Serangga 19(1): 37-50
ISSN 1394-5130 © 2014, Centre for Insect Systematics,
Universiti Kebangsaan Malaysia

ETHNOENTOMOLOGICAL KNOWLEDGE DOCUMENTATION OF INDIGENOUS PEOPLE IN PENINSULAR MALAYSIA

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ABSTRACT

Ethnoentomological knowledge can be defined as information and practices used by different human culture that are related to insects. Documentation of the knowledge is essential as it may lead to exploration of other fields. In Malaysia, documentation of the knowledge is very limited albeit indigenous people have been using insects in their daily life for ages. It is interesting to note that insects have not been procured only for food but also as medicines and for other uses. However, throughout this research it is evident that the knowledge has begun to erode as the indigenous people moved towards modernisation. This paper focuses on the issues and challenges faced by researchers when performing the documentation processes.

Keywords: ethnoentomology, erosion of knowledge, issues and challenges in documenting processes.

ABSTRAK

Pengetahuan etnoentomologi didefinisikan sebagai penggunaan serangga dalam kalangan etnik. Pendokumentasian maklumat etnoentomologi ini merupakan sesuatu yang sangat penting kerana maklumat ini boleh membawa kepada penerokaan bidang-bidang lain. Pendokumentasian maklumat etnoentomologi di Malaysia adalah sangat terhad walaupun masyarakat Orang Asli telah menggunakan serangga dalam kehidupan harian mereka sejak dahulu lagi. Serangga bukan sahaja digunakan sebagai makanan malah digunakan dalam perubatan dan juga kegunaan lain. Walaubagaimanapun daripada kajian ini telah dibuktikan bahawa pengetahuan etnoentomologi telah mulai hilang akibat pemodenan serta perpindahan penempatan masyarakat Orang Asli ke bandar. Kertas kajian ini memfokuskan kepada isu dan cabaran yang dihadapai oleh penyelidik-penyelidik semasa menjalankan proses pendokumentasian.

Kata kunci: ethnoentomologi, hakisan pengetahuan, isu dan cabaran dalam proses pendokumentasian.

INTRODUCTION

Insects procured as food, medicine and other ethnoentomological uses such as entertainment, bait and belief has been practiced since ancient time by societies in the world. For instance, insect as food is a common practice because according to a study conducted by Bodenheimer (1951) insects play an important role in the history of human nutrition in Africa, Asia and Latin America. However in this modern age, most people find it disgusting and not appropriate to be consumed. In Malaysia, Bodenheimer (1951) and Gimlette (1939) briefly mention about consumption of insects among the indigenous people though there has been no comprehensive documentation. Besides, records of ethnoentomology are very few and limited to works by Dr. Arthur Chung and his colleagues from Sabah Forestry Department. They have been reporting on how various Sabah ethnic groups have been using insects as food, medication and as toys (Chung, 2008).

Traditional knowledge can be defined as a long-standing traditions and practice of certain communities. The knowledge has been passed from a generation to the next in many ways such as songs, legends, dreams, rituals, folklore, laws and through stories. It typically distinguishes one community from another. Some communities depend on their traditional knowledge for survival, for instance on how to grow food. Yet, in this modern world it is easy to lose the valuable traditional knowledge and practices. Moreover associated with the modern up-bringing, the traditional knowledge has not been practiced as it used to be, especially among the younger generation and this may lead to erosion of knowledge and eventual loss. There is a concern about the loss of traditional knowledge. In addition to this, the documentation of traditional knowledge is essential in order to retain and protect the identity of the ethnic.

METHODOLOGY

Survey

This research is focused on two indigenous subgroups represent by the Jakun and Temuan from the states of Johor and Selangor. Selection of the study areas and respondents is in consultation with Jabatan Kemajuan Orang Asli (JAKOA). Before conducting a survey researcher must obtained permission from the respondents. Researcher will explain to the respondents about the objectives, institutions involved and method of the study. The document used was written in Malay language, understood by the respondents and be dated and signed by the respondents and at least one witness. This document is known as Prior Informed Consent (PIC). Another document that the respondents need to sign is known as Access and Benefit Sharing (ABS). This document is to inform the respondents about fair and equitable sharing of benefits arising from the utilisation of knowledge given by them. For example when the knowledge is being used for commercialisation such as for pharmaceutical purposes.

The survey also was conducted through face-to-face interviews with the villagers and the Headman/Tok Batin using questionnaires which have been formulated as the main method of the data collection. The data gathered for the interview include background information of the respondents, insects used, how they were used and some

ecological information of the insects. Reference materials such as pictures of insects had been used for the insect identification because some live insect specimens will not always available during the survey. The interview took approximately 30 minutes but the length of the interview depends on the comprehension and literacy level of the respondents, and the amount of information they offer.

Sampling methodology

Selected insects had been collected with the assistance of the respective respondents whenever possible or with individuals, knowledgeable of insect identification, using suitable traps depending on the insects that werebe collected. The insect collections were deposited at Universiti Tun Hussein Onn Malaysia, UTHM.

Specimen identification is a process of determining the category of the collected specimen (Mohamed Salleh, 1990).For the specimen identification, several reference collections been used by the researcher such as *Dragonflies of Peninsular Malaysia and Singapore* (Orr, 2005); *The Butterflies of the Malay Peninsular* (Corbet & Pendlebury, 1992); *Termites of Peninsular Malaysia* (Tho, 1992); *The insects of Australia: A textbook for student and research workers* (Commonwealth Scientific and Industrial Research Organization, 1991); *Inventory & Collection: Total protocol for understanding of biodiversity, 2nd edition* (Hashimoto, 2006) and *The insects of Borneo (including South-east Asia)*. Besides, the researcher also used the service provided by the experts from Universiti Kebangsaan Malaysia (UKM) dan Muzium Serangga Universiti Malaya (UM) to authenticate the specimens.

RESULT AND DISCUSSION

A total of 37 insects have been used by the Jakun and Temuan. Coleoptera, Hymenoptera and Orthoptera are three leading insect orders in ranked sequences (represented in Table 1). Some of the insects were found in the field research; they were identified to the extent possible, but sometimes only by a local common name. It must be emphasized that the data presented in the table are provisional. They are incomplete with respect to precise identification.

Table 1. List of insect used by the Jakun and Temuan.

No.	Order	Family	Insects	M	P	K	H	L
1	Coleoptera	Buprestidae	*Catoxantha opulenta*	/	/	/	/	
2	Coleoptera	Curculionidae	*Rhynchophorus ferrugineus*	/	/			/
3	Coleoptera	Curculionidae	*Rhynchophorus schach*	/				
4	Coleoptera	Lampyridae	Firefly sp.			/	/	
5	Coleoptera	Scarabaeidae	*Anomala cupripes*				/	
6	Coleoptera	Scarabaeidae	*Onthophagus gazella*				/	
7	Coleoptera	Scarabaeidae	*Onthophagus taurus*			/	/	
8	Coleoptera	Scarabaeidae	*Oryctes rhinoceros*				/	/
9	Coleoptera	Unknown	Beetle sp.			/		
10	Homoptera	Cicadidae	*Dundubia* spp.	/				
11	Homoptera	Cicadidae	*Cryptotympana aquila*			/		
12	Homoptera	Cicadidae	*Megapomponia imperatoria*			/		/
13	Homoptera	Cicadidae	*Meimuna* sp.		/			
14	Homoptera	Cicadidae	Cicada sp.			/	/	/
15	Hymenoptera	Apidae	*Apis cerana*	/	/			
16	Hymenoptera	Apidae	*Apis dorsata*		/			
17	Hymenoptera	Apidae	*Apis* sp.		/			
18	Hymenoptera	Apidae	*Trigona* sp.		/			/

19	Hymenoptera	Formicidae	*Camponotus gigas*	/	/	/	/		
20	Hymenoptera	Formicidae	*Leptogenys* sp.			/			
21	Hymenoptera	Formicidae	*Oecophyllas maragdina*						/
22	Hymenoptera	Formicidae	Ant sp.			/			
23	Isoptera	Rhinotermitidae	*Coptotermes formosanus*	/					/
24	Isoptera	Termitidae	*Macrotermes* sp.		/	/			
25	Lepidoptera	Crambidae	*Omphisa fuscidentalis*	/	/			/	
26	Lepidoptera	Pieridae	*Appias albina albina*			/			
27	Lepidoptera	Riodinidae	*Laxitathuistothuisto*			/			
28	Lepidoptera	Unknown	Lepidoptera sp.			/			
29	Mantodea	Mantidae	*Tenodera aridifolia*	/					
30	Mantodea	Mantidae	*Hierodula grandis*	/					
31	Odonata	Libellulidae	*Neurothemis fluctuans*			/	/	/	
32	Orthoptera	Acrididae	*Omocestus viridulus*					/	
33	Orthoptera	Acrididae	*Valanga nigricornis*	/					
34	Orthoptera	Unknown	Orthoptera sp.		/				
35	Orthoptera	Tettigoniidae	*Elimaea* sp.			/			
36	Orthoptera	Tettigoniidae	*Mecopoda* sp.	/					
37	Orthoptera	Gryllidae	*Achetadomesticus*			/		/	

* (M) Food; (P) Medicine; (L) Other ethnoentomological uses; (K) Belief; (H) Entertainment

CHALLENGES

There are many aspects and issues that arise throughout the process of documenting the ethnoentomological knowledge. The challenges discussed here have been part of researcher's experience during fieldworks and data collection in a few areas of Peninsular Malaysia. The various challenges include language barrier, natural disaster, urbanisation and modernisation, biasness of information, and inefficient communication between scientists.

Language barrier

A standard language, that is well-conversed by the researchers and the respondents, acts as an ideal medium to transfer the information during interview. In Malaysia, in spite of thevarious dialects in Malay language, it is still been used as the main language during documentation since it is the national language and can be understood well by the respondents. However, it is interesting to note that the language of indigenous people differs between communities. The distinct dialect used by the indigenous people could lead to miscommunication, misinterpretation and inaccurate information. Additionally, the terminology used to describe the insects varies among indigenous community. For example, *Megapomponia imperatoria* is known as "besan" by the Jakun while for Temuan it is known as "kanton".

Based on experience, language barrier between the researcher and respondent during interview session is demonstrated in Figure 1. Figure 1 demonstrates that the process of documentation from local knowledge into scientific knowledge would be best facilitated by using the standard language, preferably the native language of the community. In other words, the researchers should at least familiarise themselves with the spoken language of their human subjects before conducting the interview. Alternatively, the information given by the respondents should be transcribed and translated into Malay and English languages with the help of translators among local community or linguistic experts, so that they could be understood by others for documentation purposes to capture the real meaning and perceptions.

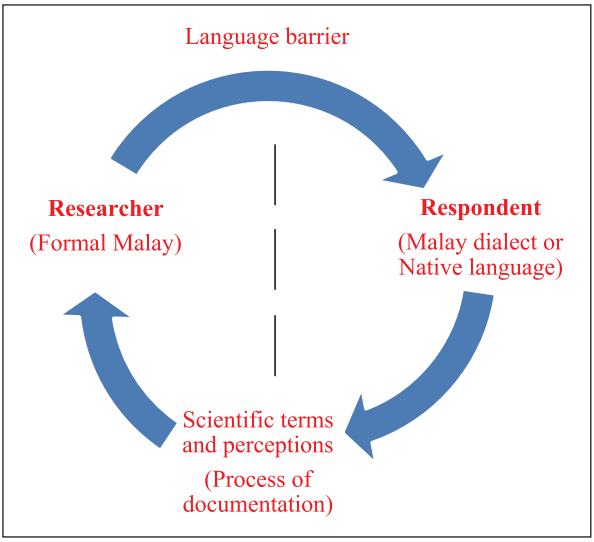

Figure 1. The relationship on how language barrier can be one of the challenges in ethnoentomological knowledge documentation based on the researcher's experience.

Natural disaster

Natural phenomenon, such as bad weather, is one of the unexpected conditions that occur while conducting the research. Based on experience in Kampung Peta, the researchers had been stranded in a flooding area for three days while conducting the interviews session with Orang Jakun, the indigenous community, causing the documentation process to be postponed until the next visit, approximately two months after that. In Malaysia, the raining season starts in November until March. The time limitation should be taken into account to avoid time constrain. Also, the availability of the resources such as insects for specimen collection is limited due to raining season. The dry season is the most appropriate time to do fieldwork because it gives the researchers more time to collect data and samples and also avoid harmful situations especially when the sampling site is in the forest. However, it is interesting to note that some insects are found in abundance after raining and some might disappear during raining. As a result, this factor may cause incorrect

identification of the specimen since the documentation of ethnoentomological knowledge greatly relies on the information given by the respondents. Thus, planning ahead of time for fieldwork help the documentation process run smoothly and easier to monitor.

Urbanisation and modernisation

Ethnoentomological knowledge gradually erodes and eventually loss if nothing is being done to maintain this valuable knowledge. The major element of this issue is urbanisation and modernisation. Urbanisation such as resettlement of the indigenous people from rural area to town area has changed their lifestyle and daily needs. As a result, insects may not be the first option for medicinal purposes due to the easy access to modern medication and they prefer to get treatment from nearby clinics or hospitals. Besides, based on experience by the researcher, some of the indigenous people thought that they were being offended when they were asked about the uses of insects in their daily life. For instance, one of the respondent did reply: "*Kami tak makan serangga, baik makan KFC*" ("We don't consume insect, it is better to eat KFC"). In the meantime, as Malaysian societies modernise, its population is becoming more educated. Due to modern up-bringing, traditional knowledge has no longer been practiced as it used to be. Moreover, as been told by the Tok Batin (headman of the village), the indigenous people want to ward off the second-rate stigma on them, in which they are still living in primitive waysand not having proper education. As a result, they no longer use the insects for specific purposes, leading to knowledge erosion. Although urbanisation and modernisation are inseparable in human needs, sustainable development approach will help to preserve and conserve the existing ethnoentomological knowledge.

Biasness of information

Biasness of information could be due to the different personalities of respondents. Based on researcher's understanding from a series of ethnoentomologicalfieldworks, some respondents favour to be interviewed individually and some respondents preferred to be interviewed in groups. Thus, the gathered information was not thoroughly covered to catalogue a long list of insects used including their associated preparations and uses. Consequently, causing the

researcher to collect less significant data for his or her research. Correspondingly, realibility of information is essential during data analysis.

Reliability of information

Some information given by the respondents could be questionable and contradict with the established data. We usually encounter this situation at the stage of analyzing the ethnoentomological data. For example, a particular respondent was shown a photograph of cicada (*Dundubia* sp.) that is taken as food and usually produces noise between mid-day until 5 o'clock in the evening and continue at dusk. Information given by the respondent was actually about the 6 o'clock cicada (*Pomponia merula*) that produces noise at 6 o'clock in the evening. The species is endemic to Borneo and as such the information given by the respondent is unreliable. Our finding shows that the respondentwas confused on the timing. This kind of 'trial and error' situation limits the process of acquiring the accurate information and creates a hole in ethnoentomological knowledge documentation.

Limited number of respondents

Large number of respondents definitely will make the data collected during the process of documentation be more reliable, significant and easier to analyse (either qualitatively or quantitatively). In real situation, there are limited sample of respondents that could be interviewed for each indigenous groups nowadays. By using snow-ball approach, the selection of the respondents usually made based on consultation with Jabatan Kemajuan Orang Asli (JAKOA) and Tok Batin (headman) of the villages. Rather than attempting to survey all age groups, only elders considered by the local residents to be experts in various domains were consulted. As a result, this approach limits the number of respondents. Most of the respondents are between 40 to 60 years old. Another drawback to this approach is that many of these elders no longer hunt or travel far from their villages, making them questionable sources for information on present day use of these taxa. Consequently, there is a good probability that some synonyms were missed, and that some of those terms elicited are not widely known or scarcely used anymore. A second weakness related to this

limitation was not being able to observe the daily used of resources in the surveyed villages in order to corroborate respondent's reports.

Ethical standards

Ethnoentomological knowledge documentation begins with discussion, which is the first step in the research, and human subjects. The acquisition of prior informed consent (PIC) and access and benefit sharing (ABS) agreement are essential because the process of gathering and publishing data in ethnoentomological knowledge raises many ethical questions. However, building up the rapport with the local community may take some time. As a result, detailed information can often only be obtained after an extended period of interaction. From our experience when conducting ethnoentomological survey, PIC and ABS were the 'first-thing-first' to be introduced and explained well to the local community. In Malaysia, these two aspects are still being revised by the government. However, as we aim to be collaborating and achieving excellent relationship with the indigenous people, this issue must not be. Indeed, researchers inescapably must earn trust to do their work, as ethnobiology is not only the study of people and their relationship to the natural world, but also a field of study that involves modern or customary governments, organisations, local communities, or corporations that secure the value of intellectual property generated by or identified through the collaborative research process. Recognition of the unique intellectual contributions made by international research colleagues and their extended communities is a central theme in the ethical standards and unique perspectives of ethnobiologists. Ethical standards have also been widely recognised by groups of indigenous and local peoples as a necessary component of collaboration.

Inefficient communication between scientists

One problem that ethnobiologist often face is developing collaborative ties between different disciplines. Lack of communication between field scientists and lab scientists causes the issue of intellectual property and resources (IPR) and indigenous people rights are abandoned. Lim *et al.* show the lack of involvement in upstream research (such as non-timber forest products, in-situ and ex-situ conservation of TK, and tree species used by local communities)

compared to downstream research (such as chemical contents and biological activities of specific species, commercial planting of plants, chemical analysis, products development, marketing prospects of medicinal plants). In Malaysia, more downstream research has been conducted, which involves a great number of lab scientists. Ethnoentomological knowledge documentation is a type of upstream research, which is uniquely poised to develop insights that can bridge scientific knowledge and local knowledge. From our experience as a novice scientist, whose background is non-social science, the attempt to start the process of ethnoentomological knowledge documentation was challenging. This trial occurred especially during interviews. Some of the skills needed during data collection are the ability to distinguish and develop the same appreciation for quantification and regard it as a necessary analytical step. In addition, the researcher should be trained to seek meaningful data from local respondents. Improper training to conduct fieldwork is one of the drawbacks during the documentation. Therefore, the effective communication between researchers from different disciplines helps to encounter this situation. More hands-on trainings or workshops on ethnoentomology should be conducted for the researchers from multidisciplines and together with the local people to create a strong networking to assist the communication.

CONCLUSION

In conclusion, ethnoentomology is still being practiced by some people especially the elderly. Scientifically it has been reported that insects are higher in protein and lower in fat. Although such practice may no longer be common due to urbanisation, insects and insect products can be promoted as source of protein and nutritious food. On the other hand, insects are also targeted as a source of antibiotic and anticancer drugs and for that reason further research is needed to substantiate the claims. Thus documentation of this knowledge should be preserved for sustainable development of the community and it is important as references for other researchers and to promote further research. Besides, the documentation is essential to strengthen the ethnic identity.

ACKNOWLEDGEMENTS

The authors would like to thank the staff of Universiti Tun Hussein Onn Malaysia (UTHM) (Norradihah Ismail, Mohd. Nizam Zubir & Adlil Ikram Sharuddin) for their assistance during the research. Special thanks to Institute for Medical Research (IMR) for their financial support, Jabatan Kemajuan Orang Asli (JAKOA); Perbadanan Taman Negara Johor (PTNJ) for giving permission to conduct the interviews and our respondents for their valuable information. We also thank Dr. Arthur Chung (Sabah Forestry Department) for his consultation. This research is funded by Vot A018.

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