

Documenting Names of Insects in Zambian Local Languages for Entomological Literature and for use in School Curricula and Instruction

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ABSTRACT--- *Names of insects and the indigenous value of these insects are at risk of being lost without proper documentation of this resource. The purpose of this research was to document the names of insects in Zambian local languages based on a case study of Zambia's Southern Province. Southern Province is one of the thirteen administrative provinces in Zambia and the major language spoken in the province is Tonga. Forty colour pictures of insects commonly found in Zambia and in many countries of the world were presented to participants for identification and naming in Tonga. Participants were able to identify 39 insects from the 40 pictures presented to them. With probing, participants also came up with 16 additional local names of insects that were not among the forty pictures of insects presented to them. With this, the total number of documented local names of insects from this study came to 55. The folklore associated with some of these insects in the Tonga culture was also documented. This study is significant in the development of Zambian entomological literature and in creating awareness on the importance of preserving biological diversity, heritage, and indigenous knowledge. Inclusion of locally recognizable samples such as these insects in the curriculum and in instruction is likely to increase relevance, contextualization, and motivation for learning in biological and environmental science education. The identification and naming of insects in local languages will, most likely, serve as scaffolds when learning the insects' scientific names.*

Keywords--- insects, entomology, folklore, curriculum, biology education, environmental education, language

1. INTRODUCTION

This study is concerned with identification and naming of insects in local languages in Zambia. The scientific naming of organisms is generally traced back to the Swedish naturalist Carolus Linnaeus (1758). The naming of organisms in native languages goes way back to the first man Adam where we read in Genesis 2: 19-20:

Out of the ground the LORD God formed every beast of the field and every bird of the air, and brought them to Adam to see what he would call them. And whatever Adam called each living creature that was its name. So Adam gave names to all cattle, to the birds of the air, and to every beast of the field.

Since the time of Adam, people in different cultural settings have given names to organisms in their environments. The naming of insects in native languages falls within a relatively new field of entomology called "Cultural Entomology" (Hogue 1987). Several types of insects in different countries are given local names because they have acquired special cultural importance and recognition. For example grasshoppers, especially locusts, command special recognition in countries prone to locust plagues. Others like butterflies and moths have aesthetic value because of their flash colours and thus in some African countries, including Zambia, some fabrics and other materials have designs depicting them. In ancient Egyptian culture several species of dung beetles were revered and rose in religious and symbolic importance early in history. Amulets in the form of cicadas were placed on the tongues of the dead in China, to induce resurrection by sympathetic magic (Hague, 1987). In South Africa, Mkize, et al. (2003) found that among the Xhosa, insects with medical, domestic, cultural, and agricultural significance were readily identified by local names. There are many other examples that could be used as justification for studies on names of insects in local languages. Entomological Societies in America, Canada, and Australia, for example, have studied and published comprehensive lists of the names of insects in their local languages.

In African countries, publications in local languages often focus on naming plants, mammals, fish and birds (Binns & Logah, 1972; Figueiredo & Smith, 2012 and Kwembeya & Takawira, 2002) and very little on naming insects in spite of their greater abundance and impacts on human welfare. In Zambia, the few names of insects in local languages in literature are incidental in that they are found in research articles not directly intended to document names of insects in

Zambian local languages. For example, Mwizenge (2013) documented five major types of edible insects in Zambian local languages in Bemba as *inswa* (winged Termites), *Mafulufuta* (thief ants), *Shongonono* (Green long-horned grasshoppers), and *Finkubala* or *Matondo* (caterpillar). In 2014 Mwizenge added 2 more edible insects, namely, *Masa* (bee larvae), *Nyenje* or *Chenge* (cicada). Kachali (2013) in the article on “Edible caterpillars: A tool in preserving biological diversity” mentions names of a caterpillar eaten in Mpika District of Muchinga Province. The local names of this caterpillar is *ifishimu* (Bemba language) and *Vinkhubala* (Nyanja language). The article further indicates that there are 2 species of this edible caterpillar locally known in Bemba as *Mumpa* and *Chipumi*. In the same article Bemba names for edible grasshoppers *Inshonkonono* and winged termites *Inswa* are mentioned. According to the household survey on edible caterpillars carried out by Mbata (2002) in Kopa area of Mpika District, three local Bemba names of edible caterpillars were recorded as *Chipumi* (*Gynanisa maja* Strand), *Mumpa* (*Gonimbrasia zambesina* Walker), and *Fikoso* (*Cirina forda*). In a study integrating Ethno-Ecological and Scientific Knowledge of Termites for Sustainable Termite Management and Human Welfare in Africa, Nkunika (2009) documented local Zambian names of termites belonging to 7 genera in Southern and Eastern Provinces.

From the foregoing, it is unquestionable that, in developing Zambian entomological literature, focused and deliberate studies on documenting names of insects in local languages and associated folklore need to be undertaken. This will raise greater awareness of biodiversity and at the same time preserve an important resource and a vital aspect of cultural heritage. Besides this, there is educational value added by documenting local resources and their value and impact on local environments. In particular, the inclusion of locally recognizable samples such as these insects in the curriculum and in instruction is likely to increase relevance, contextualization, and motivation for learning in biological and environmental science education. The identification and naming of insects in local languages, will most likely serve as scaffolds when learning to name them scientifically. It is expected that this will have a positive influence on the current Zambian debate regarding the use of local languages in the school curricula. The current educational policy requires pupils to be taught in the seven major Zambian local languages from grades one to four with English being taught alongside local languages. According to the National Literacy Policy Framework (2013), the seven major local languages recommended include Nyanja, Bemba, Kaonde, Lunda, Luvale, Lozi, and Tonga as well as the widely used languages in specific school catchment areas. It is believed that the learning in local languages from grades one to four will give learners a strong foundation on which to build literacy and language skills in English in later grades.

Names of organisms in local languages should be regarded as part and parcel of a particular local language, and as such should be able to aid learning when it comes to scientific identification, naming, and classification. Ngugi wa Thiongo (1986) urged African governments to consider promoting the use of local languages in literature in the book “Decolonising the Mind: The Politics of Language in African Literature”. Ngugi wa Thiongo (ibid) complained that ‘an educational focus that embraced essentially only foreign works (not only foreign in language, but also in culture) was destructive: Thus language and literature were taking us further and further from ourselves to other selves, from our world to other worlds’. In the curriculum context, Ademowo (2010) advanced the need for both the foreign languages and indigenous languages to be officially approved, developed and adopted as classroom media with consequential provision of scientific books in both languages. In the case made for this study, community people have knowledge and familiarity with local insects through the insects’ impact on their welfare including insect bites, insects as disease vectors, e.g., mosquitoes and other flies, etc., insects as crop and livestock pests, insects as food sources, e.g., crickets, caterpillars, termites or as sources of food products, e.g., honey, and insects as aesthetically and as culturally significant.

2. MAIN OBJECTIVE

The purpose of this study was to document names of insects in Zambian local languages for use in the development of Zambian entomological literature and in promoting interest in the study and preservation of biological diversity, national heritage, and indigenous knowledge. This is important since, presently in Zambia, there is no history of a study specifically directed at investigating and documenting names of insects in different local languages. The few names of insects in Zambian local languages come from studies not directly meant to document names of insects as such. Without proper identification and documentation the value of insects will not be fully appreciated and their conservation may not be valued thereby contributing to their loss. The loss of biodiversity results in disappearance of certain insect species together with their vernacular names. This likely loss stems from the fact that Zambia is a highly urbanized country where the younger generation in urban areas have less contact with the older people who are expected to transfer indigenous knowledge to the future generations. It is therefore, imperative to document names of insects in Zambian local languages.

Other objectives

Other objectives of the study are as listed below:

- i) To document the folklore associated with some insects in the Tonga culture.
- ii) To promote the use of local names of organisms in curricula and instruction.
- iii) To assess the attitudes of local communities towards insects found in their locale.

3. METHODOLOGY

A case study research design was used in documenting names of insects in Zambian local languages and the folklore associated with insects. The study was carried out in phases involving, selection of pictures of insects that are commonly found in Zambia, selection of study sites, identification and selection of participants, and conducting of the study.

Selecting pictures of insects for the study

The first phase of the study involved selection of pictures of insects that were to be included in the survey. These pictures were obtained from internet using different websites. The selection of insects was based on their common occurrence, assumed familiarity to the local communities, and the entomological knowledge and experience of the researcher. Forty (40) colour pictures of insects were downloaded from various websites shown in the box below.

Box 1: Sources of forty pictures used for identification and naming of local insects.

Insect Picture No 1	http://commons.wikimedia.org/wiki/File:Acrididae_-_Omocestus_rufipes.JPG
Insect Picture No 2.	www.invasive.org/browse/tax.cfm?fam=3
Insect Picture No 3	http://www.junglekey.fr/wiki/definition.php?terme=Tettigoniidae
Insect Picture No 4	http://www.foroswebgratis.com/tema-crianza_de_mantis-4325-240993.htm
Insect Picture No 5	http://www.mark-ju.net/wildlife/hoppers.htm
Insect Picture No 6	http://www.mark-ju.net/wildlife/russia.htm
Insect Picture No 7	http://www.ohio-nature.com/butterfly-pictures.html
Insect Picture No 8	http://www.pragas.com.br/consumidor/pragasdejardim/grilo/grilo.php
Insect Picture NO 9	http://www.tattoodonkey.com/in-madballs-tattoos/
Insect Picture No 10	http://animals.howstuffworks.com/insects/question675.htm
Insect Picture no 11	http://www.d.umn.edu/~jmaahs/Bonus%20Questions/maahs%20as%20insect.htm
Insect Picture no 12	http://greennature.com/article248.html
Insect Picture no13	http://www.fcps.edu/islandcreekes/ecology/common_black_ground_beetle.htm
Insect Picture no 14	http://www.uky.edu/Ag/CritterFiles/casefile/insects/beetles/tiger/tiger.htm
Insect Picture no 15	http://www.rspb.org.uk/community/placestovisit/ramseyisland/b/ramseyisland-blog/archive/2013/08/24/new-dung-beetle-record-for-ramsey.aspx
Insect Picture no 16	http://www.hiltonpond.org/thisweek031001.html
Insect Picture no 17	http://waynesword.palomar.edu/ww0502.htm
Insect Picture no18	http://waynesword.palomar.edu/ww0502.htm
Insect Picture no 19	http://animalworld.tumblr.com/post/4091997961/firefly-or-lightning-bug
Insect Picture no 20	http://www.fotografia-okolicznosciowa.adminpoleca.com/naukowa/fotografia-naukowa/
Insect Picture no 21	http://www.shutterstock.com/s/fly/search.html
Insect Picture no 22	http://www.brisbaneinsects.com/brisbane_flies/Culicidae.htm
Insect Picture no 23	http://www.entomology.wisc.edu/insectid/fly.php
Insect Picture no 24	http://www.zbestpestcontrol.com/stinging.htm
Insect Picture no 25	http://allbestdesktopwallpapers.blogspot.com/2011/03/wasp.html
Insect Picture no 26	http://www.free-picture.net/insect/bees/insect-bee.jpg.html

Insect Picture no 27 <http://sinobug.aminus3.com/image/2012-09-26.html>

Insect Picture no28 http://www.fcps.edu/islandcreekes/ecology/green_stinkbug.htm

Insect Picture no 29 <http://www.standrewsblantyre.com/index.php/about-us/our-minister/peters-blog/326-water-walkers>

Insect Picture no30 <http://www.virginmedia.com/digital/science/pictures/parasites.php?ssid=12>

Insect Picture no31 <http://www.orkin.com/termites/solider-termite/>

Insect Picture no32 <http://realestate.msn.com/article.aspx?cp-documentid=13108069>

Insect Picture no 33 www.crystalgraphics.com/powerpictures/images.photos.asp?ss=maggot

Insect Picture no34 <http://www.fotothing.com/potterjo/photo/e23f9a3ea698cb41e4eedfbf0e8bd3e6/>

Insect Picture no35 <http://www.grub-worms.com/search/label/grubs>

Insect Picture no36 <http://scienceblogs.com/gregladen/2008/11/14/when-the-corn-weevil-knocks-we/>

Insect Picture no 37 <http://mindjourney1962.wordpress.com/2012/11/23/how-many-eyes-does-a-fly-have/>

Insect Picture No 38 <http://www.jigzone.com/puzzles/40055D4E7278>

Insect Picture No 39 <http://www.orkin.com/other/fleas/what-do-fleas-look-like/>

Insect Picture No 40 <http://www.landcareresearch.co.nz/resources/identification/animals/bug-id/alphabetic-list-of-bugs/stick-insects>

Selecting the study site

Southern Province was selected as a case study site. The province was selected because the researcher hailed from there, thereby avoiding the need for interpretation during the study. Six out of a total of fourteen districts in Southern Province were purposively selected to be included in the study to adequately represent the four major dialects of the Tonga language. The six districts are Monze, Gwembe, Namwala, Choma, Kalomo, and Livingstone. Their location on the map is shown in Figure 1, although the map only shows eleven out of fourteen districts. This is because there are three newer districts that do not yet appear on the map, these being Chikankata, Pemba, and Zimba. The fourteen districts and the Tonga dialects they represent are shown in Table 1. The study was conducted at a primary school in each of the six districts shown in Table 2.

Table 1. Districts and dialects of the Tonga language.

Districts	Dialects
Mazabuka, Monze, Chikankata, Pemba, and Choma	Plateau Tonga
Gwembe, Siavonga, and Sinazongwe	Valley Tonga
Namwala, Itezhi-Tezhi	Ila (Tonga)
Kalomo, Zimba, Livingstone, and Kazungula	Toka-Leya

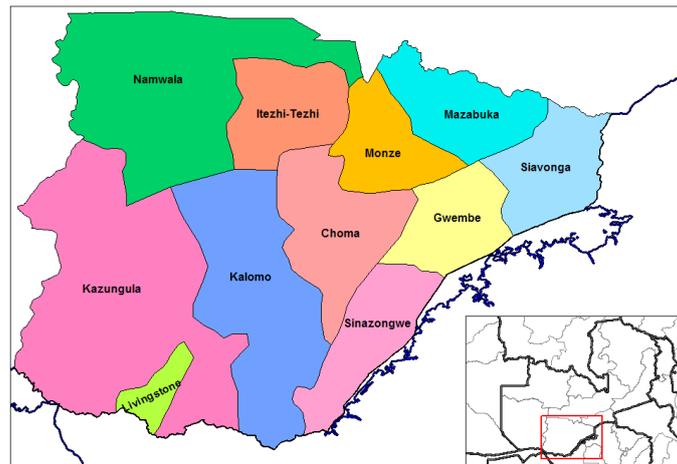


Figure 1. Districts of Southern Province

Table 2. Names of primary schools where the study was conducted.

District	Primary School
Monze	Simukali
Gwembe	Gwembe
Namwala	Niko
Choma	Batoka
Kalomo	Kalomo
Livingstone	Mukuni

Selection of participants

The local chiefs in the area where the selected primary schools were located and the school Headmasters in the selected primary schools cooperated in identification and recruitment of participants who were going to be the respondents in the study. The head teachers sent written invitations to the identified participants using the pupils in the selected primary schools to deliver the invitations.

Thirty participants per district were planned to take part in the study. The participants were to be of a minimum age of 40 years as the assumption was that people in this age group had lived in rural areas long enough to have acquired knowledge of names of insects and the folklore associated with these insects in the Tonga language. Table 3 shows the actual numbers of participants who took part in the study and their average ages.

Table 3. Numbers and average ages of respondents in the different focus groups

District	Monze	Gwembe	Namwala	Choma	Kalomo	Livingstone	Average
Numbers	27	25	29	25	28	28	27
Average Age	42	51	49	52	52	47	49

Conducting the study

Collecting of data for documenting names of insects in a Zambian local language of Tonga was carried out using oral group interviews and discussions. The procedure involved presentation of 40 colour pictures of insects to the participants with instructions to identify and name the insects in the local language. After exhausting the identification and naming of insects represented in the 40 pictures, participants were asked to give names of any other insects that they knew of, including the folklore attached to some of the insects. The data on folklore was obtained by asking respondents to indicate some myths and legends associated with some insects.

Scientific and English common names of insects were included in the compilation of data for easy reference.

The attitude of participants towards the study to document names of insects in Zambian local languages was assessed by observing the participants' interest and enthusiasm in responding and providing the information that was being sought.

4. RESULTS AND FINDINGS

4.1 Results from the 40 pictures of insects presented to the respondents

Table 4 shows the names of insects in the local Zambian language of Tonga in the six districts of Southern Province. Their common English names and scientific names are included in the table for easy reference. In the five districts of Kalomo, Livingstone, Choma, Gwembe, and Monze, an insect is referred to as *kauka* while in Namwala District, it is known as *kapuka*. It should be mentioned that the spelling of a name of an insect in most local Zambian languages, including Tonga, can change depending on the context. For example, in Livingstone District the name "kauka" can mean either a small insect or a single small insect. With a big insect the name "kauka" changes to "Chuuka" while with many small insects the name "kauka" changes to "Tuuka". Similarly with many big insects the name "Chuuka" changes to "Zyuuka".

Several observations can be made from Table 4. Where there are blank spaces in the table, the respondents either failed to identify the insect or identified it, but, did not have a local name for it.

Table 4. Names of insects in Tonga in six districts of Southern Province, Zambia

English and Scientific Name			Names of Insects in Tonga Language by District					
<i>English</i>	<i>Order</i>	<i>Family</i>	<i>Monze</i>	<i>Gwembe</i>	<i>Namwala</i>	<i>Choma</i>	<i>Kalomo</i>	<i>Livingstone</i>
1. Short-horned grasshopper	Orthoptera	Acrididae	Nsozi	Nsozi	Nsozi/ Ingwikwi	Nswabanda	Nsozi	Mpasu
2. Long-horned grasshopper	Orthoptera	Tettigoniidae	Nswabanda	Nswabanda	Chikwikwi	Nswabanda/Ch ikwikwi	Nswabanda	Nswabanda
3. Long-horned grasshopper	Orthoptera	Tettigoniidae	Nswabanda/Ch ikwikwi	Nswabanda/Ch ikwikwi	Nswabanda/Ch ikwikwi	Nswabanda/Ch ikwikwi	Nswabanda	Bbalala/Nswab anda
4. Mantid	Orthoptera	Mantidae	Kachembe gondo/Sianto- bobo	Kachembe gondo/ Simudubula ntobolo	Kachembe gondo	Simudubula ntobolo	Kachembe gondo/ Simudubula ntobolo	Simutematema /*Simafaindi
5. Cricket	Orthoptera	Gryllidae	Simantungwi- zya	Simantungwi- zya	Chivwunye	Chivwunye	Chivwunye	Magunta/ Cenzenene
6. Cricket	Orthoptera	Gryllidae	Chivwunye	Chivwunye	Himantungwi- za	Kabulambe	Hahimbizya	Magunta
7. Butter fly	Lepidoptera		Simukokolwa	Simukokolwa	Kokoliko	Nkonkolekwa	Nkonkolekwa	Nkongoolo- kwa
8. Cricket	Orthoptera	Gryllidae	Munkwanza	Munkwenza Munkwanza	Cheenze munkwanza	Nsilambwido- be		Chenzenkonon o/Munkwanza
9. Moth	Lepidoptera		Simukokolwa		Kokoliko		Nkonkolekwa	Sichinsondo Nkongoolo- kwa
10. Moth	Lepidoptera		Simukokolwa	Simukokolwa	Kokoliko	Chaadunda	Nkonkolekwa	
11. Dung beetle	Coleoptera		Hamfumbula	Siamfumbula	Hichihumbula	Hamfumbula	Siamfumbula	Cimfumbula Siamfumbula
12. Beetle	Coleoptera	Buprestidae			Chidonkola	Chikutumba		Sendalukuni
13. Ground beetle	Coleoptera	Carabidae	Singangalinyo	Singangalinyo	Hichipailila	Shapila	Siapiila	Syapailapaila
14. Tiger beetle	Coleoptera	Cicindelidae	Hamangunta	Siamagunta	-	-	-	-
15. Beetle	Coleoptera		Hakampanya- nga	Siakampanya- nga	Hiluubilili?	Coombenkutu	Chihumpa	Syatobetobe Chimbwizu
16. Whirligig Beetle	Coleoptera	Gyrinidae	Njebeebe	Njebeebe	Njebeebe	Njebeebe	Njebeebe	Njebeebe Nsambalwizi
17. Beetle	Coleoptera	Hydrophilidae	-	-	-	-	Kasambila meenda	-
18. Dung beetle	Coleoptera		Hamfumbula mupati	Siamfumbula mupati	Inkala?	Hamfumbala mupati	Chitonta Mazi	Chimfumbula/ Siamfumbula
19. Fire fly	Coleoptera	Lampyridae	Nguninguni	Nguninguni	Kangunguni	Ngunguuni	Ngunguuni	Chingunguuni

20. Blister beetle	Coleoptera	Maloidae	Ng'ombe Muuka	Ng'ombe Muuka	Ng'ombe Mboobo	Njambi	Chitanta Lungu	-
21. fly	Diptera		Zyimbwa	Zyimbwa, Izyimbwa	Iluzyi	Inzi	Zimbwa	Inzi Nzinini
22. Mosquito	Diptera	Culicidae	Nsenya	Nsenya	Nsenya	Nsenya	Nsenya	Imwe/Nsenya
23. Horse fly	Diptera		Mbuwo	Mbuwo	Himbwa	Zyimbwa	Mbuwo	Simuzimbwa
24. Wasps	Hymenoptera		Maanko	Maanko	Maanko	Maanko	Maanko	Mavo Tunamukuni
25. Wasps	Hymenoptera		Maanko (Madumang'o-mbe)	Mavo/Matanta nsya/Mazinda mbizi				
26. Honey bees	Hymenoptera	Apidae	Nzuki	Nzuki	Nzuki	Nzuki	Nzuki	Nzuki
27. Cicada	Homoptera	Cicadidae	Nyenze	Nyenze	Nyenze	Nyenze	Nyenze	Nyenze
28. Stink bug	Hemiptera	Pentatomidae	Chingulungu-ngwa	Chingulungu-ngwa	Chingulungu-ngwa	Chingulungu-ngwa	Chingulungu-ngwa	Nsunguni/Chingulungu-ngwa
29. Water strider	Hemiptera	Gerridae						
30. Chewing lice	Mallophaga		Njina	Njina	Njina	Njina	Njina	Njina
31. Soldier Termite	Isoptera		Simachenya	Simachenya	Machenya	Jeenkenene	Machenya	Chenkenene
32. worker Termites	Isoptera		Lumoma	Lumoma	Nalunze	Lumoma	Mulazyi	Lumoma
33. Maggot	Diptera		Hunyu	Hunyu	Hunyu	Hunyu	Hunyu	Nsongonzi/Masene/Mabuku
34. Hairy Caterpillar	Lepidoptera		Vwiya	Vwiya	Suntaboya	Suntaboya	Suntaboya	Suntaboya
35. Grub	Coleoptera		Nsenda	Senda	Vwiya	Senda	Senda	Vwiya
36. Maize weevil	Coleoptera	<i>Sitophilus zeamais</i>	Musunse	Musunse	Hikabusumpe	Musunse	Musunse	Musunse
37. Fly	Diptera		Mantaka	Mantaka	Mantaka	Mantaka/Nziniini	Nziniini	Inzi mpati
38. Hairless Caterpillar	Lepidoptera		Chinkubala	Chinkubala	Chinkubala	Chinyabulede	Chinkubala	Luungu
39. Flea	Siphonaptera		Ntabwa	Ntabwa	Imbwanjina	Ntabwa	Ntabwa	Nkuwa
40. Stick insect	Orthoptera	Phasmatidae	Lubbungu	Lubbungu	Lubbungu	Lubbungu	Lubbungu	Sibunimba

4.1.1 Number of insects with known local names in the Zambian language of Tonga from the 40 pictures.

The respondents successfully identified and gave local names of 39 out of the 40 insects presented to them in pictures.

4.1.2 Similarities in the local names of insects between the six districts

In Table 5, the first nine (9) out of the 35 insects identified and given local names had technically similar vernacular names in all the six districts of Southern Province. The word technical is used because the spelling of the local names may differ only with the first or last few letters of the words in a particular name. For example, the name of a dung beetle in Monze is spelt Hamfumbula while in Gwembe, only 36 kilometres from Monze, the dung beetle's local name is Siamfumbula. Such are technically considered to be the same name in this analysis. These can be considered to be among the more common and familiar insects to communities in the six districts.

The next group of 4 insects from number 10 to 13 had similar names in 5 of the six districts while the group of 11 insects from number 14 to 24 had similar names in 4 districts. Three (3) insects from numbers 25 to 27 had similar names in 3 districts while 5 insects from numbers 28 to 32 had similar names in 2 districts. Among the 5 insects which had similar names in 2 districts, butterflies had a similar name in 2 districts and a different name that was similar in two other districts. Two of the 35 insects, numbers 33 and 34, had unique names not found in other districts. The last insect in Table 5 could neither be recognized nor identified by respondents in all the six districts of Southern Province. This was interesting because this insect lives in the same aquatic environment as the Whirligig beetle which was identified, and given the same local name in all the six districts. The reason might be that while the whirligig beetle is conspicuously shiny black, the water strider on the surface of shallow water against the background of the colour of the soil at the bottom of the water body is almost invisible and only becomes noticeable when it is moving. Table 5 shows only 35 out of 39 insects because of some insects that occurred more than once in Table 4, for example, pictures of different types of flies.

Table 5. Names of districts with technically similar insect names in the Tonga language

Insect names In English		Technically same local names of insects by districts					
		Monze	Gwembe	Namwala	Choma	Kalomo	Livingstone
1	Long-horned grasshoppers	Nswabanda	Nswabanda	Nswabanda	Nswabanda	Nswabanda	Nswabanda
2	Dung beetle	Hamfumbula	Siamfumbula	Hichihumbula	Hamfumbula	Siamfumbula	Cimfumbula Siamfumbula
3	Whirligig beetle	Njeebebe	Njeebebe	Njeebebe	Njeebebe	Njeebebe	Njeebebe Nsambalwizi
4	Firefly	Nguninguni	Nguninguni	Kangunguni	Ngunguuni	Ngunguuni	Chingunguuni
5	Mosquito	Nsenya	Nsenya	Nsenya	Nsenya	Nsenya	Imwe/Nsenya
6	Cicada	Nyenze	Nyenze	Nyenze	Nyenze	Nyenze	Nyenze
7	Stink bug	Chingulungu ngwa	Chingulungu ngwa	Chingulungu ngwa	Chingulungu ngwa	Chingulungu ngwa	Nsunguni/Chingulungu ngwa
8	Lice	Njina	Njina	Njina	Njina	Njina	Njina
9	Honey bee	Nzuki	Nzuki	Nzuki	Nzuki	Nzuki	Nzuki
10	Wasps	Maanko	Maanko	Maanko	Maanko	Maanko	
11	Fly maggot	Hunyu	Hunyu	Hunyu	Hunyu	Hunyu	
12	Maize weevil	Musunse	Musunse		Musunse	Musunse	Musunse
13	Stick Insect	Lubungu	Lubungu	Lubungu	Lubungu	Lubungu	
14	Mantid	Kachembelegondo	Kachembelegondo	Kachembelegondo		Kachembelegondo	
15	House Cricket	Munkwanza	Munkwanza	munkwanza			Munkwanza

16	Bombardier beetle			Hichipailila	Shapila	Siapiila	Syapailapaila
17	Dung beetle	Hamfumbula	Siamfumbula		Hamfumbala		Chimfumbula/Siamfumbula
18	Soldier termite	Simachenya	Simachenya	Machenya		Machenya	
19	White ants	Lumoma	Lumoma		Lumoma		Lumoma
20	Hairy caterpillar			Suntaboya	Suntaboya	Suntaboya	Suntaboya
21	Beetle grub	Senda	Senda		Senda	Senda	
22	Big fly	Mantaka	Mantaka	Mantaka	Mantaka		
23	hairless caterpillar	Chinkubala	Chinkubala	Chinkubala		Chinkubala	
24	Flea	Ntabwa	Ntabwa		Ntabwa	Ntabwa	
25	Armoured cricket			Chivwunye	Chivwunye	Chivwunye	
26	Horse fly	Zyimbwa	Zyimbwa,			Zimbwa	
27	Horse fly	Mbuwo	Mbuwo			Mbuwo	
28	Butterfly	Simukokolwa	Simukokolwa		Nkonkolekwa	Nkonkolekwa	
29	Moth	Simukokolwa	Simukokolwa				
30	Tiger beetle	Hamangunta	Siamagunta				
31	Long-legged darkling beetle	Hakampanyanga	Siakampanyanga				
32	Blister beetle	Ng'ombe Muuka	Ng'ombe Muuka				
33	Buprestidae			Chidonkola	Chikutumba		Sendalukuni
34	Hydrophilidae					Kasambila meenda	
35	Gerridae	-	-	-	-	-	-

4.1.3 Differences in the local names of insects between the six districts

One observation that stands out in Table 4 is the difference in the local names of insects among the six districts, thereby reflecting the dialectal differences in the Tonga language.

4.1.4 Differences in the local names of insects as influenced by distance between districts

It is also observed that the distances between districts had an influence on the similarities and differences of local names of insects. Table 6 and Figure 2 show the number of insects with similar local names among the six districts in relation to distance. Livingstone District followed by Namwala District had the highest number of insects with different local names from the other districts. Monze and Gwembe districts have the shortest distance of 36 kilometres between them with the highest number of 33 insects with similar local names; while Namwala and Livingstone are separated by a distance of 354 kilometres resulting in only 10 insects with similar vernacular names. There is an inverse relationship between

similarity in local names and distances between districts; the greater the distance between districts, the lower the number of insects with similar names as depicted in Figure 3.

Table 6. Number of insects with the same local names among the six districts in relation to distance.

Districts	MG	MK	GK	CM	CK	CG	CK	KN	MN	GN	CN	ML	GL	KL	NL
Number of insects	33	23	22	21	21	20	18	18	17	16	15	14	13	12	10
Distance (Km)	36	160	176	60	100	116	234	188	152	188	174	287	296	120	354

Key: M=Monze; G=Gwembe; K=Kalomo; C=Choma; N=Namwala; and L=Livingstone

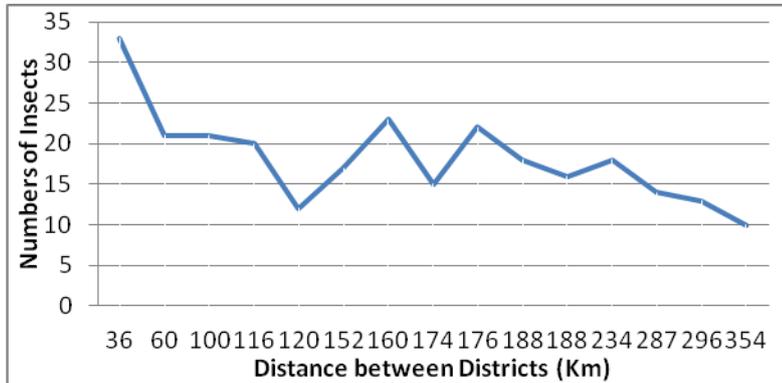


Figure 2. Numbers of insects with similar names in relation to distance between districts.

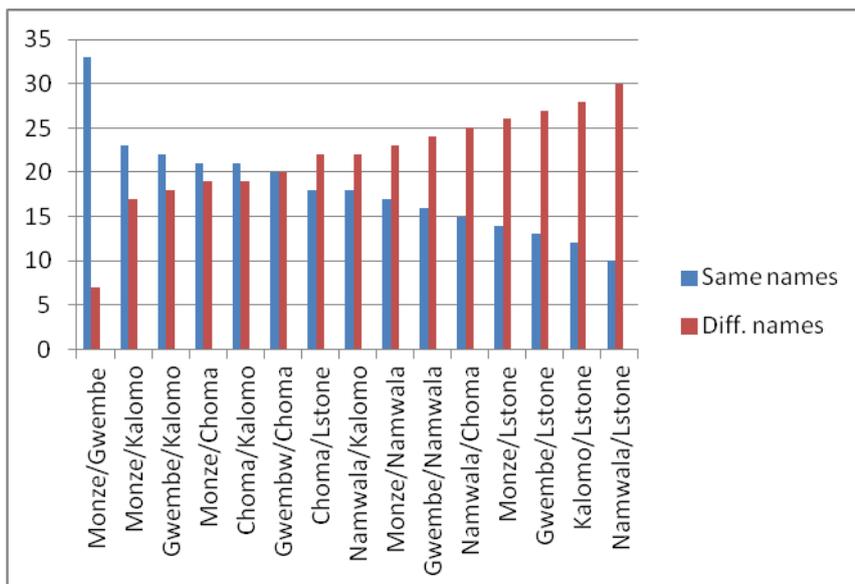


Figure 3. Similarities and differences in vernacular names between districts.

4.1.5 Meaning of local names of some insects

Another observation is the reason some insects are given particular local names. For example, some local names of mantids are linked to the posture of their raptorial front legs. Apart from the name of the mantid “Kachembele Gondo” in Monze, Gwembe, Namwala and Kalomo Districts, the mantid is also known as Siantobolo in Monze and Simudubula ntobolo in Gwembe, Choma, and kalomo Districts. The names Siantobolo and Simudubula ntobolo give an impression that the mantid is shooting a gun by its front legs. The two names literally mean “one who shoots a gun”. The name of a mantid “Simutematema” from Livingstone gives a different impression of a mantid wielding an axe, rather than shooting a gun. From the same district, the name “Simafaindi” with an asterisk for a mantid in Livingstone was given by an entomologist who has the impression that the mantid’s front legs give a picture of one boxing more than that of either shooting a gun or wielding an axe. The entomologist also suspects that the name Simafaindi actually exists in some pockets of the Livingstone local communities and could have been captured if a more extensive survey was conducted.

4.1.6 Misidentifications of some insects

Some insects were misidentified by the respondents as the case with insect number 15, and insect number 18, in Table 4. Insect number 15 was misidentified in Namwala district as *hilubilili* which is the name of a spider in Tonga. In the same district, insect number 18 was misidentified as *inkala* which is the name of a crab in Tonga. The appearance of these insects probably misled the respondents.

4.2 Results for insects that were not represented in pictures

Knowing the limitations posed by pre-selected pictures, respondents were asked to name any other insects that they knew outside of those presented in pictures. Some insects considered common and familiar to the communities were only remembered after a list of pictures was completed. To make up for the insects left out of the pictures, respondents were engaged to come up with local names for other insects. The respondents were assisted to do this by describing the life habits these insects. This exercise yielded sixteen (15) local names of insects in addition to those identified and named from the presented pictures. Table 7 shows the names of the additional 15 insects. Their descriptions and life habits are as follows:-

Table 7. Local names of insects not represented in the 40 pictures.

No.	Local Name	English Name	Scientific Name
1	Mpobe	Horse fly	<i>Haematopota pluvialis (L.)</i>
2	Loma	Mud dauber	<i>Sceliphron Caementarium (Drury)</i>
3	Manyeu	Big black stinging ants	Family Formicidae
4	Simuzinziimwa or Namuziizi	Dragonfly	Order Odonata
5	Bususuli	Biting mighes	Ceratopogonidae: <i>Culicoides</i> sp
6	Luuka	Tsetse flies	Glossina sp.
7	Inswa	Edible Termites	Order Isoptera
8	Tumputu	Small bees	Apis sp
9	Insundila	Small black stinging ants	Family Formicidae
10	Insilibi	Red Ants or fire ants	Solenopsis sp
11	Sichitebbela	Caterpillar	Family Psychidae
12	Insisini	Bed bugs	<i>Cimex hemipterus (Fabricius)</i>
13	Tunyenyene	Small sugar ants	Family Formicidae
14	Matingatiile	Red Driver ants	<i>Dorylus helvolus</i>
15	Simoombolwa	Big reddish ants	Family Formicidae
16	Ibbubi	Big biting fly	Tabanus sp

Mpobe (Horse fly) : Is a brownish medium sized fly that inflicts very painful bites. In Zambia it is most noticeable during the time of weeding in the rainy season when people are bitten by this fly, especially in the morning and late evening.

Loma (Mud dober): This is a very familiar insect to Zambians. It is a wasp that has yellow markings on the legs and abdomen and makes mud nests in sheltered environments like houses.

Manyeu (Ants): These are again familiar insects. They are big black ants that move in bands and sometimes carry loads of their food as they travel along. There is a myth that if one is travelling and encounters these insects carrying their food, they can expect good things where they are going.

Simuzinziimwa or Namuziizi (Dragonfly): Dragonflies are common and familiar insects to most people.

Bususuli (Biting midges): Biting mighes are swarming small insects (type of fly) that can be a nuisance to people who spend time outdoors during early morning and evenings, and even during the daytime on cloudy days when the winds are calm. They will readily bite humans; the bites are irritating, painful, and can cause long-lasting painful lesions for some people. The name *Bususuli* was recorded from Livingstone.

Luuka (Tsetse flies): Is a name given to tsetse flies in most parts of Southern Province.

Inswa (edible Termites): *Inswa* or edible termites are eaten in most parts of Zambia, including Southern Province.

Tumputu (Small bees): These are small types of bees that like to buzz around one's face and ears while threatening to enter the ear. They are usually found in wooded habitats on a hot day. This again a name recorded from Livingstone.

Insundila (Faily Formicidae): Are small solitary black ants well known for their stinging habits if one sits on them on the ground, especially so for boys sitting on the ground with torn pants. The name *Nsundila* is common in Gwembe and Livingstone districts.

Insilibi (Fire ants): Red or fire ants, *Solenopsis geminate*, occasionally visit human habitations in large numbers and can cause havoc if disturbed by inflicting painful bites. If they enter a house unnoticed they can cause such trouble as to temporarily evict the occupants. If one is outdoors and happens to be standing where they are found, they have a habit of crawling up one's legs unnoticed, and only begin to inflict painful bites once they reach the under clothes.

Sichitebbela: This is a Psychid moth caterpillar name in Kalomo District given to caterpillars which carry along their nests constructed out of silk, sticks and leaves. Folklore says that an encounter with these caterpillars is associated with

good luck.

Insisini (Bed bugs): In Livingstone and Gwembe *insisini* is a name given to bed bugs which inflict bites when people are sleeping, especially in unkempt living quarters..

Tunyeneyene (Sugar ants): *Tunyeneyene* are tiny black ants which frequent human habitations, especially in kitchens, where they are attracted to various foodstuffs, particularly sugar and animal products. They often fall into various foodstuffs such as sweet beer, a local non alcoholic beverage called *chibwantu* in the Southern Province.

Matingatiile (Red driver ants): *Matingatiile* are big red driver ants living in colonies in subterranean nests. They are normally found crawling on the ground and are edible in most parts of the Province.

Simoombolwa (Big reddish ants): They are red ants almost the size of *manyeu* but they do not sting.

Ibbubi (Big Tabanidae fly): These are large horse flies which can inflict a painful bite.

A consideration of insects presented in pictures and those not presented in pictures has yielded a total of 55 local names of insects in the Tonga language of the Southern Province of Zambia from the six districts involved in this study.

4.3 Taxonomic levels of local names

Taxonomic levels of vernacular or local names of organisms are miscellaneous, but are mostly at higher categories of order and very few refer to the species level. The approximate taxonomic levels of the 55 local names of insects are shown in Table 8. From this table, it is observed that that most local names of insects in the studied area relate to the order and family taxonomic levels.

<u>Taxonomic level</u>	<u>Number of insects</u>
Order	11
Suborder	5
Family	28
Genus	7
Species	4

4.4 Tonga folklore associated with some insects

While there is much folklore associated with insects in Southern Province, the scope of the study could not allow for an exhaustive coverage of the subject. This study only highlights the folklore associated with love, help, team work, luck, and weather. The following are samples of folklore recorded from the respondents.

Folklore associated with love.

There is a saying which goes as follows; “A honey bee protects its beehive”. In Tonga it is translated “*Inzuki ikwabilila muzinga wayo*”. The meaning of this saying is understood to emphasize the importance of jealousy in couples because it minimizes chances of intruders. As the saying is repeated in the community, it encourages faithfulness in marriages.

Another saying, “*Simunyeu ulenda angoma yakwe*”, translated into English says that “A certain type of ant moves with its own drum”. In this saying couples are encouraged to, as much as possible, move together with their spouses. The lesson is obvious.

The third example in this category is the saying, “*Nziniini ikukala njiikuyanda*” which translates as “the fly that sits on you is the one that loves you”. It means to value friends who are always near to you both in times of happiness and adversity.

Folklore associated with help and teamwork

The saying that “*Wabusinka buzwa nswa*” loosely translates “He has closed the hole through which edible termites are emerging”. The educational value of this saying is not to frustrate those who give you help or else the source will be closed.

In case of teamwork, there is a saying “*Munwe omwe taupwayi njina*”, that is, “one finger cannot crush a louse”. The saying here seeks to encourage team work. In the same vein team work is encouraged by the saying “*Kubeleka mbuli mulazhi*”, that is, “To work like Termites”,

Folklore associated with luck

There is a myth that if a hunter comes across a praying mantis, he is likely to find game.

Lice in big numbers are believed to be a sign of bad luck.

Still on luck, it is also said that if you come across *Basimunya* (big black ants that move in bands) as you travel from one place to another and these insects are carrying or loaded with merchandise, you will find good things where you are going.

Folklore associated with weather

The appearance of Lepidoptera (butterflies and moths) is believed to signify proximity to water bodies or approach of the rainy season.

4.5 Attitude

The respondents' attitudes towards the documentation of the names of insects in local languages were assessed during the time of interaction with them. Their attitudes were positive judging by the enthusiastic and active participation in contributing to the discussions to the extent that they even requested to have copies of the document that was going to be published.

5. DISCUSSION

The documentation of 55 local names of insects from the first study of this kind in Zambia is an indication of the availability of rich indigenous knowledge among the rural communities. Had the study covered all the 14 districts of Southern Province, the list of local names of insects would have been longer. As pointed out earlier in this document, names of organisms in any local language ought to be regarded as part and parcel of the vocabulary of that particular language. As well as preserving languages in writing, names of organisms should equally be preserved in writing along with the particular languages. Identification and naming of insects in local languages can have wider taxonomic significance and application when matched and compared with their English and scientific names. This study has shown that local common names of insects in Tonga are mostly at family of classification and much less at lower levels of classification, especially at species level. Most indigenous naming and classification of insects in Tonga are, therefore, to be understood in broad taxonomic terms. Be this as it may, there is a lot of value in documenting local indigenous knowledge for the development of the local entomological literature, preservation of cultural heritage, and for conservation of biological diversity.

In education, inclusion of locally recognizable samples such as these insects in the curriculum and in instruction is likely to increase relevance, contextualization, and motivation for learning in biological and environmental science education. The identification and naming of insects in local languages, i.e., common naming will most likely serve as scaffolds when learning to name them scientifically. In fact, over the past few years the metaphor 'learning as connection' which implies learning that has meaning in people's lives (Lotz-Sisitka, 2010; Stephens, 2003; Shumba, 2012; Shumba & Kampamba, 2013) has increasingly become relevant in educating for sustainability. The notion of learning as connection conflates with concepts of inclusivity (Lotz-Sisitka, 2010) and with 'bigger issues of society' such as democracy, freedom, equality and human rights or conversely, exploitation, oppression, and inequality (Stephens, 2003). For Lotz-Sisitka (2010) learning as connection implies "to be inclusive of culture, local context and issues and practices that have meaning on local societies such as environment and sustainability practices, health education practices, life skills and citizenship practices". These issues are the ones often excluded from science education and yet they can provide a context for relevance and personalisation of meaning.

It is the major postulate and contention in this paper that naming of organisms in local languages should be regarded as part and parcel of a particular local language, and as such should be able to aid learning when it comes to scientific identification, naming, and classification. The identification and naming of insects in local languages will act as a valuable pre-requisite when learning to name them scientifically at a later stage in the learning process. On the national level, it is expected that this will have a positive influence on the current Zambian government consideration to use local languages and examples drawn from local environments and cultures in the curriculum. In doing so, this will raise greater awareness on the importance of sustainable use and conservation of biological diversity, as well as preservation of cultural heritage. The metaphor of "learning as connection" provides, therefore, a sound rationale for further work to document indigenous knowledge and folklore.

6. CONCLUSION

This study has engaged rural community participants in the identification and naming of fifty five (55) insects which have been documented, contributing to the development of Zambian entomological literature. Using this literature in both formal and non-formal education will help community people to make the connection between knowledge located within their culture and scientific knowledge that is often packaged for formal education. This education and awareness is necessary when promoting conservation of insects and in promoting the cultural heritage associated with the insects. Besides, recognition through local names is necessary when scientists, agriculturalists, and health practitioners are working with local communities; they will communicate more effectively concerning insects as sources of food, as pests,

as vectors of disease organisms, and as sources of many other insect products such as silk. The use of indigenous names of insects will facilitate the teaching and learning of entomology in schools, colleges, and universities, and most likely will have a spill over effect in other areas like tourism in which insects need to be made part and parcel of the Zambian wildlife attractions. Currently, only mammals, fish and birds are given prominence as wildlife attractions. On the basis of this study, it is recommended that further work be done in Southern Province and nationally to document insects in local languages and that the use of local names of insects should be incorporated into entomological literature and in curriculum and instruction at both school and tertiary levels of education.

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