkang Soman dialect; Nagano and Prince database), /<sup>2</sup>ta/ in Tamang (Risiangku dialect; Mazaudon 1978), etc. If this hypothesis is true, MS Lolopho’s word for ‘horse’ may have come from the compounds \**rta* + \**mraŋ*<sup>2</sup>, which is rarely attested in other Tibeto-Burman languages.

## 7. Concluding Remarks

This paper described the mammal terms in MS Lolopho, analyzed their morphological and semantic features, and investigated their historical development.

This paper described 76 mammal terms in MS Lolopho. The morphological operations found in these terms, as in the other nominals, are compounding and affixation. The morpheme /xɛ<sup>33</sup>/ which can be found in many MS Lolopho mammal terms prototypically denotes ‘rodents’, which extends its meaning to the category of ‘monkeys/ macaques’. This paper concludes that /xɛ<sup>33</sup>/ is not the animal prefix of this language for diachronic reasons, which is different from the situation of the Akha Buli language described in Hayashi (2020).

## Data Sources

**Achang** [Burmish; China]: Sun et al. eds. (1991)

**Akha Buli** [Loloish; Luang Namtha, Laos]: Hayashi (2016, 2020), Hayashi’s field notes

**Hani (Caiyuan)** [Loloish; China]: Sun et al. eds. (1991)

**Konyak** [Brahmaputran; India]: Marrison (1967)

**Langsu** [Burmish; China]: Sun et al. eds. (1991)

**Lisu** [Loloish; Thailand, Myanmar, China]: Bradley (1994)

**Phuza** [Loloish; China]: Pelkey (2011)

**Proto-Loloish**: Bradley (1979)

**Proto-Tibeto-Burman**: Matisoff (2003)

**Mile dialect of Yi** [Loloish; China]: Sun et al. eds. (1991)

**Muang Sing Lolopho** [Loloish; Luang Namtha, Laos]: Hayashi’s field notes, Hayashi (2015)

**Nanhua A of Lolopho** [Loloish; Luang Namtha, Laos]: Sun et al. eds. (1991)

**Nanhua B of Lolopho** [Loloish; Luang Namtha, Laos]: Huang et al. eds. (1992)

**rGyalrong** [rGyalrongic; China]: Nagano and Prins database

<sup>29</sup> Sample data for ‘rabbits’ in Northern Loloish: /tʰa<sup>55</sup>la<sup>31</sup>/ (Nusu [Bijiang]; Sun et al. 1991), /tʰo<sup>33</sup>lo<sup>33</sup>/ (Yi [Weishan]; Huang et al. 1992), /tʰa<sup>33</sup>la<sup>33</sup>/ (Yi [Nanjian]; Sun et al. 1991), etc. All of these can be dated back to Proto-Northern-Loloish \**taŋ*<sup>2</sup> + \**loŋ*<sup>2/1</sup>.

**Tamang** [Tamangic; Nepal]: Mazaudon (1978)  
**Tangkhul** [Tangkhulic; India]: Marrison (1967)  
**Trung** (Nanjiang dialect) [Nungic; China]: Sun ed. (1982)  
**Wancho** [Brahmaputran; India]: Marrison (1967)  
**Written Tibetan** [Tibetan; China]: Jäschke (1881)  
**Zaiwa** [Burmish; China]: Huang et al. eds. (1992)

## Abbreviation

DIM: diminutive, MS Lolopho: Muang Sing Lolopho, Nan-A: Nanhua-A of Lolopho, Nan-B: Nanhua-B of Lolopho, NM: nominal marker, PL: Proto-Loloish, PTB: Proto-Tibeto-Burman, REL: relativizer

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