THE 10th INTERNATIONAL CONFERENCE ON TRADITIONAL FOREST KNOWLEDGE AND CULTURE IN ASIA

(사)한국임학회
The Korean Forest Society

APAFRI

National Institute of Forest Science

IUFRO

AFoCO
한-아세안 산림협력협정
ASEAN-Korea Forest Cooperation

THE 10th INTERNATIONAL CONFERENCE ON TRADITIONAL FOREST KNOWLEDGE AND CULTURE IN ASIA

"Traditional Use of "Non-Wood Forest Products" and Its Sustainability in Asia"

◆ Objectives

Through sharing information on TFK in Asia, to explore values of TFK and culture and to develop the sustainable use of non-wood forest products related with TFK in Asia

◆ THE 10th Conference Outline

- Theme: Traditional Use of "Non-Wood Forest Products" and Its Sustainability in Asia
- Schedule: 31 October ~ 3 November 2017
- Venue
  - Workshop: Conference Hall of T-mark Hotel, Seoul (31 October)
  - Symposium: Magnolia Hall of Convention Center at Hoam Faculty House, Seoul National University (1 November)
  - Field trip: Hahoi Traditional Folk Village (YeongJu • AnDong, 2~3 November)
- Hosted by National Institute of Forest Science,
- Organized by National Institute of Forest Science, The Korean Forest Society
- Sponsored by APAFRI, IUFRO, AFoCO
- Participating Nations (11 countries): Korea, China, Japan, Malaysia, Vietnam, Indonesia, Myanmar, Philippines, Mongolia, India, Argentina

◈ Workshop and Agenda Meeting

Traditional Forest Knowledge
for Ecosystem Services in ASEAN Countries - Collecting Proverbs, Old Sayings and Community Rules related to Climate Change and Forest Management in ASEAN countries

Time	31 October 2017
09:00–09:20	◉ Opening Ceremony • Opening remarks (*Dr. Gan Kee Seng*, Executive Secretary, APAFRI) • Congratulatory remarks (*Dr. Koo Kyosang, Secretary General of ACTFOK*)
09:20–09:40	◉ Introduction of Folk Culture Workshop's history and results: *Dr. Park Chan Ryul (NIFoS)* ◉ *Collecting Proverbs, Old Sayings and Community Rules related to Climate Change and Forest Management in ASEAN Countries*
09:40–10:00	❖Coffee break
10:00–10:40	◉ Presentation on Proverbs and Old Sayings – Moderator: Dr. Lim Hin Fui • Indonesia 1: *Prof. Ervizal A.M. Zuhudl* • Indonesia 2: *Dr. Elisa Iswandono* • Malaysia: *Dr. Lim Hin Fui*
10:40–12:00	◉ Group Discussion – Moderator: Dr. Park Chan Ryul 1) Proverbs and Old Sayings 2) Next year research • AFoCO: Training Program for TFK and Culture in Asia 3) How can we make a capacity building for TFK and Culture?
12:00–14:00	❖Lunch
14:00–16:30	◉ *Field Trip (Changdeokgung Palace)*
16:30~18:00	◉ *Agenda Meeting (T-mark Hotel)* ◉ *Chairperson: Dr Lee Kyeong-hak, Moderator: Dr Sim Heok Choh* *1) Agreement on Operation Arrangement (AOA)* *– Title of ANTFOK, Membership, Duty, Organization (Technical Staff, Conference Committee, Advisory Committee, Cooperatives)* *2) APAFRI and AFoCO Roles in the Networks* *3) Website Operation* *4) The others*

◆ Symposium: 1 November

Time	Contents
~09:00	◉ Registration
09:00~09:30	◉ Opening Ceremony
	• Opening address (President of NIFoS) • Welcome address (President of APAFRI) • Congratulatory address (Acting Executive Director, AFoCO)
09:30~09:50	◉ Memorial Photo and Coffee Break
09:50~10:20	◉ Keynote Speech: Prof. Monica Gabay Does the study on TFK for local villagers benefit local villagers?
10:20~11:40 (80min.)	◉ Session Ⅰ : TFK in Asia -Past 10 years towards the next 10 years- (Moderator: Dr. Gan Kee Seng) 1. ACTFOK (Dr. Park Chan Ryul): Analysis of presented papers for 10 years 2. Direction of TFK in Asia towards the next 10 years Korea (Prof. Youn Yeo-Chang), China (Prof. Liu Jinlong), Japan (Prof. Kohsaka Ryo), APAFRI (Dr. Sim Heok Choh) 3. Commemorable remarks by members or organizations
11:40~12:00	◉ Ceremony for ANTFOK (Asian Network of Traditional Forest Knowledge) –Signing Ceremony for『Agreement on Operation Arrangement for TFK and Culture in Asia』
12:00~13:30	❖Lunch
13:30~14:50 (80min., P–15m, Q–5m.)	◉ Session Ⅱ : Proverbs and old sayings related with TFK and its application in Asia (Moderator: Dr. Park Chan Ryul) Presented by Vietnam, Republic of Korea, Philippines and Mongolia 1. Proverbs, Old Sayings and Community Rules Related to Forest Management and Climate Change of Thais in Viet Nam (Dr. Pham Duc Chien) 2. Enhancing Ecoliteracy through TFK in Proverbs and its Application in Asia (Dr. Kim GoWoon)

Time	Contents
13:30~14:50 (80min., P-15m, Q-5m,)	3. Documentation of Proverbs, old sayings and community rules of Tagbanuas and Ifugaos in the Philippines (Ms. Karen Rae M. Fortus) 4. Traditional knowledge of Mongolian herders to herd livestock and adapt for weather condition (Prof.Tserenkhand Geleg)
14:50~15:10	❖Coffee Break
15:10~16:10 (60min., P-15m, Q-5m,)	◉ Session Ⅲ: Traditional Use of "Non-Wood Forest Products" in Asian Natives and Its Sustainability (Moderator: Dr. Sim Heok Choh) Presented by Republic of Korea, Indonesia and Myanmar 1. The use of pine resin in the early 20th's century and current status of its damage in Korea (Mr. Lee MinJoo) 2. The local wisdom of forest communities in utilizing non-timber forest resources for their livelihood needs while conserving forest ecosystems (Prof. Nandi Kosmaryandi) 3. Spiritual beliefs and locally-accepted rules of Traditional Forest Management in Myanmar (Dr. Ei Ei Swe Hlaing)
16:10~16:30	❖Coffee Break
16:30~17:50 (60min., P-15m, Q-5m,)	◉ Session Ⅳ: TFK, Biodiversity and Ecosystem Services (Moderator: Prof. Koshaka Ryo) Presented by Indonesia, Malaysia and China 1. Ethnobotany of Kepuh (Sterculia foetida L.) on Sumbawa Community, Nusa Tenggara Barat (Prof. Ervizal A.M. Zuhud) 2. Ethnobotany of manggarai ethnic in Ruteng Mountains, Flores, Indonesia (Dr. Elisa Iswandono) 3. Traditional and Sustainable uses of bamboos in Tambunan District, Sabah, Malaysia (Mr.Julius Kulip) 4. A study on the forest-related traditional knowledge retained by Dong Ethnic Group-A case of Deng-cen village in Guizhou Province, Southwest China (Ms. Huang Yinghe)
17:50~18:00	◉ The 11st Conference call (Dr. Gan Kee Seng) ◉ Closing remarks (Dr. Lee Kyeong-hak)
18:30~20:00	◉ Dinner (Restaurant near the Naksongdae Subway Station)

◆ Field Tour: 2~3 November

Time	2 November 2017
08:00–11:00	Move to Forest Medicinal Resources Research Center, YeongJu.
11:00–12:00	Introduction of Forest Medicinal Resources Research Center
12:00–13:30	Lunch
13:30–14:30	Move to Buseoksa Temple, YeongJu
14:30–16:30	Tour at Buseoksa Temple, YeongJu
16:30–17:30	Move to Hahoe Traditional Folk Village (www.hahoe.or.kr)
17:30–19:00	Dinner
19:00–19:30	Check-in GAGYEONGJAE and DEOKYEOJAE
Time	**3 November 2017**
08:00–09:00	Breakfast
09:00–09:30	Move to Buyongdae Cliff
09:30–10:00	Enjoy the View at Buyongdae Cliff
10:00–10:30	Move to Hahoe Traditional Folk Village
10:30–12:30	Take a Walk at Hahoe Traditional Folk Village
12:30–14:00	Lunch
14:00–15:00	View the Performance of Hahoe Mask Dance Drama
15:00–19:30	Move to Seoul

Opening Address

Ladies and gentlemen, I would like to welcome all of you to Seoul, Korea.

As a president of NIFoS, it is a great pleasure that **IUFRO, APAFRI, National Institute of Forest Science (NIFoS)**, co-host the 10th Conference on Traditional Forest Knowledge and Culture, especially in the meaning of commemoration on the 10th meeting of this Network.

Let me extend my gratitude to Prof. Liu JinLong of Renmin University of China, **Prof. KoShaka Ryo of Tohoku University of Japan, Prof. Youn Yeo-Chang of Seoul National University, Korea, Dr. Sim Heok Choh & Dr. Gan Kee-Seng of APAFRI, Prof. Monica Gabay of National University of San Martin of Argentina and** participants for attending this conference. Also, I would like to thank moderators, speakers and all the distinguished guests for being here with us today.

This conference on TFK goes back to the first time pre-meeting on TFK, starting at Kunming in November 2007. Due to the continued attention and concerns of China, Japan, Korea and ASEAN Countries, this 10th conference has come to be here at this Seoul National University. Thanks again **Prof. Liu JinLong and Prof. Youn Yeo-Chang** who had founded this network.

Most countries over the world have come to recognize the decrease of biodiversity and they have been arguing and debating the importance of biodiversity at the COP meeting of Convention on Biological Diversity (CBD). Also, The Nagoya Protocol on Access to Genetic Resources and the fair and equitable sharing of benefits arising from their utilization to the Convention on Biological Diversity is an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way.

Opening Address

On Friday, 19 May 2017, the Republic of Korea became the 98th country to ratify the Nagoya Protocol. Korea Forest Service also prepares the legislative and administrative measurements for implementation of Nagoya Protocol in next year. In this perspective, this 10th conference will provide the platform for the practical sharing and communication of TFK among participated countries.

Two thirds of the world's indigenous peoples, 260 millions of indigenous people live at Asian Region; these indigenous people have been transcending the treasure and wisdom of traditional forest knowledge.

Recognition of intellectual property rights (IPRs) over traditional knowledge (TK) held by indigenous peo¬ples and local communities (ILCs), particularly TK associated with biodiversity and genetic resources (GRs), is an important step in actualizing sustainable development.

TFK can be linked to the SDGs' targets, # 2, the achievement of food security, # 6 the sustainable management of water, and # 15 the protection and restoration and sustainable use of terrestrial ecosystems and biodiversity. Among them, target of food security cannot be emphasized too much for sovereignty and safety for peoples in each country.

Asian Network of TFK (ANTFOK) needs to leap to new platform through this 10th conference, and so it is a great honor to have a chance to invite all of you in here **Seoul, Korea**. I hope you can share and coexist by adoption of diverse training programs of cooperatives, APAFRI and AFoCO based on the fair and equitable sharing of benefits arising from their utilization on Traditional Forest Knowledges among you.

Opening Address

I believe this conference is very significant and timely since now forest co-operation among Asian countries is highly required. I hope our discussions here will result in fruitful outcomes through your active participation.

Once again, I would like to offer my appreciation to all of you for joining us today despite your busy schedule.

Thank you.

1 November 2017

President of National Institute of Forest Science,
LEE Changjae, Ph.D.
NIFoS, Republic of Korea

Welcome Address

Sim Heok Choh

Asia Pacific Association of Forestry Research Institutions

Congratulatory Address

November 1, 2017
Magnolia Hall of Convention Center at Hoam Faculty House, Ho-Am, SNU

Distinguished **Prof. Liu Jin Long** of Renmin University of China, **Prof. Ko Shaka Ryo** of Tohoku University of Japan, **Prof. Youn Yeo-Chang** of Seoul National University, Korea, **Dr. Sim Heok Choh** & **Dr. Gan Kee-Seng** of APA-FRI, **Prof. Monica Gabay** of National University of San Martin of Argentina,

Distinguished participants, and
Ladies and Gentlemen!

Good morning,

Let me firstly express my sincere congratulations to NIFoS for hosting the **10th International Conference on Traditional Forest Knowledge and Culture in Asia**. I also warmly welcome all participants in many countries in Asia, especially Korea, China and Japan. It is a phenomenal moment to continue this conference for 10 years on the topic of "Traditional Forest Knowledge (TFK)".

The National Institute of Forest Science has led this conference on traditional forest knoweldge and culture since it began in 2008. However, I believe that this achievement was only possible with the help and dedication of the members of the advisory committee, Prof. Liu, Prof. Youn, and Dr. Sim. Thank you again for your devotion to this gathering.

In the global discourse such as the **Convention on Biological Diversity and the Nagoya Protocol**, all of us aware that to preserve traditional knowledges creatively is one of the significant factors for the sake of sustainable development.

Under the motto of pursuing action-oriented field activities, we, AFoCO,

Congratulatory Address

aim to broaden the regional cooperation through undertaking projects and programs in the context of sustainable forest management and addressing climate change.

As serving many countries in Southeast Asia, our organization always watches on the importance of traditional forest knowledge among indigenous people. In line with that, unfortunately, we also watch ourselves that sometimes we easily tend to neglect their precious knowledges by pressing and showing off our 'noble' or 'advanced' knowledge and technologies.

With learning by doing, we are pursuing to develop various projects and programs to support traditional forest knowledge and wisdoms of local communities in many countries. In this regard, it is my sincere honor and pleasure to meet many professors and researchers in this area, and I hope we can cooperate more creatively for Asian TFK.

Before closing my remark, please let me briefly share with you one thing about AFoCO. This December, we finish the construction of AFoCO Regional Education and Training Center (shortly, we call it AFoCO RETC). The location is Yangon, Myanmar, and it will be opened in next year. I hope to meet all of you in our center again.

I hope you have a delightful stay in building up of good relationship and network from this event. I wish the **10th International Conference on Traditional Forest Knowledge and Culture in Asia** the best success.

Thank you.

Jun Seok, Choi

Acting Executive Director, AFoCO

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Does The Study On TFK For Local Villagers Benefit Local Villagers? Research Ethics, Communication And Impact: Sharing Research Results With Communities

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Keywords: Research ethics, social responsibility, translation, forest-dependent communities

1. INTRODUCTION

This conference aims at illuminating the need to further advance ethical considerations and social responsibility in forestry research, particularly when it is done with participation of forest-dependent communities. It presents work in progress contributing to this end, looking at how the benefits emerging from research results are shared (or not) with the communities involved, and suggests the need to bridge the epistemic gap between scientific research outputs and community-accessible materials. It is anticipated that these materials would contribute to enhancing local livelihoods and the sustainable management of forest landscapes. Thus, scientific research would leverage investment by fostering, inter alia, the Sustainable Development Goals (SDGs) and the Aichi Biodiversity Targets. Strategic Goal D seeks to “enhance the benefits to all from biodiversity and ecosystem services”, while Strategic Goal E is to “enhance implementation through participatory planning, knowledge management and capacity building”. The accessibility of scientific research results for forest-dependent communities may support these goals.

The last decades have witnessed a growing accountability of the business community regarding business values, ethics and social responsibility. The United Nations and organizations such as the World Business Council for Sustainable Development (WBCSD), the Organization for Economic Co-operation and Development (OECD), the Global Reporting Initiative and the International Organization for Standardization produced guidelines, standards and recommendations such as the Global Compact, GRI 4, ISO 26000, the Equator Principles, and the OECD Guidelines for Multinational Enterprises. However, there has been no meaningful initiative on this matter dealing with scientific research.

The European Union, within Framework Programme for Research and Innovation Horizon 2020, established the "responsible research and innovation" approach that "anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation" (EU, 2017). This framework fosters citizen engagement and open access to research results, although there is no specific provision for the translation of research into accessible materials. The Royal Society, together with the Academy of Medical Sciences, the Royal Academy of Engineering and Wellcome, established a series of commitments for the "translation" of research into practical business-related actions (The Royal Society, 2017). "Translation" is understood here as a wide range of outputs and activities involving the exchange of knowledge and ideas, creation and exploitation of intellectual property, academic-industrial collaborations, establishment of spin-out companies and development of products, processes and enabling technologies (ibid.).

Besides these initiatives, the research community is frequently confronted with ethical concerns, particularly regarding biological and genetics issues. The Nagoya Protocol, among other objectives, seeks to ensure equal access to benefits derived from the sustainable use of biodiversity, particularly of indigenous and traditional communities. Furthermore,

there has been significant progress in promoting evidence-based policies and fostering the science – policy dialogue.

In spite of this progress, there is a gap that requires developing new solutions and involves "giving back to communities" in an effective fashion. Participatory Action Research and related methodologies did take into account the need to produce "Impact" and the possibility of transferring knowledge to participating communities. They also pioneered in stepping down from the pedestal of Western science and valued local and traditional forest knowledge. However, these efforts did not achieve the intended results in terms of improved livelihoods and post-project sustainability. Hence, the question remains on how to bridge the gap.

2. METHODOLOGY

Realizing the need to reach out to forest-dependent communities, within the context of the International Union of Forest Research Organizations (IUFRO), particularly the Research Group 9.03 Forest History and Traditional Knowledge, a Task Force is being developed in order to produce a voluntary protocol for communicating science more effectively to local communities directly or indirectly participating in research projects. The strategic intent of this initiative is to produce guidelines that enable scientists to produce accessible and useful materials based on the results of their research that contribute to fostering enhanced livelihoods for the participating communities, including small-scale producers, indigenous communities and peasants. This would also imply a two-way dialogue between "Western" science and traditional forest knowledge.

This protocol would provide a useful tool to materialize social responsibility in science in a meaningful way. It is anticipated that the protocol will support further synergies between research results and the advancement of the Sustainable Development Goals by directly supporting forest communities through accessible knowledge sharing. This approach to the

dissemination of research results in participating communities could also provide valuable insights that promote the development of local and regional economies. Furthermore, the protocol could also provide useful guidelines to connect research with cooperation for development in a new way, which optimizes investments through an enhanced science outreach supporting ODS-related projects in the field of forestry and related disciplines.

Once developed, the protocol will be validated through its implementation in two or more sites. The validation process involves the construction of a validation tool (C&I), selection of case studies and pilot implementation of the protocol. The pilot implementation of the protocol includes capacity building of researchers and practitioners, elaboration of accessible materials based on research results, and dissemination workshops with local communities.

3. EXPECTED RESULTS

The broad project development goal is to improve the role and contribution of scientific research in advancing the SDGs in forest-dependent communities. The main expected outcomes are: (1) a validated protocol for research accessibility and dissemination, (2) a report on the implementation of the protocol in at least two case studies, and (3) a forest research community more aware and accountable for the ethical aspects and social responsibility for its activities with smallholders and forest-dependent communities. Intermediate outcomes include a draft protocol with voluntary guidelines for research accessibility, capacity building activities to enhance the ability of scientists and practitioners to share and communicate knowledge to non-expert stakeholders (i.e. smallholders and forest dependent communities), and enhanced awareness of the ethical aspects of and social responsibility in forest research. Figure 1 shows the development goal, intermediate and end-of-activity outcomes.

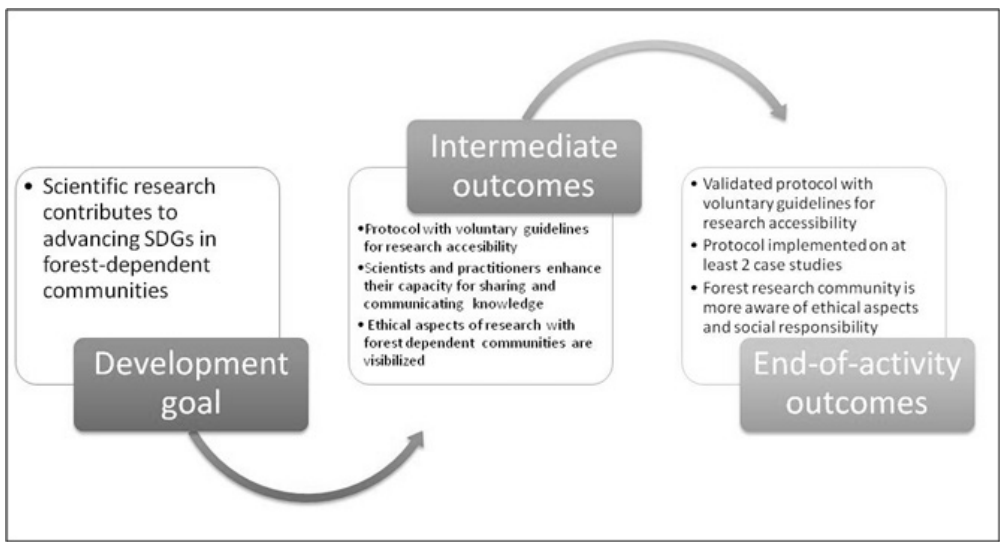

Figure 1. Key project elements

The Task Force's outputs will contribute to the global dialogue on the SDGs implementation, Forest Law Enforcement and Governance (FLEGT) processes, and climate change (notably, REDD+). The Task Force will also make its outputs widely available to IUFRO units and produce an IUFRO publication freely-accessible on the Internet. Other expected impacts of this initiative include an enhanced awareness and accountability of the forest research on the ethical aspects and social responsibility for its activities with smallholders and forest-dependent communities. Moreover, the ability of scientists and practitioners to share and communicate knowledge to non-expert stakeholders (i.e. smallholders and forest dependent communities) is expected to be improved through the implementation of the protocol.

4. REFERENCES

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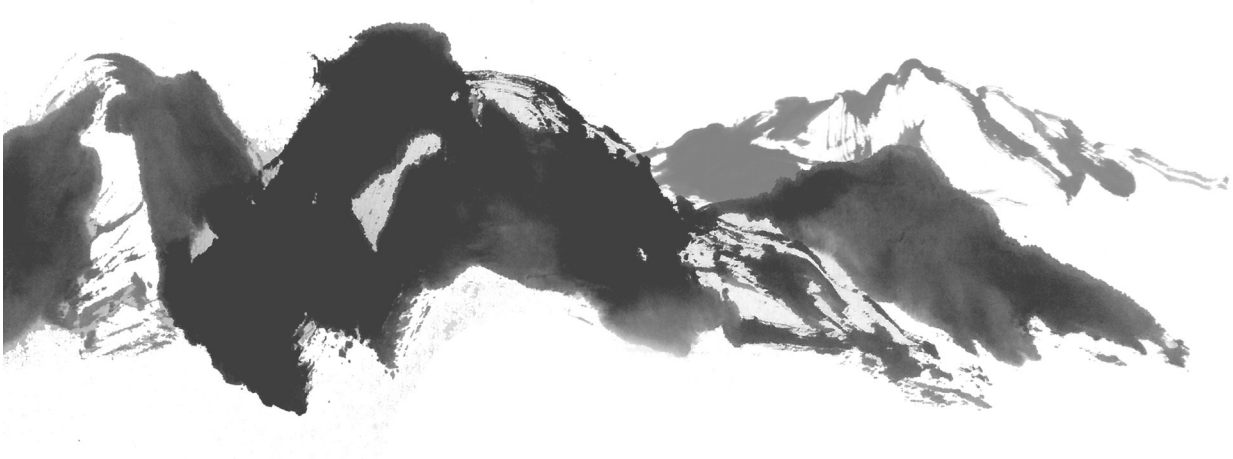
Session I

TFK in Asia -Past 10 years towards the next 10 years

Moderator: Dr. Gan Kee Seng

1. ACTFOK (Dr. Park Chan Ryul):
   Analysis of presented papers for 10 years

2. Direction of TFK in Asia towards the next 10 years
   1. Korea (Prof. Youn Yeo-Chang),
   2. China (Prof. Liu Jinlong),
   3. Japan (Prof. Kohsaka Ryo),
   4. APAFRI (Dr. Sim Heok Choh)



1. 1 Analysis of presented papers for 10 years at the conference of Traditional Forest Knowledge and Culture in Asia

Chan-Ryul PARK, Eunha PARK, Lee MinJoo,
Koo Kyosang, Kyeong-hak LEE

Forest Conservation Department, National Institute of Forest Science, Seoul, Korea

Abstract

The annual conferences on traditional forest knowledge and culture have been alternately held in China, Japan and Korea since 2008. This conference is the first time for ASEAN countries to host. It may be meaningful event to strengthen the Asian Networks of Traditional Forest Knowledge (ANTFOK). We reviewed the presentation papers and analyzed the keyword of title in the presentation papers. In terms of recent global change including Paris Agreement in UNFCCC, indigenous peoples would face a crisis on the conservation of traditional forest knowledge and culture (TFK). In this perspective, this conference gives a chance of discussion on conservation of the TFK and watching future direction of TFK of Asia. From the 1st to 10th conference, total 223 papers including 80 and 54 papers in Korea and China have been presented. We suggested important keywords entitled at the title as “case”, “management”, village”, “conservation”, “culture”, “landscape”, “community”, “sustainable”, and “biodiversity”. Until now, IUFRO, APAFRI, NIFoS and two universities (Seoul National University in Korea, Renmin University in China) have supported networks in financial and scientific aspects. In the future, participation of national and/or public research organization can intensify the networks more than now in financial and academic ways.

Keywords *: ANTFOK, Indigenous people, Keywords Analysis, Network*

Introduction

The international conferences on traditional forest knowledge and Culture in Asia have been alternately held by the three East Asian countries —China, Japan, and Korea— since 2008. The fourth symposium was held on Jeju in the year of 2011. In the Jeju symposium, three countries—China, Japan, and Korea—concluded a mutual agreement to establish the Asian Center for Traditional Forest Knowledge (hereafter; ACTFOK) for sharing the TFK information and operating the sustainable research networks actively. ACTFOK is established for the purpose of the promotion of academic meetings propelled by a sound network of East Asian countries and of the enhancement of joint research on TFK. In 2012 meeting at Seoan of China, ACTFOK made a small step to share the shoulder with the ASEAN countries. This paper was intended to review proposed papers and analyze the keyword of presented papers and to suggest future direction on the Asian Network of Traditional Forest Knowledge (hereafter; ANTFOK).

Methods

Total 223 papers have been presented until the 10th international conferences on traditional forest knowledge and Culture, so we arranged the title and analyzed keyword to know the frequency of main subject. We consider only the presented papers except the poster, and analyzed the one phrase keyword.

Results and Discussion

Keyword analysis of presented papers

From the 1st to 10th conference, total 223 papers have been presented, 40 papers at the 1st conference showed the highest value of papers. Two countries including 80 papers of Korea and 54 papers of China have been largely supported networks (Table 1, Fig. 1.). In keyword analysis, we excluded the main keyword such as traditional forest knowledge.

We suggested important keywords entitled in the title as “case”, “management”, village”, “conservation”, “culture”, “landscape”, “community”, “sustainable”, and “biodiversity”.

Table 1. Number of papers presented until the 10th Conference

Countries	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total
Korea	27	4	27	16	7	6	5	3	4	2	80
China	7	16	7	4	5	2	1	12	2	1	54
Japan	3	4	3	3		5	4	2	1		28
Indonesia						1	1	1	12	3	18
Malaysia	2	1	2		2	2	2	1	2	1	13
Philippines		1			2	1	2	1	1	1	11
India		1		1	2			1			6
USA					1			2			3
Vietnam					1		1			1	3
Bangladesh	1		1								1
Cambodia							1				1
Lao PDR											1
Thailand		1									1
Mongolia										1	1
Myanmar										1	1
Argentina										1	1

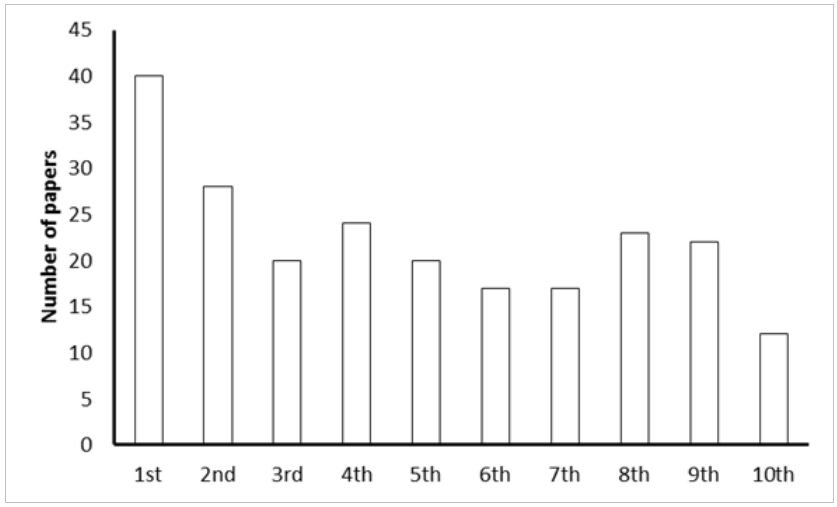


Fig. 1. Number of presented papers from 1st to 10th conference

Table 2. Results of keyword analysis of presented papers from 1st to 10th conference

Word	Count	Density (%)	Word	Count	Density (%)
forest	93	3.20	japan	8	0.28
traditional	89	3.06	forestry	8	0.28
knowledge	66	2.27	medicinal	7	0.24
case	33	1.14	research	7	0.24
village	32	1.10	satoyama	7	0.24
management	30	1.03	ecological	7	0.24
Korea	29	1.00	cultural	7	0.24
study	28	0.96	uses	7	0.24
conservation	26	0.89	nontimber	7	0.24
china	24	0.83	practices	7	0.24
culture	22	0.76	food	7	0.24
community	21	0.72	role	7	0.24
korean	19	0.65	west	6	0.21
landscape	17	0.58	asia	6	0.21
sustainable	15	0.52	landscapes	6	0.21
biodiversity	14	0.48	diversity	6	0.21
local	14	0.48	maeulsoop	6	0.21
forestrelated	13	0.45	areas	6	0.21
province	13	0.45	mountains	6	0.21
resources	12	0.41	natural	6	0.21
forests	12	0.41	development	6	0.21
yunnan	12	0.41	restoration	5	0.17
people	11	0.38	plant	5	0.17
related	11	0.38	protection	5	0.17
Philippines	11	0.38	ethnobotany	5	0.17
communities	10	0.34	rural	5	0.17
indigenous	10	0.34	system	5	0.17
Malaysia	10	0.34	comparison	5	0.17
ethnic	10	0.34	proverbs	5	0.17
application	9	0.31	wood	5	0.17
plants	9	0.31	change	5	0.17
ecosystem	9	0.31	villages	5	0.17
policy	9	0.31	status	5	0.17
national	9	0.31	utilization	5	0.17
groves	9	0.31	park	5	0.17
Indonesia	8	0.28	resource	5	0.17
mountain	8	0.28	villagers	5	0.17
services	8	0.28	nature	5	0.17
minority	8	0.28	life	4	0.14

First step of networks

In the period of initial stage of Asia networks on the traditional forest knowledge and culture, three countries — Korea, China and Japan have conducted the joint symposium on the traditional Forest Knowledge in 2008. Sixteen countries had participated at the scientific conference until now. All participated experts in the network estimated around 200 personals. In 2012, the Asian Center for Traditional Forest Knowledge was established in National Institute of Forest Science Korea (NIFoS, former KFRI, Korea Forest Research Institute) The Center contributed to share the information of TFK and support new platform for Asian countries since 2014 (Fig. 2). Korea and China hosted the conference three times and Japan hosted two times respectively. Each conference consisted of one or two day symposium and one night-two day's field tour. Participators in each country exchanged information on the traditional forest related knowledge and culture in each local area. This chance provided the mutual comprehension on the different and particular forest knowledge and culture (Table 3).

Fig. 2. Three periods of Asian network of traditional forest knowledge

Table 3. Host country, place and number of participated countries of each conference until the 10th conference

Conference	Year/Month	Country	Place	Participated countries
1st	2008 (Oct.)	Korea	Seoul	5 countries
2nd	2009 (Nov.)	China	Kunming	7 countries
3rd	2010 (Dec.)	Japan	Kanazawa	6 countries
4th	2011 (Nov.)	Korea	Jeju	4 countries
5th	2012 (Nov.)	China	Yangling	7 countries
6th	2013 (Nov.)	Japan	Miyazaki	6 countries
7th	2014 (Sep.)	Korea	Jeonju/Wanju	8 countries
8th	2015 (Nov.)	China	Nanjing/Taixing	8 countries
9th	2016 (Sep.)	Indonesia	Bogor	6 countries
10th	2017 (Oct)	Korea	Seoul	11 countries

Financial support from NIFoS

NIFoS has started financial support through APAFRI to the networks for activation of the related research and networking on TFK since 2012. The network had acted the research links well among Renmin University of China and Seoul National University of Korea. However, NIFoS's fund such as ODA should pay the national institutes or public level organization not private one. Finally, NIFoS would suggest new frameworks for ANTFOK as bellows in Fig. 3. IUFRO working group 9.03.04 and 0.5 deal with the traditional forest knowledge in tropical and temperate regions. If possible, the Asian Networks of Traditional Forest Knowledge would be connected with IUFRO WG above. The present committee members including researchers and professors may act as an advisor committee for the ANTFOK. ACTFOK play a role on executing the ANTFOK with steering committee, secretary office and cooperatives organization such as APAFRI and AFoCo.

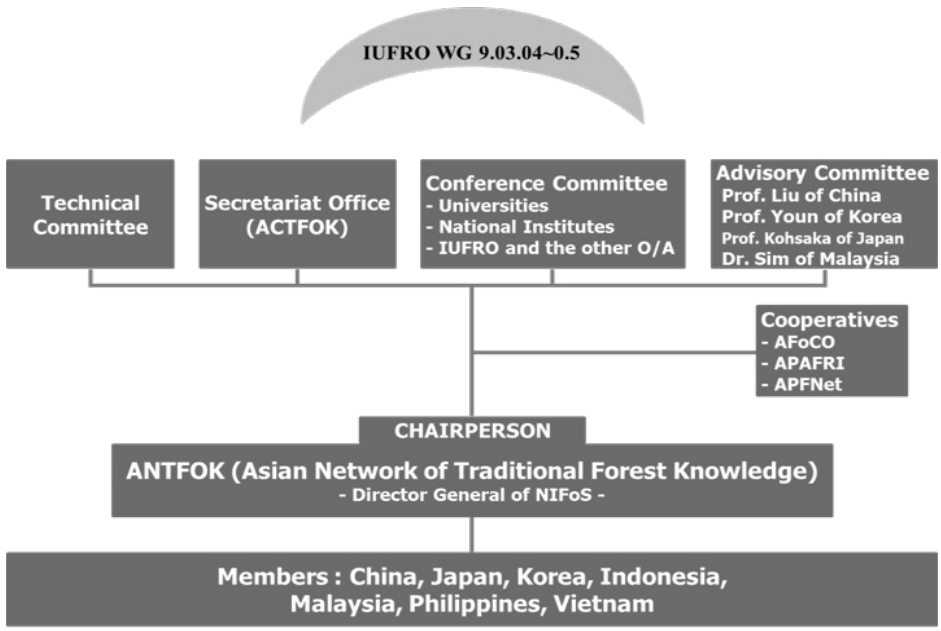


Fig. 3. Proposed modified networks scheme (ANTFOK, Asian Networks for Traditional Forest Knowledge)

Future direction of ANTFOK

Most of Asian countries experienced a sudden urbanization, development pressure. Those situations resulted in the decreasing population in indigenous local communities (ILC) at specific areas. TFK plays a very important role in conserving and sustaining the livelihoods of indigenous peoples and local community. Also, TFK of indigenous peoples and local communities contribute to enhancing biodiversity. To use limited resources and overcome this changing situation, we would suggest the importance of TFK not only in the management of useful resources, but also in the excavation of invaluable spirits embedded on the commons of Asian forests. We should consider the new paradigm based on TFK in each country, and share the information on TFK from a local community and regional step to Asian level. Traditional forest knowledge has been highlighted at all over the world

during IUFRO related meeting. Therefore, the importance of traditional forest knowledge has been overemphasizing; however, we are now at a primary level in sharing and applying the TFK on forest management in the field. In the early and mid-20th century, all countries have experienced the common problem such as rapid urbanization coupled with rural exodus due to occidental civilization and institutions. Rapid urbanization has caused to declining traditional forest knowledge and culture transcended at rural community from generation to generation. However, we can consider the excavation of the traditional spirits and way remnant in the forests all over the world. Each country has its own typical culture handed down from old generation. Therefore, we need to find the similarities and dissimilarity of TFK among local, regional and global level. We need to establish the criteria and indicator of TFK to compare the TFK of each country. NIFoS Korea has been conducted the preliminary tentative Criteria and Indicators to categorize and construct the database on TFK to activate the research and conduct the related policy. In the near future, ANTFOK would suggest Asian Initiatives for traditional forest knowledge.

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1. 2. 1 Direction of TFK in Asia towards the next 10 years

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1. 2. 3 Direction of TFK in Asia towards the next 10 years

Bee honey production and ecological knowledge: Knowledge transmission for sustainable NTFP production

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Public and scientific interest in degradation of pollination-related ecosystem services is increasing. That is a global environmental issue related to the loss of biodiversity. Human interventions including beekeeping can contribute to the management of ecosystem services. Ecological and local traditional knowledge of management is transmitted with different content and quality (Park & Youn, 2012; Kohsaka et al., 2015). Ecosystem services of pollinators are gaining importance globally. For example, the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem services (IPBES) issued one of the first thematic reports focusing on pollination (IPBES, 2016).

As the current trend of beekeeping in Japan, production of bee honey is gradually increasing, and the number of households with beekeepers has been increasing from the year 2005. Small-scale beekeeping is implemented with various methods in the country, for instance, beekeeping in urban areas such as central business districts in Tokyo is conducted by participatory approaches. Satoyama ecosystems in Japan include urban and rural ecosystems, and pollination services are expected to contribute to maintain such complex ecosystems. To maintain ecosystem services including pollination services, monitoring and indicator based managements with relevant incentives for stakeholders are necessary.

The role of beekeeping as a human intervention in pollination has been highlighted in

the national and international arenas for sharing the relevant knowledge and experience. However, the status and trend of knowledge transmission in beekeeping have been overlooked, partially due to relatively small share of products from beekeeping in the national economy (and the difficulty of capturing the real economic share) in some countries. Transmission of ecological and local knowledge in individual regions can contribute to sustainable beekeeping as an underpinning factor. In this research, status of knowledge transmission and the relevant issues in the transmission are analyzed. Identifying the information channels of beekeeping can be expected to contribute to implementation of relevant policies and activities.

The research site is the Nagano Prefecture, Japan which is well-known as the largest producer of the bee honey in Japan. Nagano has a diverse topography including mountainous areas and flatlands with rivers. By a questionnaire survey, information channels and productivity of bee honey of individual beekeepers were identified. The respondents of the questionnaire were members of the association of beekeepers in Nagano. The questionnaire survey was conducted in 2017. In this survey, we sent the questionnaires to all members, 280 in total, and obtained answers from 153 members.

As a result of the analysis, the effect of different information channels of beekeeping on productivity was identified. The beekeepers who obtained knowledge from their parents or relatives had a relatively large number of bee colonies. Secondly, the director, district leaders, and the younger generations' leader frequently recognized and mentioned the need to maintain the ecological condition of bee habitats in discussions and interviews in the annual meeting of their association. Their parents are beekeepers in most cases. It seemed that they tended to understand the importance of healthy ecological conditions for sustainable beekeeping through their experience.

There is a challenge to open the knowledge transmission channels beyond family members, transforming the knowledge from tacit knowledge shared by limited members to an explicit

manualized knowledge. This is potentially a fundamental question not only for beekeeping but for forestry, agriculture, and other related practices. The task is urgent as some of the knowledge can be lost where there are no successors in the family or neighboring regions. As an example of countermeasure, the Japanese government is collecting tacit knowledge of experts by using information and communications technologies (ICT) for transmission of the knowledge to future generations and to protect the knowledge as intellectual property. Recording and compiling this knowledge is an urgent task in depopulated and aging society.

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1. 2. 4 Direction of TFK in Asia towards the next 10 years

Sim Heok Choh

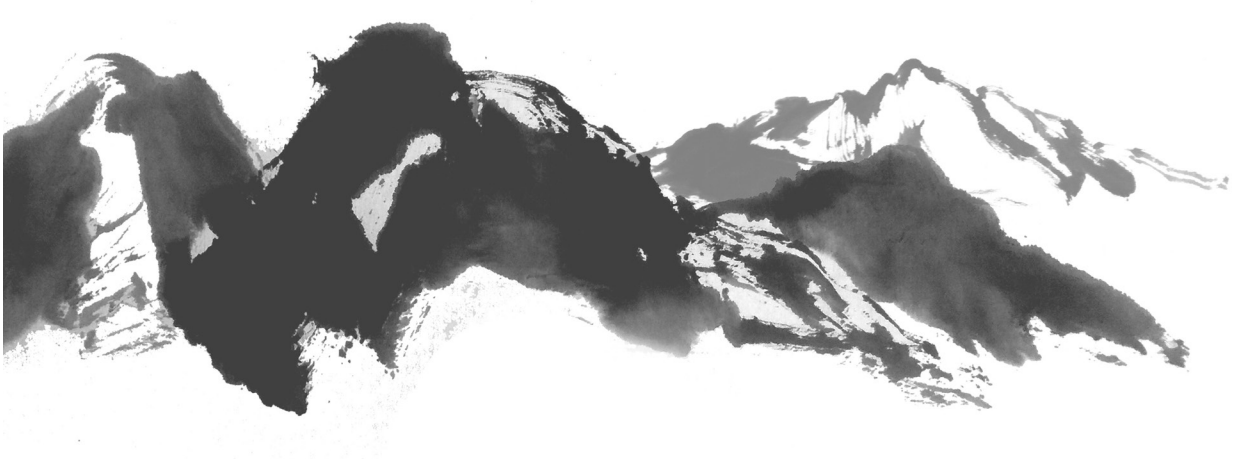
Asia Pacific Association of Forestry Research Institutions

Session Ⅱ

Proverbs and old sayings related with TFK and its application in Asia

Moderator: Dr. Park Chan Ryul

1. Proverbs, Old Sayings and Community Rules Related to Forest Management and Climate Change of Thais in Viet Nam (Dr. Pham Duc Chien)
2. Enhancing Ecoliteracy through TFK in Proverbs and its Application in Asia (Dr. Kim GoWoon)
3. Documentation of Proverbs, old sayings and community rules of Tagbanuas and Ifugaos in the Philippines (Ms. Karen Rae M. Fortus)
4. Traditional knowledge of Mongolian herders to herd livestock and adapt for weather condition (Prof. Tserenkhand Geleg)



2. 1 Proverbs, Old Sayings and Community Rules Related to Forest Management and Climate Change of Thaisin Viet Nam

Pham Duc Chien, Bui TrongThuy, and Tran QuangTrung

Introduction

More than 20 million people of Viet Nam live in or near forests, and most of them are minor ethnic people. Over time, their ancestors depended on forests for livelihood and daily life. To live peacefully with the forest and environment, they have learned and experienced how to manage and co-exist with the forest and the environment. This kind of traditional ecological knowledge (TEK) has been accumulated overtime and to be handed down from one generation to the next mainly by oral tradition. Understanding and use of TEK, therefore, is very useful in order to manage and develop sustainably the forest and environment in the region.

The study was carried out in Son La Province, Viet Nam, focusing on the traditional ecological knowledge (TEK) of Thai people through their proverbs, old sayings and community rules in relation to sustainable forest management and climate change.

Objectives

The study has 3 objectives: (i) To gather proverbs, old sayings and community rules of Thais living within or near the forests; (ii) To examine the extent of understanding on proverb/old saying/community rule among Thais; and (iii) To analyze proverbs, old sayings and community rules in relation to forest management and climate change of Thais.

Methodology

Listing of existing proverbs, old sayings and community rules

A literature search of the existing proverbs, old sayings and community rules in relation to the forest management and climate change of Thais was conducted. This was the basis information for the research team to understand and make plan to gather and check the meanings of the proverbs, old sayings and community rules in relation to forest management and climate change of the Thais.

Gathering of proverbs, old sayings and community rules

The survey was conducted in Nhop Village, Chieng Bom Commune, Thuan Chau District, Son La Province in Agust to September, 2016, to gather proverbs, old saying and community rules of Thais. The research team firstly worked with the leaders of the Commune and the Village to select 15 suitable interviewees in Nhop Village. They were both Thai male and female elders, who have fair knowledge of the Thai proverbs, old sayings and community rules. To ensure the effectiveness of the interviews, the research team included a Thai youth, who could speak both Vietnamese and Thai languages, in case, the research team needed translation.

A set of questionnaire was used as a guide togather the following information: (1) Proverb/old saying/community rule related to the forest management and climate change; (2) Meaning of the items provided; (3) Source of the items discussed; and (4) Awareness on the level (individual, family, community, regional, national) of use of the items discussed.

Conducting recognition survey

The recognition survey was then conducted in Pan Village 1, Chieng Ly Commune, Thuan Chau District, Son La Province in October 2016. Twelve elders (more than 50 years old) of the village were interviewed to recognize the sources and meanings of the information provided. To examine the impact of proverbs, old sayings and community rules to the

young, three young Thais were also selected for the interviews.

The questions used for the interviews were as follows: (1). Have heard of proverbs, old sayings and community rules as provided; (2). Understand the meaning; (3). Agree with the proverbs, old sayings and community rules; and (4). Reasonsfor disagreeing (if disagree).

The survey was conducted with assistance from some young Thais, who can speak both Vietnamese and Thai.

Results and discussions

Ethnic groups and Thais in Vietnam

Thai is one of 53 ethnic minorities of Vietnam. The population of Thai minority is 1,550,423 people, being the third largest ethnic group of the country. Thais distribute along the country, but settle mostly in the northern provinces of Lai Chau, Son La, Hoa Binh, Dien Bien, Yen Bai, Thanh Hoa and Nghe An (UNFPA 2011).

Thais may purely settle or live with other ethnic minorities in a village. A village of Thais is a stable populated organization, having boundary with other villages using natural terrain. Thais often choose their settlement near water source, suitable for agricultural cultivation and daily life. This is the main foundation for a village to sustain and develop economically. A village has the right to manage and use natural resources such as forest, farm field and land. The boundary of a village and its land and forest is determined by experienced village patriarchs using stream, river or mountain gorge. Even though the boundary is not official, it is respected and obeyed by local people (Lan 1998, Care 2012).

From a long time ago, Thais have created and maintained sacred forests around their village, including worship forest, sacred forest and ghost forest. These types of forests are very valuable in regard to Thai belief and attitude, and also for ecological environment protection (Cam Trong 1998, Ty 1998).

Proverbs, old sayings and community rules in relation to forest

management and climate change

Forty two proverbs, old sayings and community rules (TEK) related to forest management and climate change of Thais have been collected. They include all four types of provisioning, regulating, cultural and supporting services.

Provisioning services

Thais understand very well the provisioning services of forests and the surrounding to their life. They teach each others and new generations that "food in the forest, and cooked rice in the soil" . Furthermore, they highly appreciate the great role of forests to their living. Forest is very crucial to them because it feeds people, and even whey when people die, forest is as their home to receive them "forests feed when one lives, forests burry when one dies". In addition, they also ask each others and new generations to protect and conserve forests as a food sources for them "do not cut big trees to get mushromm, do not cut ancient trees with hope to get sufficient food, do not cut trees to get fruits".

Regulating services

Thai people have great experiences in terms of regulating services of forests. They think that "huge milpa is not equal as a small paddy field" . It means that milpa cultivation could not produce effectively and stably food. On the other hand, it could degrade strongly forest and environment. Water is very important for the Thai culture and development. So, Thais tell their young generations about the regulating services of forest, forest is a source of water and it can keep, regulate water: "no water without forest, or protect forest for the development of Thais and water sources". Thais also understand that the natural phenomena related strongly to forests. If forests are destroyed, severe phenomena will happen: "lost forests, severe phenomena will occur". Thais also experience about the weather by watching birds. They say that: "swallows fly low, it will reain over the pond

bank; swallows fly high, rain will stop". It means that if it is going to rain, the presssure is low, so that insects fly near ground, and swallow flys near ground to catch insect. Under high pressure (it is sunny), insects fly high, so swallow will fly high to catch insects.

Cultural services

Cultural services from forests are very important to Thais. They knew the important role of forest to their life, so that each village has its own ghost forest and spirit forest. They told each others: "damage forests like to destroy your house; burn forests like to burn yourself". They respect ghost forest, spirit forest, in which ancient trees are very repected. They said that if lose ancient trees, severe phenomena will occur and damage villages. On the other hand, they understood that when ancient trees lost, forest are destroyed, so that nothing could protect people from natural phenomena.

Supporting services

Thais understand very well the role of supporting services of forests. They know very well that forest will provide good soil for cultivation. However, if forests convert into bamboo, the soild is damaged, and it is not good for cultivation: "it is difficult to cultivate in sat bamboo forest". Water is very crucial to Thai daily life, and Thais speically respect forests as a water source "to conserve forest for stable wate source". Thais also tell each others to conserve wildlife for them to serve peple. People are adviced not to take care wildlife, not to hun them in mating seasons, so that they will be stable for hunting.

Conclusions

The TEK is very important for the daily life of theThais as it has been accumulated for ages. TEK is rarely written, but to be handed down from one generation to another by traditional oral. TEK is also very important to modern society when applied to help people

to co-exist and interact sustainably with forests and the ecological environment.

TEK of Thais has gradually been neglected without the support and effort of the authorities and the people. Some Thai elders did not remember much their TEK that had been accumulated for ages. Many young Thai did not know and understand TEK of Thai due to a busy life and technical skills and knowledge. Some, particularly, who live in or near cities, could not speak the Thai language anymore. Some activities such as teaching Thai language, organizing traditional festivals, have been conducted, but the results were very limited.

In short, in order to conserve and apply TEK of the Thais in Viet Nam, more efforts are needed to collect, document and make those available for not only the Thais in Son La Province, but also for other people within and outside Viet Nam.

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2. 2 Enhancing Ecoliteracy through TFK in Proverbs and Its Application

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Introduction

The preservation and application of traditional knowledge, local knowledge, and indigenous knowledge to enhance sustainable forest management has become an integral part of conservation planning for forest ecosystems. In particular, proverbs are considered pithy axioms of traditional knowledge or local knowledge in relation to forest and natural resources management in that they effectively convey the six aspects of traditional knowledge that are regarded as the basis of ecoliteracy, as given by Houde (2007): 1) factual observation; 2) management system; 3) past and current uses of the environment; 4) ethics and values; 5) vector for cultural identity; and 6) cosmology. Based on previous research by Kim *et al.* (2017) and further literature review on the use of traditional knowledge for forest management, this paper aims to 1) examine critical research questions and research approaches suggested by previous research on the use of TK or LK for forest management; 2) summarize the opportunities and challenges of using proverbs in the context of forest and natural resources management; and 3) suggest a research framework for further studies.

Materials and Methods

I used ISI Web of Science and Google Scholar to conduct the literature search. The keywords included traditional ecological knowledge, traditional knowledge, local

knowledge, indigenous knowledge, forest management, and natural resources management. In addition, the second and third part of this paper largely relied on the findings and approaches suggested by Kim *et al.* (2017), and I further developed the approaches so as to develop a more generalized research framework for relevant studies.

Findings and Discussion

Among 90 papers found through the literature search, 30 relevant studies were shortlisted for analysis of critical research questions in relation to the use of TK or LK for forest management. The findings of the literature review reveal that most studies on the use of TK or LK for forest management pay attention to the first, second, fourth, and sixth aspects (factual observation, management system, ethics and values, and cosmology, respectively) of the knowledge system in developing research questions and framework. In other words, TK or LK is thought to be effective for identifying the "context" of a given community and/or local social-ecological characteristics. In terms of research methodological approaches, many studies chose both qualitative and quantitative methods so as to increase study credibility. The findings and approaches used by Kim *et al.* (2017) on their studies on the use of proverbs to enhance ecoliteracy also show similar implications in that it employed an exploratory sequential methodological framework that combined both qualitative and quantitative methods. Such a framework also enables researches to effectively examine the relevance of proverbs in finding implications for forest management and conservation. In this regard, I summarized and developed a research framework that adopts an exploratory sequential methodological approach, and selected key research questions/guidelines with regard to the examination of proverbs in the context of forest management research, which will be presented during the 10th International Conference on Traditional Forest Knowledge and Culture in Asia.

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2. 3 Documentation of Proverbs, Old Sayings and Community Rules of Tagbanuas and Ifugaos in the Philippines

Dr. Antonio M. Daño, Karen Rae M. Fortus, Donnabel A. Elpedes, Kristine Marie S. Amatus

"Indigenous knowledge is an integral part of the culture and history of a local community. We need to learn from local communities to enrich the development process."

James D. Wolfensohn, President, World Bank

Abstract

Proverbs and customary laws have dramatically been neglected in the past but now gaining grounds and recognized as an important aspect in sustainable development. Indigenous people can provide valuable input about the local environment and how to effectively manage its natural resources. Indigenous knowledge represents a way of life that has evolved with the local environment.

The documentation of proverbs or old sayings was done through review of existing literature and primary data gathering in the indigenous communities in the provinces of Benguet and Palawan, Philippines. Rapid survey on proverbs through primary data gathering was employed through Key Informant Interviews (KII) and Focused Group Discussion (FGD) complemented with secondary literature. The KII and FGD were guided by the field note and recognition survey discussed during the 3rd workshop on Traditional Knowledge on Ecosystem Services in ASEAN Countries held in Kuala Lumpur, Malaysia last March 2016.

Tuwali tribe places high importance to nature, regarding it as equivalent to their life. They recognize their dependence on nature for their provisions. They believed that no one

owns nature in general, thus, is careful in dealing with it as a habitat or a resource for the community. These beliefs may have helped preserve their natural environment. Forest-ricefields are treated as one by the people, hence, they put a high value on the forests. Proverbs that reflect harvesting mechanisms and helped regulate the extraction of and sustain the resources were also documented.

Meanwhile, the Tagbanuas regards their land/forest with high importance. Their concern is not on what they get as food but on the many things it provides. They believed that bad things will happen to them if they destroy the tree, river or waste any resource. Tagbanuas has a strong belief that animals are strong indicators to changes in weather or a bad omen. These old sayings make the Tagbanuas careful not to destroy the resources in the forest and could have contributed in maintaining biodiversity in their area.

Keywords: proverbs, customary laws, Tuwali, Tagbanuas

Introduction

Traditional knowledge or indigenous knowledge (TK/IK) is now recognized as an important aspect for sustainable development. Empowerment of these local communities is considered essential for the integration of this knowledge into the development process. In some countries, incorporating appropriate IK systems into development programmes has already proved to contribute to effective resource management and sustainable development.

The Philippines is home to 126 ethno-linguistic groups with huge variety of traditional knowledge that impacts the lives of the Filipinos. TK in the country is mostly focused in the areas of health care, agriculture, forestry systems, mining, arts, crafts, music, dance and literature.IK systems and practices work well towards efficient management and preservation of the ecosystem and sustainable development (Blanco, 2004).

Better understanding of proverbs, old sayings and community rules that can contribute to solving problems of modern society is significant. However, there is only a very little research done in collecting and understanding proverbs, old sayings and community rules as means of documenting TK in the Philippines.

Indigenous people can provide valuable input about the local environment and how to effectively manage its natural resources. Local people are familiar with IK system and do not need any specialised training in that field. There are some features of IK that are relevant to conservation and sustainable management of natural resources. According to Tanyanyiwa and Chikwanha (2011), IK represents a way of life that has evolved with the local environment; only what is needed for immediate survival is taken from the environment; there is no over exploitation of a single resource; a 'conservation ethic' often exists; IK is able to adapt to new conditions and incorporate outside knowledge; and there is social responsibility.

The study aimed to document the role of IK systems in the conservation of forest resources thru proverbs, old sayings and community rules of the selected local people. Traditional rules and sayings regarding the sustainable management of forest resources should be well communicated especially for the youth and employ an integrated approach taking into consideration the technical and IK systems in the natural resources management.

Methodology

The documentation of proverbs or old sayings was done through review of existing literature and primary data gathering in the indigenous communities in the provinces of Benguet and Palawan.

Rapid survey on proverbs through primary data gathering was employed through Key Informant Interviews (KII) and Focused Group Discussion (FGD) complemented with secondary literature. Data gathering were conducted among selected Tagbanuas in Barangay

Mabini, Aborlan, Palawan and among culture bearers in Lagawe and Kiangan, Ifugao Province (Figure1). The KII and FGD were guided by the field note and recognition survey discussed during the 3rd workshop on Traditional Knowledge on Ecosystem Services in ASEAN Countries- Folk Culture: Old Sayings, Proverbs and Community Rules held on March 2-4, 2016 in Kuala Lumpur, Malaysia.

Key activities in documenting proverbs or old sayings include:

a) Inquiries from collegues belonging to indigenous community to secure information on possible province/villages to visit;
b) Visit to the national office of National Commission of Indigenous Peoples (NCIP) to secure permission for the conduct of the study. NCIP have a policy to secure permission from their office prior to entering a village of indigenous people;
c) Coordination with the regional office of NCIP and secure permission for the visit of a village as well as secure information of possible informants and interpreter;
d) Field visit for KII and FGD. This involves interview of elderly people in the village to gather proverbs, old sayings and community rules using the field note and recognition survey;
e) Review of recorded information in the native language and translation by the hired interpreter who belongs to the tribe of the informants;
f) Discussion on the meaning of the gathered information;
g) Gathering of secondary data from universities near the study site; and
h) Processing of field notes for report writing

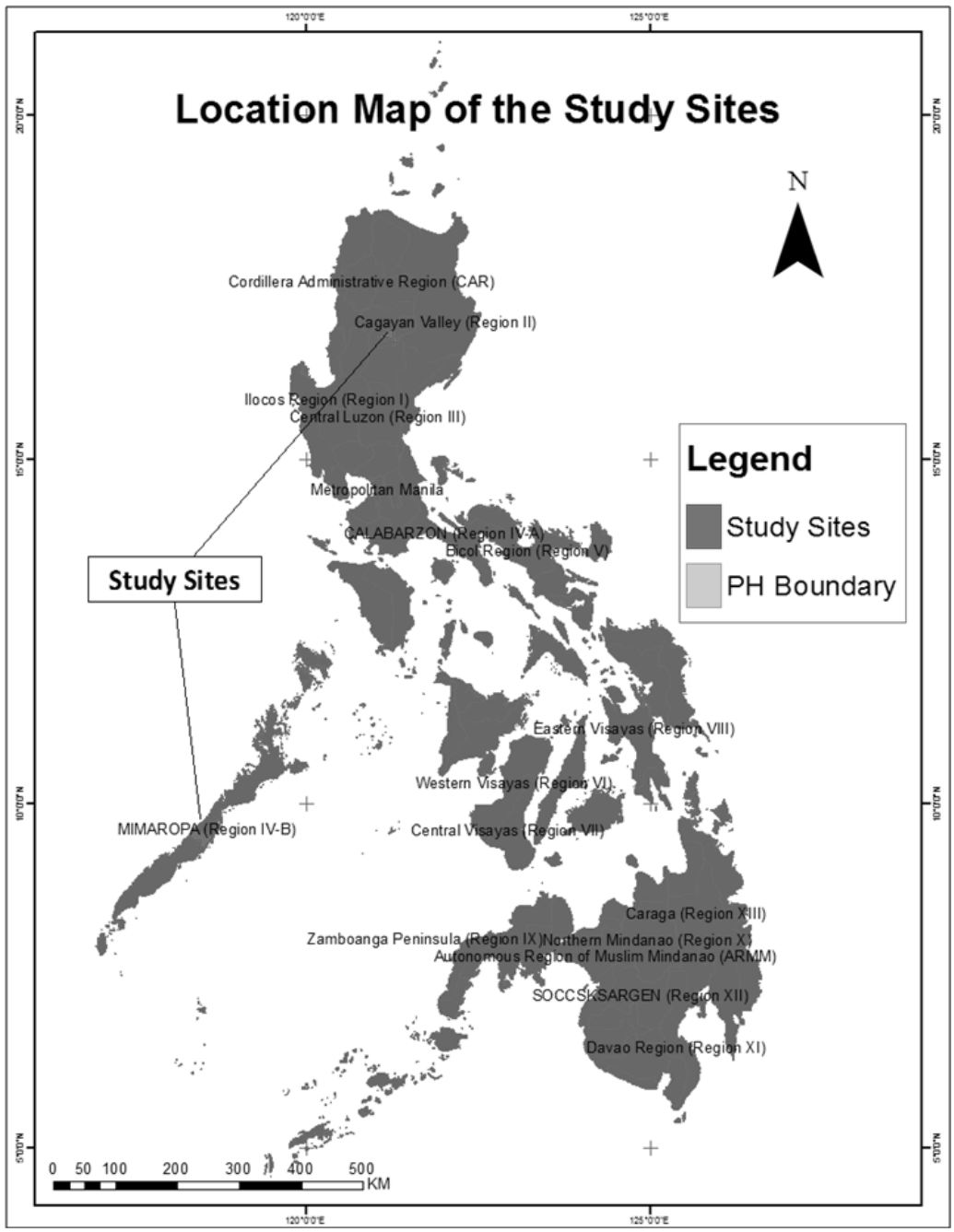

Figure1. Location areas of the study (Benguet and Palawan Province)

Results And Discussion

This section presents the proverbs, old sayings, and community rules which are related to ecosystem management in Aborlan, Palawan and municipalities of Kiangan and Lagawe in Ifugao.

The Ifugaos

Ifugao is a province in the Cordillera Administrative Region (CAR) located north of the Philippines. It is named after the predominant ethnic group in CAR which is also called Ifugao. Ifugao was derived from "ipugo" or "ipugaw" which means "from Pugaw (Earthworld)". Hence, Ifugao means Earthman (Dulawan, 2006).

The Ifugao ethnic group is generally categorized into two subgroups – Ayangan and Tuwali – who have relatively different language, customs and clothing. For this study, the researchers were only able to explore the side of Tuwali from the municipalities of Kiangan and Lagawe. These municipalities along with Aguinaldo, Asipulo, Hingyon, and parts of Banaue, Hungduan, and Mayoyao lie in the middle region of Ifugao where rice terracing is heavily practiced. Furthermore, the Tuwali people are also found in Hungduan, Asipulo, and Hingyon and a few in Banaue and Lamut.

In the Philippines, Ifugaos are quite popular among other indigenous groups since it is associated with the internationally known cultural heritage called Banaue Rice Terraces or *payoh*. Ifugaos have placed significant attention to their *muyongs* which play critical roles in sustaining their land-use. For them, protecting the forests through *muyong* (or traditional tending of the forest) means protecting the lowlands. Thus, their oral literature is really rich in nature- and forest-related concepts.

Secondary documents gathered revealed several types of Ifugao oral literature which include folktales, legends, myths, chants, songs, and rhymes. There is almost no record of proverbs/old sayings since these are recited during liw-liwa or *balagtasan* (poetic discourse)

according to the Ifugao culture bearers interviewed. From all the literature gathered, only in the article 'A Documentation of Ifugao Proverbs: Surfacing Socio-economic and Political Views' by Dr. Manuel P. Malingan III published in The Upland Farm Journal, proverbs/old sayings were written. Proverbs with mentions of environment-related terms are as follow:

- *Muntanomkayu hi kaiwhinankiggidan ta adikayutunmunbuluhan*.
  (Plant boundary trees to prevent conflict someday.). This proverb reflects the land management system to avoid future conflict among villagers.
- *Adi e dapaon di intanom di udummakam mamma hinnapudungan.*
  (Do not bother the plants of others much more when pudung is present.)
- *Haot ta kaytaduntug an adigagalanmidlig*
  (Be like a mountain that cannot be moved.)
- Maid di bimalitiyonantagu.
  (No man has become a century tree.)
- Adi ta umathinankalulu an munbinaliw di upupna.
  (Do not be like the chameleon that changes its color all the time.)

Meanwhile, through a number of key informant interviews of some Ifugao culture bearers with age ranging from 70 to 76 years old (Mr. Julian Manglib, Ms. Florentina Dulnuan, Apo Junia Guimpayan), IPEd Supervisor Ms. Herminia Hoggang, and Ms.Maribelle Bimohya from the Ifugao Provincial Office, the following proverbs/old sayings in Tuwali dialect with corresponding English translation were recorded (Table 1). Some remarks were also added to better understand the context of the proverbs/old sayings.

Table 1. Proverbs/old sayings of Ifugao related to forest and environment

	Tuwali Dialect	English Translation	Remarks
1	Hay muyungyaipaptok; Ta wada'yibatim hi imbabalem!	Take good care of the forests; So our children can benefit from it! *(Cultural service)*	People are directed to protect/ conserve the forests so that the next generation will be able to enjoy it as well.
2	Maid ha kumbagi hi danum; TeindatMaknongan hi am-in!	So that others will not claim part of it! *(cultural service)*	Water is a God-given gift for everyone and not to an individual. Nobody is allowed to take possession of the water. Hence, these resource should be shared to everyone.
3	Mabalin an longhom nan nunyaku an kaw-iw;Ta adimahawan nan nataldong!	You can cut growing trees that are not straight; For the straight ones to grow fast! *(provisioning service)*	Ifugaos in the past prefer straight trees to be used in building the Ifugao native house. (This reflects part of their management of the forest which is to remove unwanted trees to allow the straight ones to grow faster).
4	Mangaiw ta keya nan opang di alan;Yanadannamag-anan!	Do not cut the trees for firewood, just the branches and the soft wood! *(provisioning service)*	Only the branches and twigs are gathered to be used as fuelwood. Cutting of trees is prohibited. (this proverb provides guidance to villagers on proper utilization of trees).
5	Tigom nan koggad nan muyung;Ta adi da idol-dol!	Protect the boundaries of your forest; So that others will not claim part of it! *(cultural service)*	Placing high importance to the forest, they are to guard their borders or boundaries, preventing access of others who might try to possess it. (This saying provides instruction to villagers to protect their forest from intruders so they can continue to enjoy the services it provides).

	Tuwali Dialect	English Translation	Remarks
6	Nan muyungya nan payoya nun–uddum;Maid ke nan muyung, ya maid bo nan payo!	The forests and fields are one; If there is no forest, there is no rice field. *(supporting /regulating service)*	The forests play a vital role in the existence of rice fields. Preserving the forests will allow resources (e.g. water) to flow and be available to the rice fields. If forests are degraded, it may not be able to provide critical water resource for the rice field. (villagers recognized the forest–rice field relationship)
7	Di ke ta niboklayaaditaumepayo; yapanniyo di manologyamanginga	When the rice stalks have been planted; it is forbidden to gather fish and field snails. *(provisioning services)*	Villagers adhere to the principle that there should be a season for everything; for these food species to regenerate or for wildlife to grow and rear their young; there is a season in gathering them.
8	Dimmatong nan e pun–anupan!	It is summer, and thus time to hunt! *(provisioning)*	Application of seasonal hunting on designated hunting grounds.
9	Ipatok mu anpanguluwan nan muyungyapayo an tanud mu!	First child, take good care of the forest and rice fields that are your inheritance. *(cultural)*	Traditionally, the first child inherits the land by either mother or father, whichever is greater. He is tasked to protect the prestige and inheritance of the family.
10	Timmagu da di nitanomyanitunod;Niptok kaya!	The planted trees and rice stalks are well and growing. It is correct. *(provisioning)*	Ifugaos of old believed in supernatural intervention and believes that a ritual conducted for the purpose has been met with approval from the gods.(if their crops are growing well, it signifies blessing and approval of God of their activities but if not then a curse through poor growth of crops).
11	Muntanom ta wada'ykitaguwan	Plant so we can have life. *(provisioning)*	People survive through planting crops to acquire for their daily food needs. (everyone are admonished to work hard so they will have a happy life).

	Tuwali Dialect	English Translation	Remarks
12	Iphod nan muyong ay payo;Ta midum hi pang-o, balitukyabuhi an ipatanud hi imbabale.	Take good care of the forest and the fields; So it can be added to the pendant, gold and jars as inheritance to our children. *(cultural)*	If forests and fields are taken care of, they can also serve as inheritance to the next generation along with other treasures/wealth such as pendant, gold, and jars. (this indicates how Ifugaos value their forests).
13	An am-in di nitanomyawada'yki-atana;Kanon, pun-aga, pun pa-ongal hi ni-mogmogan	All plants have uses; as food, as medicine; as food for domestic animals! *(provisioning)*	People recognized that all plants are useful may it be as medicine or food for humans or animals.
14	Na-e nan binoltananmuyung-yapayoyapanniyo an i-gattang!	You cannot sell the forest and the field that you inherit! *(cultural)*	This concept is purposely so that forests and rice fields inherited are really protected and valued by the family.
15	Hay kitaguwanya hay muyong. Muyongyakitaguwan.	Life is nature. Nature is LIFE. *(cultural)*	They treat nature as valuable as on their own lives. (Ifugaos believed that they are part of nature)
16	Hay nunlinikkodanyanadan muyongyadanumyanangin-nginangemnadanngungunut.	Nature is more valuable than our properties. *(cultural)*	They value nature more than other physical properties such as gold, jars, pendants, house, etc. (This is supportive to prov. 16, that they are part of nature).
17	Ipaptoktakunadanmuyong, yapayoyanadanudum an ngunut; bokonammuna pang-adolmo ta hay kipkihodan di dakdakol.	We protect our properties not for ourselves but for our community. *(provisioning/ cultural)*	Properties here mean natural resources which are owned by nobody. Hence, they preserved it for the benefit of everyone, discounting personal or individual interests.

As observed from the above proverbs, the Tuwalis places high importance to nature, regarding it as equivalent to their own lives (proverb no. 15). Seemingly, their living is also dependent on nature where they can plant crops (proverb 11). Interestingly, forest/nature is even passed on as inheritance from one generation to another as the clan's treasured it

more than their house, gold, etc. (proverbs 1, 9, 12, and 14). They also believed that no one owns nature in general or water, thus are careful in dealing with it as a habitat or resources for all the community members (proverbs 2 and 17). Hence, these beliefs may have helped preserve their natural environment.

Proverb 6 depicts the interrelationship of the forests and the fields. The fields are important to them since they are very dependent to farming to meet their daily food needs. The Banawe Rice Terraces is a living example of how Ifugao's manage their area. The ricefield is dependent on water that comes from their protected forest. Since forest-ricefield are treated as one by the people, this explains the high value the people put on the forests. As they take care of their fields, they also protect the forests and vice-versa. Furthermore, there are also proverbs (3, 4, 7, 8, and 10) which showed harvesting mechanisms that helped regulate the extraction of and sustain the resources.

The Tagbanuas

Aborlan, Palawan according to legends is a town rich in folk literature and its history is recited time and again in oral fashion. The municipality is nestled in the middle of mainland Palawan, extending from its east coast to west coast. It is bounded by Sulu Sea on the eastern part and China Sea on the west. Aborlan is divided into three distinct geographical zones, the eastern coastal plain; the central mountain range; and the western valleys. The story of Aborlan is the story of Tagbanuas, a story of undying race.

The Tagbanuas are Malayan in physique, medium built and with brown reflection. They live in the mainland of Aborlan, which is the reason they are called Tagbanuas. The term Tagbanuas comes from two words – "taga banua" which means "from the mainland". It is instilled with them the sense of belongingness with the wilderness. Their way of life responds merely to the pulse of the living earth and their main concern was living in harmony with their gods. They involve unseen spirits of nature in time of needs (Bayuga, 1989).

Tagbanua is one of the oldest ethnic groups in the Philippines. Accordingly, Tagbanuas are possible descendants of the Tabon Man, making them one of the original inhabitants of the Philippines. The Tagbanuas practice shifting cultivation of upland rice and are known for rice wine ritual called "Pagdiwata". They also worship deities that they believe are found in their surroundings. The indigenous group did not write their history, they kept to themselves their life stories.

Key informant interview with the elders of Madarcos clan (more than 70 years old), Tagbanuas in Barangay Mabini, Aborlan, Palawan with the assistance of Ms. Mary Ann de los Santos (Administrative Officer, NCIP, Palawan) coupled with secondary literature review in Western Palawan University-Aborlan Campus in December 2016 documented some old sayings. Table 2 shows respondents' community rules and old sayings passed on by their parents and their elders.

Table 2.Community rules and old sayings of Tagbanuas

English Translation	Remarks
1) Inpukanenmo, un-gamiipang-on, matayka!	If you try to cut a tree and it falls, you will die! *(The Tagbanuas worship deities found in their surroundings. They believed that spirits live in trees and cutting down of trees is not allowed. If one cut a tree, the tree will fall on him and he will die).* *(cultural)*
2) Magpadoonka,nga mama-yo, sungarotka.	If you go to the river, you have to pray. If not, you will get sick. *(Before going to a place where sacred spirits thrive, one must pray first before going there to avoid getting sick; Tagbanuas believed the many spirits in the river hence they do not destroy it but protect).(cultural)*
3) Magtinggeg i-tukoganamapanaw, buwatenmomisikaatep.	Do not go out of the house if you hear a gecko making noise, for you can get hurt. *(They value the animal sounds and signals given to them, hence conserving their species; they believed that when gecko makes sounds, it warms them of a coming danger.)* *(cultural)*

English Translation	Remarks
4) Ing may tinggegngagukguk, may duwangaaldaw, 'sang dilem, maymatayngatao.	When a male and female owl is making answering noises, within two days and one night, someone will die. *(Birds like owls serve as their sign-giver. So when they hear two owls (a male and female) owl making answering noises with each other, the people within the community take very good care of their loved-ones and spending their time with them. And they get cautious in what they are doing.)*
5) Ing may tinggegngagukguk, duwa'ngbato, duwa'ngaldaw, mag-uranna.	When an owl is making noise (answering noises) to each other, after two days it will rain. (if there is drought in the community). (An owl making noise can indicate a better day; that there is a coming rain after long drought)
6) Ing may tinggegngagukguk, duwa'ngbato, duwa'ngaldaw, magtigilnauran, mag-iinitna.	When an owl is making answering noise (answering noises) to each other, after two days the rain will stop. (if there is continuous rain) (Better day can be also be thru halting of continuous rain)
7) Ing mag-petik kayo ngadakula in gamu, ipam-un o mag-angutitabobarang, sumarotka.	One must offer a prayer before cutting a big tree to avoid getting sick. *(They believe that spirits are thriving in trees, so they must protect and conserve these trees; they protect the forest because they believed that destroying it will affect their life. If they cut a tree they have to pray and ask permission)*
8) Gamuadu-adutun i-bagaska, yan un wawangangaraniya kin siUngo.	Do not waste rice, for he is a child named Ungo. (Do not take the resources for granted. One must make use of it in a rightful manner/way; it also projects careful management of their resources) *(cultural/provisioning)*
9) Kayu-kayu ta, egatumuboka'tlugta, sabaliga do' otdibwa't.	A small tree does not grow by land, but grows up in the cross. (This refers to a small plant "Alkambar", a kind of plant that grows up in rocky areas). (This reminds villagers that their life is not easy so they have to strived and work hard) *(provisioning services)*
10) Enggaka-neyilibwak Yan ka'nenlini-wakan	Do not eat what you plant. But eat that place you planted. (This indicates their emphasis on the land or their forests rather than the crops they get from the land); it speaks also of humility. *(cultural /provisioning)*

English Translation	Remarks
11) In may tinge i-luluy, patandaan it muran.	If a worm makes a siren sound-noise, it will rain. (The worm will go out on the surface during hot days/ weather, to make some noise because they can sense that rain is coming to wet the soil with water) *(supporting services)*

In the above proverbs, it is evident that like the Ifugaos, the Tagbanuas places high importance to their land/forest; their concern is not on what they get as food but on the many things it provides (ecosystem functions - proverb no. 10). Seemingly, they believed the bad things that will happen to them if they destroy the tree (proverb no. 1); river (prov. 2) or waste a resource (Prov. 8). Interestingly, Tagbanuas have a strong belief that animals are good indicators to changes in weather (proverbs 5 and 6) or a bad omen (proverbs 3, 4 and 11) for what they did in the forest.This belief makes the Tagbanuas careful not to destroy resources in the forest and could have contributed in maintaining biodiversity in their area.

Conclusion And Recommendation

Indigenous peoples' old proverbs/sayings/community rules related to the environment and management of our resources form part of the culture of Tuwalis and Tagbanuas. These information were passed down to them generation to generation by their parents or elders in the community for them to be aware of their co-existence with nature and that they are one with nature. Documenting such is important because they have been there for ages and has maintained or sustained their environment. Their indigenous rules and sayings partly or wholly contribute to their attitude to protect the forest, animals and rivers. Their involvement in future projects or studies is recommended for effective implementation and understanding the role of IK in sustainable forest management.

The use of Recognition Survey form was found not suitable with limited time and

informants of the study. Attempts to conduct recognition survey to young generation of the two tribes were found not successful as most proverbs were not recognized anymore by the young generations. This indicated that if not documented, these proverbs will soon vanished.

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Annex A. Sample field notes.

Field Note

1. *Proverbs / Old sayings / Community roles*
   a. (In native (local) language) [illegible]
   b. (In official language) [illegible]
   c. (In English) When the rice stalks have been planted, it is forbidden to gather fish and field snails.

2. *Meanings* It is based on the principle that there should be a season for these food
   a. Meaning: to regenerate or for them to grow and rear their young.
   b. Subjects (keywords): rice stalks, fish, snails
   c. Scientific interpretation:

3. *Types of Ecosystem Services*
   Provisioning / Regulating / Cultural / Supporting

4. *Source of knowledge*
   Where / Whom did you learn this from?
   Parents / elders / friends / media / literature / others ( )

5. *Applicability to modern society (researcher's comments)*
   Hunting season for animals and time of harvesting an management approach.

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Field Note

1. *Proverbs / Old sayings / Community rules*
   a. (In native (local) language) Ingokmon mo, ung gani ipong-on ... malay ka!
   b. (In official language) Kung tagah mo at matumba, mamamatay ka.
   c. (In English) If you try to cut a tree and it falls, you will die.

2. *Meanings*
   a. Meaning: Spirits thrive in trees, it is not allowed for them to cut down trees, especially illegal cutting.
   b. Subjects (keywords): tree
   c. Scientific interpretation:

3. *Types of Ecosystem Services*
   Provisioning / Regulating / Cultural / Supporting

4. *Source of knowledge*
   Where / Whom did you learn this from?
   Parents / elders / friends / media / literature / others ( )

5. *Applicability to modern society (researcher's comments)*

If you do illegal activities some things will happen to you.

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2. 4 Traditional knowledge of Mongolian herders to breed livestock and adapt for weather condition

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Abstract

Nomadic lifestyle gives the traditional knowledges and advanced experiences to adapt local environmental condition for Mongolian herders. Concept of livestock breeding is complex which consist of local geography, climate, animal habits and pasture plant composition and productivity, respectively. Herder families make livestock breeding by "family farm" which named "hot ail". Their livestock graze up to 30 km away from camp but distance to grazing is different by environmental property and seasonality. Herders consider on winter season, especially. Hence, they categorize into 3 stages such as early, mid and late winter and one stage into 3 substages and a substage continue for 9 days. Totally, winter season continues for 81 days.

Herder's movement is classified into (1) seasonal and (2) non-seasonal. (1) herder families move among livestock camps for winter, spring, summer and autumn seasons but recently, moving distance are getting shorter and decreased number of movements through year. Seasonal movement and its manner is different among regions. For example, herders in Khangai and Altai mountain ranges move to valley and higher mountains during summer season. (2) herders move to remote sites for searching better pasture lands which named "otor", because of strong drought which named "gan gachig" or deep snow which named "dzud".

Herder's family build house which named "ger" and its door is to southward, resulting in wind direction and to smooth peak of mountain, indicating symbol of peaceful life. Westward is the most important for herders, because sunlight is firstly found in the morning. Herders make forcast of seasonal and yearly weather condition, using plant phenology. Herders use livestock grazing area to orient distance. Pasture area of child livestock indicates shorter distance but that of adults shows longer. Also, pasture area of small livestock shows shorther distance, compared with that of big livestock (Table 1).

Table 1. Distance measurement using livestock grazing areas (Badamkhatan, 1965)

Category	Category
Horse secure place	0.025–0.03 km
Sheep child grazing place	0.50 km
Cow child grazing place	Around 1.0 km
Sheep grazing place	1.0–2.0 km
Cow grazing place	2–2.5 km
Horse grazing place	Around 4.0 km

Herders recognize that camel keep is completed, if they have upstanding mounds. Camel can live without drinking water, during several days or up to a month, because they drink large amount of water, once and mostly graze succulent and/or shrub plants and store the water in their mounds. Herders arrange horse's pasture to graze several decade of km (up to 30 km) away from camp. They graze nutritive pasture plants on higher mountain hills. For cow and small livestock, drinking water is more important. Dry bed is important for cow breeding more than other livestock (Table 2).

Table 2. Preferred pasture for livestock as herder's experience

Livestock type	Contents
Camel	Pasture with *Kalidium* spp., Anabasis spp., *Artemisia* (shrubs), *Salsola* (shrubs) and *Caragana* spp in the gobi-desert which is arid zone.
Horse	"Remote pasture" which nutritive plants well grow on higher mountain range but herders select their pasture, depending on seasonal situation.
Cow	Pasture with *Elymus* spp., *Carex* spp., *Agropyron* spp., *Stipa* spp., *Iris* (river site), *Achnatherum* and *Salsola* spp., on small mountain hill, slope, valley and meadow.
Sheep and goat	Pasture on low- or lower-lands. Drinking water is the most important for sheep and goat breeding, drough year.

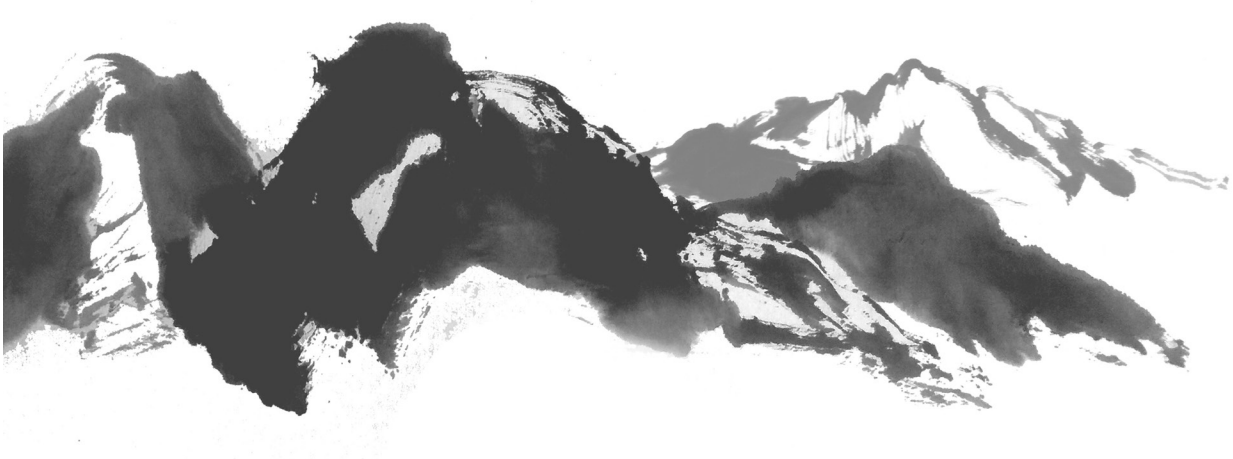
Herders give their experience and knowledge for livestock breeding to next generations, using prowerbs. "Őtög buuts"–winter camp and "khökh buuts"–spring camp which are used for long-term used from by generations (from grand parents to next generations). Herders synbolize early, mid and late winter as young, youthful and old ninth. "Youthful ninth" is the coldest stage than other two and herders teach to next generation as "youthful ninth to freeze and break horns of youthful bulls" and then "to cover horns of livestock during winter". Also, they teach as "warm bed, non-full grazing" which mean both rest and grazing are important for livestock during "youthful ninth". Herders teach as "cow weight increases or decreases as water" and as "well ruminant on dry bed" which mean drinking water and wetness is important for cow breeding. Moreover, they say that "Pass area is incompatible for sheep" which means lowlands are suitable for sheep grazing and "livestock cannot be full as eatage but full as nutritive" which means herders should select nutritive pasture for livestock. The above results are important to know in detail about traditional knowledge and experience of Mongolian nomadism.

Session Ⅲ

Traditional Use of "Non-Wood Forest Products" in Asian Natives and Its Sustainability

Moderator: Dr. Sim Heok Choh

1. The use of pine resin in the early 20th's century and current status of its damage in Korea (Mr. Lee MinJoo)
2. The local wisdom of forest communities in utilizing non-timber forest resources for their livelihood needs while conserving forest ecosystems (Prof. Nandi Kosmaryandi)
3. Spiritual beliefs and locally-accepted rules of Traditional Forest Management in Myanmar((Dr. Ei Ei Swe Hlaing)



3. 1 The use of pine resin in the early 20th's century and current status of its damage in Korea

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Key-words: non-timber forest product, pine resin, damage after extraction

Introduction

Local people in and around forests have used non-timber forest products (NTFP) such as leaves, seeds, roots, honey, and resin as well as timber (Tickin and Ganesan 2009). They used NTFP for various uses including subsistence, building and tools materials and medicines. NTFP have helped, especially for local people to overcome disturbances. There is a proverb called "As a drought comes in spring, acorns grow well." in Korea. It is the wisdom that has enabled the community to become sustainable by getting energy from NTFP, acorns in response to climate change.

Korean had used pine resin as NTFP. Pine resin was manipulated for edible and medicinal purposes, and also as glue when building houses and tools. As traditional forest knowledge, the use of pine resin exists in various forms such as collecting, compounding and processing

it. However, traditional forests knowledge using pine resins remains only in text. Declining traditional knowledge is caused by ecological factors as well as socio-economic factors (Reyes-García et al. 2013). Korea has experienced major changes in social-ecological system since the beginning of modernization in the early 1900's. This course of history affected traditional forest knowledge, also the use of pine resin.

This study aims to review the changes of the use of pine resin in the early 1900's with the social and historical contexts and to investigate the status of its traces.

Methods

1. The use of pine resin in the early 20th's century

In the early 1900's, the use of pine resin was reviewed from two perspectives. The first is the social historical background on use of pine resin in the early 1900s, and the second is the trend on the amount of pine resin.

2. Current status of its damage

The physical condition of damage (the lowest and highest height from the ground, height, width, area and ratio of damaged width) and the health status of pine trees (DBH, tree height, vitality) were investigated. Kruskal-Wallis rank sum test and ANOVA (Analysis of variance) was used to compare between plots.

Results and Discussion

1. The use of pine resin in the early 20th's century

Korea was under Japanese colonial rule, from 1909 to 1945. The nature and resources of Korea were dominated by Japan and were greatly influenced by the socio-political circumstances in Japan. In the late 1930s Japan entered the wartime regime and in 1937, it carried out 1st 7 years of artificial petroleum (Iwama 2016). When the amount of artificial oil produced by the company was insufficient, the Governor-General of Colonial Korea's

Office planned to extract the pine resin as a government-led production measure (Kim 2010). On January 29, 1938 and February 25, 1938, Donga Ilbo press introduced the method of extracting pine resin, and promoted the pine resin business. On April 17, 1938, Maeil Sinbo press had information to inspect regions where pine resin was available. These historical events show that the government and the media jointly encouraged extracting pine resin.

Statistics on the amount of pine resin in the statistical yearbook of the Government General of Colonial Korea exist from 1933 to 1943. There was no significant change in the amount of pine resin from 1933 to 1937. The amount of pine resin extracted in 1938 increased to about 32 times in 1937 and was increasing until 1943. In 1943, the amount of pine resin, 4074 ton collected from 920,000 50-year-old pine trees for a year, was 1900 times that of 1938.

The government-led pine resin extraction after "1st seven years of artificial petroleum" in 1937 explains the increasing trend of pine resin from 1938. The modernization and social historical context of Korea in the early 1900s led to the collection of pine resin to at national level. In addition, the traditional methods of extracting and using pine resin have disappeared and have changed in a way damaging the pine tree severely.

2. Current status of its damage

We surveyed 172 pine trees in 14 plots. Physical damage condition was significantly different between plots and Tree vitality was generally high.

We would like to suggest a new point of view on trace of pine resin uses, not just surveying the damage and the condition of pine trees. It is plant welfare. Welfare has continued from human to animal, but it was rarely discussed about plant welfare yet. It needs to consider the uses of pine resin and its trace from the perspective that human and plant can be sustainable together.

Conclusion

Pine resin had been widely used as non-timber forest product in Korea. As a socio-historical background with the modernization of the early 1900s, the extraction of pine resin was mass-produced at the national level. At present, the damage of pine trees varies from regions and trees are mostly vigorous. It is necessary to discuss the traces of extracting pine resin in terms of plant welfare.

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3. 2 The Local Wisdom Of Forest People Community In Utilizing Non-Timber Forest Resources For Their Household Needs, While Also Conserving Forest Ecosystem: Study on utilization of sugar palm trees (*Arenga pinnata*) by people community around Gunung Walat University Forest, Indonesia

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Key words: local wisdom, sugar palm tree, civet

Abstract

Forest people community are people community which reside around forest and has interacts with the forest ecosystem. This interaction occurs in the people's daily life so that there is a learning process which creates understanding on the role and function of living creatures in an ecosystem. Results of such learning process develop further into social capital in the form of local wisdom which plays a role in sustainably maintaining forest resources availability. They have the view that people should be able maintain forest resources sustainability so that ecosystem functions are maintained because that will affect their lives.

Condition of social, economic and cultural development which has occurred up to now, make the utilization of forest resources by people community around the forest, be conducted not only for fulfilling their daily need (subsistence), but also for their household income. In

this research, study was conducted on local wisdom of people community around Gunung Walat University Forest (GWUF) in utilizing non-timber forest products from sugar palm tree (Arenga pinnata), which has been practiced by the people for many generations. Sugar palm tree is multipurpose tree because all parts of the tree can be utilized for human life. Products obtained from sugar palm tree are sugar palm sap which can be processed to palm sugar and traditional beverage, palm-fiber for house roofing material, broom and rope/ cordage, sugar palm fruit as food (candied fruit), sugar palm stem as material for sugar palm flour, leaves for cigarette paper and root for medicine. Rooting system of sugar palm tree is in the form of fibrous root which is very strong for stabilizing soil condition, so that the tree is very important for soil conservation. Soil condition in sloping land which is grown with sugar palm trees is not easily eroded and not susceptible to landslide.

Naturally, sugar palm trees grow and are distributed in nearly all areas of Indonesia. Population of sugar palm tree in the GWUF territory and in the surrounding people's garden and fields, develops naturally and is spread sporadically in line with the development of plantation forest vegetation structure inside the territory of GWUF which develops toward the structure of natural forest. Results of sugar palm tree inventory in people's garden or fields showed data of the tress distribution in each garden or fields with complete vegetation structure, ranging from seedlings, up to adult trees. The growth and distribution of these sugar palm trees are aided by civets (*Paradoxurus hermaproditus*) which eat the ripe fruit of sugar palm and discard their feces in the form sugar palm seeds which are ready to germinate. Sugar palm seeds which exhibit embryonic dormancy, undergo ripening inside the civet's stomach which digest only the fruit flesh. This phenomenon occurs because civet has imperfect process of digestion and creates condition which eliminate seed dormancy.

Understanding the role of civet for the growth of sugar palm tree, becomes an important factor for the sustainability of the tree. People possess wisdom in utilizing sugar palm tree, namely in the utilization of sugar palm fruit which never harvest all fruits from one bunch of

sugar palm fruit. They always leave some fruits to serve as civet's food. Even some people cultivate plants which produce fruits relished by civets, such as papaya and pineapple, so that the civets will always be around their neighborhood. This action of course will have impact on civet's sustainability in nature, and afterwards on sustainability of sugar palm tree and livelihood of the forest people community in utilizing the sugar palm tree (see Fig. 1).

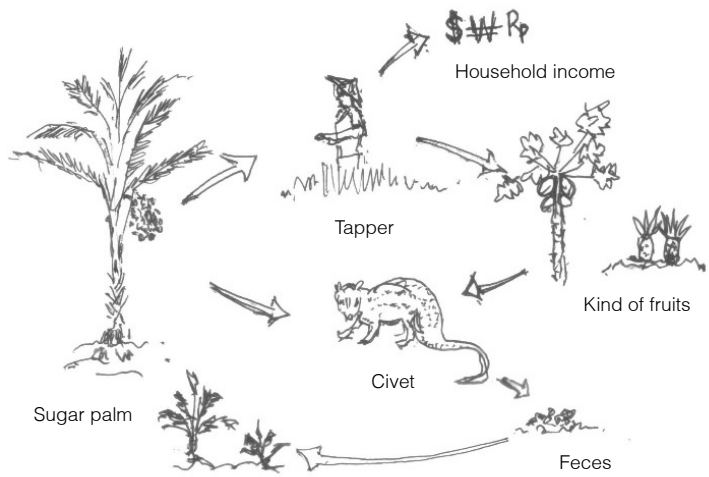


Fig 1. illustration of a beneficial mutual-relationship in the utilization of sugar palm

Utilization of sugar palm tree by harvesting the palm sap, make the sugar palm tree can survive in a long life because without cutting it, namely can reach 30 years old, so that household income can be maintained sustainably. Although sugar palm trees are available in relatively abundant quantity, each household of sugar palm sap tapper only utilized not more than 10 sugar palm trees. This phenomenon was due to tapping technique which is still traditionally practiced, and their economic orientation is still confined only for obtaining income to fulfill their daily needs. Harvesting of other parts of the sugar palm tree is in the form of palm fiber and their young leaves, which were proven to be not disturbing the sugar palm growth, because collection of palm fiber only caused leaf sheath to be more open; and

collection young leaves did not disturb the palm-leaf rib.

Forest people community around GWUF have shown that they possess knowledge on interaction (symbiosis) between biotic components of an ecosystem. With their wisdom, such interaction is maintained because it benefits their life. The form of wisdom which is practiced by them in utilizing sugar palm tree has been proven to give income to the household in sustainable manner, and to be able to preserve the population sustainability of the civet in nature.

3. 3 Spiritual beliefs and locally-accepted rules of Traditional Forest Management in Myanmar

Ei Ei Swe Hlaing*, Masayuki Kawai, Kagari S. Yasuoka, Abrar J. Mohammed, Yan Myo Naing, Thaung Naing Oo and Makoto Inoue

Myanmar is a country of proud cultural and historic traditions and it is rich in natural resources. It has a total land area of 676,578 km2. The forest covers 42.92% of the total land area, in which reserved forest is about 18 % whereas protected public forest is about 7 % altogether constituting about 25 %. The country is composed of 15 administrative regions: 7 States namely 7 States, namely Chin, Kachin, Kayin Kayin, Kayah, Mon, Rakhin and Shan, and 7 Divisions, namely Ayeyawady, Bago, Magway, Mandalay, Sagaing, Taninthayi, and Yangon and Naypyitaw Council region. According to census (2014), the total population of the country is 51 million. There are 135 different ethnic groups in Myanmar, each with its own history, culture language and traditional forest-related knowledge. The largest minority nationalities are the Chin; Kayin; Kayar; Shan; Mon; Rakhine; Kachin and Bamar. Examples of traditional forest management practices include conservation of sacred forest for watershed value, spiritual beliefs or culture and cemetery; traditional collective land use system of swidden agriculture in Chin state and conservation of private woodlots.

This study focus on some traditional forest management practices in Northern Shan State, Nyaung Cho Township where shifting cultivation field were found to have been converted to permanent field with expansion of cash crop cultivation such as maize and sugar cane and some remnant forests and trees are found in agricultural landscapes. Naung Cho township, covering a total area of 809,992 acres, is located at the west edge of Shan state and share border with Mandalay division. The three major topographic feature of the township are (1) mountainous area (500-1,100 m) in northern part, (2) plain area (600-1,000 m) in middle part and (3) upland/plateau area (1,000-1,200 m) in southeast part. 18.8% (152,523 acres)

of the land area is classified as Permanent Forest Estate, i.e. 146,000 acres of Reserved Forest and 6,520 acres of Protected Public Forest. Major crops cultivated in Naung Cho Township are maize (61,382 acres), paddy (25, 160 acres), sugar cane (23,996 acres) and wheat (6,230 acres). The population is 141,288 (male: 70,994, female: 70,274). There are 41 village tracts and 282 villages (Statistic data of FD-Naung Cho office 2014-2015).

Field research was conducted in three villages of Nyaung Cho Township namely Khe Mee village, Kone Thar village and Nyuang-htauk village. Structured, semi-structured, open-ended and random interviews were conducted to some villagers including village head, village tract head and elder persons. Participatory field observation was conducted. The people of study villages belong to the Shan and Danu ethnic groups.

Remnant forests are observed as spiritual forest of Nat spirit (figure 1) and relatively large watershed forest (figure 2) in three villages while remnant trees (figure 3) are observed inside and at the boundary of farmland. Local name for watershed forest is Ye Htwet Taw whereas local name for spiritual forest is Nat Htien Taw in Myanmar language and in Shan language, Lone Saung Mone. Myanmar name for spirit is Ywar Taw Shin and Shan name is Saung Mone. Inside the spiritual forest, there is Nat Sin (small house) for spirit that protects the whole village and villagers. Villagers believe that (spirit) Ywar Taw Shin takes care of their farming, health and economic. That is why, the forest where there is home of Ywar Taw Shin have to be safeguarded by the villagers.

Figure 1. Spiritual forest

Figure. 2. Spring surrounded by watershed forest

Figure 3. Remant trees in farmland

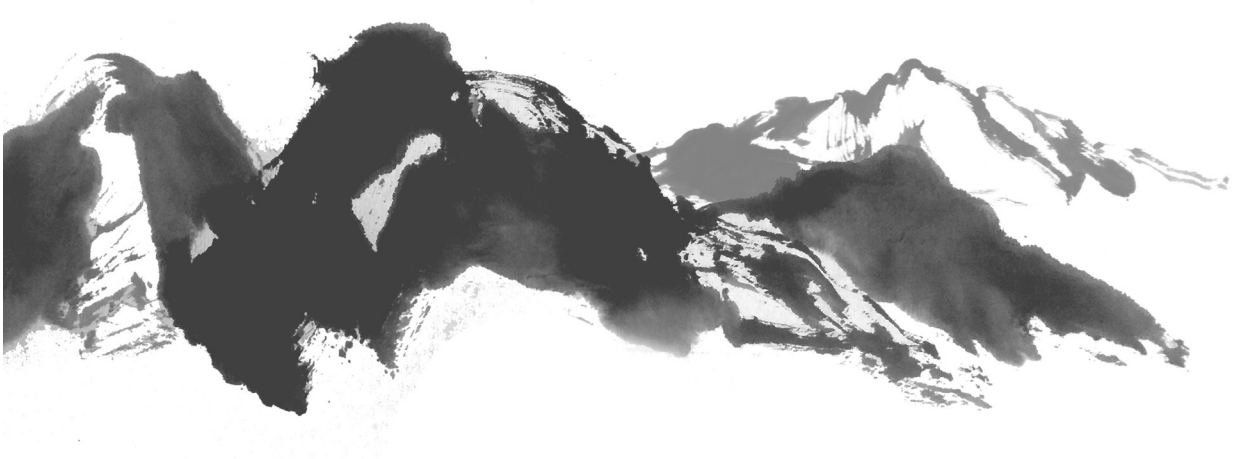
Through this study, it can be concluded that the main reasons for conserving these forests and trees are: for forest (1) watershed value (2) spiritual belief and (3) cemetery; and for trees (1) spiritual belief, (2) providing shade for human and livestock, (3) source of fuelwood and (4) source of fruit (mainly inside monastery). It was also found that spiritual forest and watershed forest maintain a higher biodiversity than original open canopy forest. Core elements of effective resource management are: locally- accepted rules respected by generations to generations; spiritual beliefs; water supply source for washing, irrigation, watering for homegarden and household consumption including for livestock; and graduated sanctions to punish violations of rules.

Session Ⅳ

TFK, Biodiversity and Ecosystem Services

Moderator: Prof. Koshaka Ryo

1. Ethnobotany of Kepuh (Sterculia foetida L.) on Sumbawa Community, Nusa Tenggara Barat (Prof. Ervizal A.M. Zuhud)
2. Ethnobotany of manggarai ethnic in Ruteng Mountains, Flores, Indonesia (Dr. Elisa Iswandono)
3. Traditional and Sustainable uses of bamboos in Tambunan District, Sabah, Malaysia(Mr. Julius Kulip)
4. A study on the forest-related traditional knowledge retained by Dong Ethnic Group-A case of Deng-cen village in Guizhou Province, Southwest China (Ms. Huang Yinghe)



4. 1 Ethnobotany Of Kepuh (*Sterculia Foetida* L.) On Sumbawa Community, Nusa Tenggara Barat, Indonesia

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Introduction

Kepuh (Sterculia foetida L.) is a species that spread evenly all across in Indonesia. This species was known had multiple benefits in fulfilling community needs such as food, health, entertainment and others (Heyne 1987; Bawa 2010). It believed that kepuh spreading evenly but in fact today it is getting hard to find. In various acts of illegal logging, the change the function of the area into a residential neighborhood, as well as the conditions on the germination of dormant causing kepuh increasingly difficult to develop.

Kepuh in local wisdom of Sumbawa community has its own place, it can be seen from their interaction with Kepuh (Supardi *et al.* 2006). This form of local wisdom need to be assessed as an effort of documentation and preservation of local wisdom in the future.

In facts, declining of kepuh population needs attention or conservation efforts. One approach in the conservation efforts is kepuh utilization by traditional communities. Value on kepuh was believed to be the trigger of conservation action by the public. In order to obtain such information, the study was conducted with the aim of analyzing the condition of kepuh populations and identifying local wisdom in Sumbawa in utilizing kepuh. This information will be used as input and consideration in decision making process of kepuh conservation (sustainable use) in the future.

Methode

The research was conducted in 12 subdistricts in Sumbawa, West Nusa Tenggara, Indonesia namely Sumbawa, Unter Iwes, North Moyo, Moyo Hilir, Moyo Hulu, Lenangguar, Lopok, Lape, Maronge, Plampang, Empang and Tarano. The data collection was conducted in June 2014 s/d in May 2015.

The data collected in this study was divided into two parts, namely the condition of the population of kepuh (kepuh population, distribution pattern and kepuh associations) and the utilization of kepuh (food and medicines).

Forms of kepuh utilization by the community in the Sumbawa District is obtained by means of semi-structured interviews using snowball sampling method. Respondent selection begins with the search key figures (key informant), one or two people like the village chief or shaman who is considered a lot of information about kepuh, then based on information from key figures, we adding other informants (Denzin and Lincoln 2009). This is done until the conditions of data / information obtained saturated (no additional new information).

Results and Discussion

Kepuh as one of the plants that are spread evenly throughout the territory of Indonesia, a sign that God has equipped the plant with many benefits and can be used by many people. This gesture is reinforced by the word of God that none of His creation futile.

Kepuh in the folk wisdom of Sumbawa has a lot of benefits from the roots to the leaves, whether the benefits of food and medicines. These following paragraph will describe each of these benefits.

Food

Kepuh food benefits derived from the seeds. These seeds used as seasoning in various

kinds of dishes typical of Sumbawa. Starts from Sepat, Singang (goulash), sirasang, Siong Sira, Cooking (soup) and other variety of other dishes. Seed processing kepuh as seasoning is done by first peeling its skin and roasting and then refined. Bulging with seeds mixed with salt and cayenne and other secret spices (choice if you want to add), it turned into a seasoning called “sira wir”. The name is a blend of wir sira, which means salt and savory meaning (sense created by the kepuh seed oil). Sira wir is mixed into different types of cuisine. In addition to self-produced, in the district. Sira wir ponds are also traded in the market. One small plastic sira wir costs Rp. 1000 - Rp. 3000.

Kepuh which has been roasted seeds can also be eaten, it resembles a peanut. Contraindications of kepuh excessive consumption of seeds can cause dizziness. Dizziness is believed to be due to the kepuh seeds contain a lot of oil. In order to eliminate the dizziness after consuming the seeds kepuh, first soaked in water use salt prior to the baking or roasting. This method is believed to be potent eliminate the dizziness after consuming the kepuh seeds stout directly. Kepuh seeds can also be used as variety of snacks (cake), one of which chips kepuh. Kepuh seed processing into chips is like making chips melinjo. Seeds that have been roasted or boiled and mashed. 3-4 seeds were united into one mashed chips. After mashed, this crisp and sun dried. Dry chips is then fried and ready to be served. In addition to seeds which can be used as a variety of snacks pastry turns the fruit skin (shell) also can be used as kue. According to Purwati (2010), fruit and peel kepuh can be used as ingredients to make a cake.

Medicinal

Sumbawa community famous with their local wisdom was also used as a kepuh media / public treatment facilities. When people know Sumbawa with oil, then one of the mixture should be present in the oil timber is kepuh. According to some sandro (shaman), this kepuh timber shall be among 44 types of wood are included in the mix of oil manufacture

Sumbawa. Wood kepuh regarded as "dea" timber (preferred) in a mixture of oil Sumbawa.

Sumbawa oil is already well known everywhere. This oil is used to treat a variety of diseases, both external and internal medicine diseases, both medical and non-medical. Raw materials used for the manufacture of Sumbawa oil is not haphazard. The material consists of various types of wood taken from the mountains (jungle) even at sea. Wood used depends on the instructions obtained by each sandro were made. Intake of raw materials and the manufacture of oil Sumbawa is only done in the month of Muharram. This is because there is a belief in the month of Muharram, God gives grace treatment on earth. So to get that grace then hereditary Sumbawa oil only made this month.

According Supardi *et al*. (2006), while taking medicine from a first sandro read and salawat recited to the Prophet Muhammad as much as three time as petition safety. Selection and part of medicinal plants taken according to the type of disease to be treated, depending on the knowledge and belief of each sandro. Further Supardi *et al*. (2006) explains, there sandro who took the medicine from plants by position backs shadow and her reflection. Some also do it facing Mecca and some are taking by pulling the plants. Of pharmaceuticals derived from the bark of plants, sandro usually take from the bottom toward the top. It is intended that the disease is lifted together with the bark peeled media.

As a medicine, kepuh in the Sumbawa District intimately with a sense of mystique. Most people believe in Sumbawa that kepuh trees is inhabited trees / tree demon. The form is great with a wide canopy, making the tree look haunted.

Convinced non medical illness must be opposed by non-medical (mystic), making kepuh often used as an antidote to the spirits of disruption. Good trance, witchcraft and magic as burak, sekancing, lome-lome, sword pekir, bawi koro, koro daggers and others, can be treated using material from kepuh.

Shell kepuh also often used as a container (fishing) neutralizing (ai pelawar), former mama (Kunya tradition betel) former mama (Kunya tradition betel) to be marked on the baby's

head (slap). Tepak a way that used to treat baby keeps crying, especially at nightfall. The shell is used because it is believed that the baby crying in the disruption caused by spirits.

Evidence that kepuh into the medicine also demonstrated in open bura (box P3K) Sumbawa community. Since time immemorial people Sumbawa used to keep the preparation of medicines in the open bura. One of the contents that must exist in open bura is a material derived from wood kepuh.

Kepuh used to treat diseases other than non-medical, is also used to treat medical disease. Starting from malaria, cough up blood, bladder stones, fertilizer hair, detoxifying, increase endurance and stamina, headache / migraine, stiff, shortness of breath, asthma, stings of wasps / bees, boils, sores, healing after childbirth, appetite enhancer , and even breast cancer. According Purwati (2010), all parts of the plant kepuh can used as a mixture of herbs.

The bark is used to treat ulcers, sores, blood cleansing postpartum, appetite enhancer, cope with crying babies and spew blood. How easy is kepuh protruding rod, taken together then pounded ginger. Juice of water and drunk. For appetite and a crying baby, bark and pounded rice kepuh along like scrubs (temar), rubbed all over the body. Kepuh skin is also used as an antidote to poison and fractures. As an antidote, skin kepuh plus “kasela” skin, skin “ketanga”, bark and yellow kemang pounded together, squeezed water and then drunk. As for fractures, skin pounded together with turmeric smeared on the fracture. Spew treatment to blood, skin stem bark kepuh plus islands, crushed and then filter drinking water.

Root seedlings grow kepuh used for endurance and increase stamina. In fact there is a mention that the strength of the same kepuh with earth peg. Therefore some people consider the Sumbawa kepuh as ginseng. Processing is performed after kepuh roots first dried and then boiled in three cups into a glass.

The shell of the burned kepuh believed to reduce dizziness (rolled earth) after affixed to

the forehead. Eggshell kepuh also used as "pejula" (container results mamaq "betel nut" parents). Betel is placed in the shell and then rubbed on the head and chest of the person with asthma / shortness of breath. Meanwhile, stew or squeeze the leaves can be used for bathing. This method is believed capable of treating sick with malaria and pegalinu. Kepuh also believed to be potent eliminate swelling caused by bee stings. Eye rings made of wood kepuh attached to any part of the sting, gently bitten areas that will not swell.

Breast cancer disease, kepuh can be used section seeds. Together with a few other ingredients, namely ginger, "Selaparang mira" (a type of grass), "pusuk jeliti", kepuh finely ground. Using chicken feathers that have been falling, collision result is then applied to the part swell. Fossil kepuh also used in several places in the eastern part of the district. Sumbawa. Wood fossil kepuh placed on jug of drinking water. Fossil wood placed in a jar of water are believed to function as a neutralizer of bacteria.

According to Bawa (2010), oil of seed ethanol extract kepuh potential as free radical agents of 85.05%. in the 60th minute. Kepuh potential as an antioxidant also expressed by other researchers, both part of the seed (Galla 2012) and leaves (Manivannan et al., 2011). This shows that the seeds and leaves kepuh potential supplement is developed into a free-radical scavengers that have an impact on the emergence of various diseases such as cancer, premature aging, inflammation and coronary heart disease. The disease appears due to free radicals can react with proteins, lipoproteins, and DNA (Asih *et al.* 2010).

According Purwati (2010), the results of research in India is known that sterkulat acid in the seed oil kepuh reach 71.5 to 72.0%. Sterkulat acid can be used as an ingredient of various industrial products such as cosmetics, soap, shampoo, fabric softener and paint. Sap of kepuh potential as an anti-bacterial. Research Kudle *et al*. (2013) showed that the sap can inhibit various activities microbial strains, including *Escherichia coli*, *Pseudomonas putida*, *Bacillus subtilis*, *Staphylococcus aureus*, *Klebsiella pneumoniae*. Kepuh sap is acting as an antibiotic against various types of microbes. In addition to the sap, leaves

kepuh easy also has potential as an antimicrobial (Singh and Vidyasagar 2014, Vital *et al.* 2010)

Kepuh plant also serves as a medicine in cattle. Kepuh leaves that have been crushed, by people believed to function healthy horse hair. Besides the leaves are also believed to treat pain in the eyes of the buffalo. When taken squeeze water kepuh leaves can treat such symptoms of tuberculosis ("jangkek") in horses.

Conclusions

Sumbawa local wisdom about kepuh can be seen from the utilization of kepuh in the field of food and medicines. In the field of food kepuh used as seasoning named sira wir well as the materials for various types of chips and other snacks. Utilization as a medicine, the kepuh is believed to cure a disease of non-medical and medical, ranging from witchcraft, magic or a disease such as malaria to cancer. Medical activity that using kepuh material could be seen from the manufacture of kepuh wood oil Sumbawa which is recognized as a "dea" timber (preferred) in a mixture of oil Sumbawa.

Dissemination of the importance and benefits of kepuh (*Sterculia foetida* L.) as a multipurpose plants and plants threatened with extinction in the wider community is a priority that we have to do. Further and advance research particularly in improving the life chances of the kepuh become important as the other steps in conservation efforts kepuh.

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4. 2 Ethnobotany of Manggarai Etnic in Ruteng Mountains, Flores, Indonesia

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Abstract

Manggarai etnic in the mountains of Ruteng have ethnobotany knowledge in the utilization of forest plant to meet their needs. Loss of traditional knowledge would have negative impacts on forest resources, because the indigenous people would have less knowledge on sustainable ways to manage the existing forest resources. This study aims to analyze the level of knowledge of ethnobotany, retention rate, and the rate of change of the annual retention on the indigenous people in the Ruteng mountains. This research was conducted in the Kampong Mano, Lerang, and Wae Rebo, Manggarai District within the Province of Nusa Tenggara Timur in July 2014 to July 2015. The data was obtained through Focus Group Discussion (FGD) semi-structured and in-depth interviews and were analyzed for the level of ethnobotany knowledge, ethnobotany retention index, testing the significance of the factors that affect the level of knowledge with Kruskal Wallis test and Man Whitney. The results of this study shows that the Manggarai communities in the Mountains of Ruteng have local knowledge to meet daily needs, especially food, and medicine through the utilization of forest plant. The level of ethnobotany knowledge is high because the indigenous people still depent their live to forest resources, practice traditional rituals,

and inheritance knowledge. The ethnobotany knowledge of young generation decreased that can be indicated forest degradation because the indigenous people would have less knowledge to manage and utilize forest resources.

***Keywords**: ethnobotany knowledge, forest plant, Manggarai tribe, Ruteng, traditiona*l

Introduction

Ethnobotany is the study of the interaction between human and plant resources (Cotton 1996; Minnis 2000; Anderson *et al.* 2011; Pei 2013) and important in the conservation of forest plants (Pei 2013). Local communities has interacted with the forest for hundreds of years and are dependent on forest resources so as to have the knowledge of how to use sustainable forest plants (Pei et al., 2009; Pei 2013). A small, compact and unique local community is a self-sustaining community capable of sustainably managing forests as a result of the experience of living dependent and in harmony with nature for hundreds of years.

The loss of local people who have traditional ecological knowledge and socio-economically dependent on the fulfillment of life is one of the causes of tropical forest destruction (Rai & Lalramnghinglova 2010). One effort to prevent the loss of local knowledge is to know the level of local knowledge, retention, and annual changes based on ethnobotany approaches because plants have an important role for local communities. This study aims to describe the ethnobotany knowledge, analyze the level of knowledge of ethnobotany, retention rate and the rate of change of the annual retention on the Manggarai ethnic.

Methods

This research was carried out for 6 months from July to December 2014. The sample location includes three *kampong* (small traditional village), two *kampong* located around Forest Ruteng, namely *kampong* Mano (8.578° - 8.609°S and 120.528° - 120.552°E),

kampong Lerang (8.652° - 8.660°S and 120.549° - 120.568°E) and kampong Wae Rebo (8.752° - 8.778° and 120.274° - 120.291°) in the Forest Todo (Figure 1).

The data was obtained through survey, participant observation, focus group discusion (FGD) and in-dept interviews with informants set based on the status and role in the community by purposive and snowball (Sugiyono 2010). The number of respondents 90 people according to age classes and traditional village (kampong). Age-class assessment is based on the ability of local community knowledge acquired during late adolescence or early adulthood, around the age of 15 years (Zent 2009).

Measuring the level of knowledge and ethnobotany using the formula (Philip Gentry 1993a, 1993b): Testing the significance of the factors affecting the level of knowledge of ethnobotany with non-parametric statistical significance (0.05): 1) Kruskal Wallis test, to test the knowledge of ethnobotany differences between kampong and age classes; 2) Man Whitney test, to test the knowledge of the differences of men and women. Measurement of ethnobotany retention index and the level of sustainability using the equation Zent (2009):

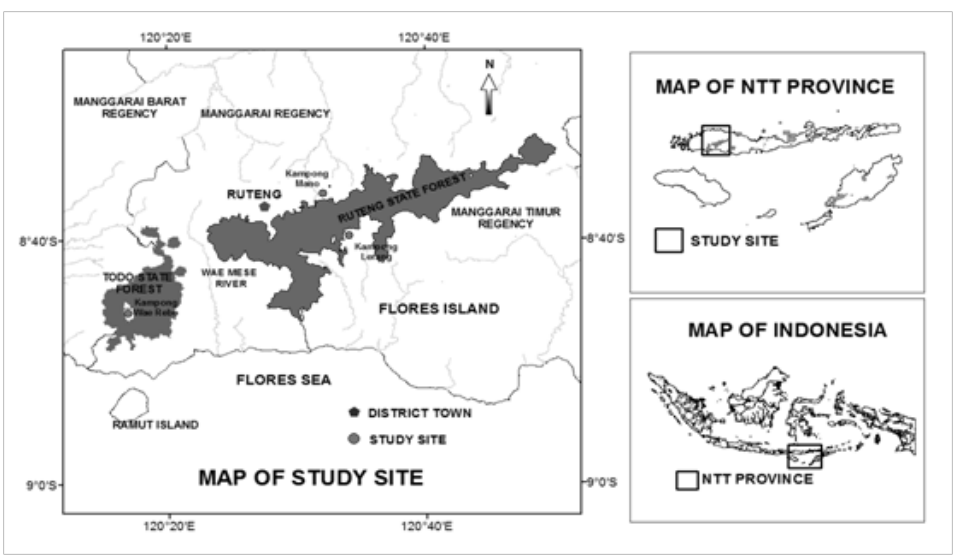

Figure 1 Map of study sites

Results And Discussion

Ethnobotanical Knowledge of Manggarai Tribe in Ruteng Mountains

Number of forest plant species are utilized by Manggarai people in Ruteng Mountains as many as 161 species (75 families) are divided into 12 kinds of utilization (Table 2). The number of species over 60% in as many as 276 species of forest plant in Ruteng Forest (Wiriadinata 1998), 252 species (Verheijen 1977). Usefulness group that has the highest number of plant species are 73 species of medicinal plants (28,57%) and food 40 species (15,87%). People still use the medicinal plant parts of bark, leaves, roots, and all parts of herbs to cure as many as 40 kinds of diseases.

Tabel 2. Species and Family of Usefulness Forest Plant

Usefulness Plant	Number of Species	Number of Family
Food	40	22
Beverage	4	4
Medicine	73	46
Wood Buildings	32	15
Poison	5	5
Dye	2	2
Equipment and craft materials	34	8
Firewood	31	18
rope material	14	9
Fodder	8	4
myths, legends and rituals	6	4
Ornamental plants and fences	7	6

Level of Knowledge, Retention and Annual Change of Knowledge in Ethnobotany

The average level of knowledge of ethnobotany (Mg) of respondents is quite high, which is between 0,848 to the age class (AC) 1 up to 0.957 at AC 4 (Table 3). Kruskal Wallis test results on residence factors showed the P value = 0.173 (> 0.05), meaning that the

difference residence does not cause a difference in the level of knowledge. Mann Whitney test for gender differences in factors indicate the value of P = 0.000 (<0.05), meaning that there are differences in the level of knowledge of ethnobotany men and women. This is because the men in charge of taking forest product while the women do the work at home and help work in the garden.

Kruskal Wallis test on the different of age classes (AC) indicates the value of P = 0.000 (<0.05), meaning that each AC have different levels of knowledge. Lowest knowledge level is at AC 1 and increasing until AC 4 because of the increasing experience in the utilization of forest plant species and interaction with the outside community as researchers and tourists. At AC 5 decrease in the level of knowledge due to aging that causes memory loss (Zent 2009).

The retention rate (RG) is a local community's ability to retain knowledge of ethnobotany (Zent 2009). The lowest RG is AC 1 because of the young age of causes have not been actively involved in traditional institutions and the lack of experience in the forest. Manggarai Community people decreased knowledge of ethnobotany. RG on all AC affects the annual rate of change in knowledge of ethnobotany (CA). Thelowest CA is the AC 1 and AC 2. The CA of AC 1 is -0.00661 per year, it means that after next 151.29 year, ethnobotanical knowledge will be lost at AC 1. CA of AC 1 is -00 319 per year, its means that after next 131.48 year, the ethnobotanical knowledge at AC 2 will be lost. The decreasing of traditional knowledge due to reduced time to interact with the forest as a result of changes in work activities, such as tourist guide, or porters, and formal education that marginalize local knowledge of ethnobotany.

Table 3. The level of knowledge, retention index, and annual change knowledge of ethnobotany

Age Class	MGj	RG	RC	CA
Kampong Mano				
1 (10–24)	0,829	0,920239	0,885808	−0,00761
2 (25–39)	0,901	0,962626	0,950717	−0,00329
3 (40–54)	0,936	0,987656	0,998707	−0,0000862
4 (55–69)	0,948	1,011144	1,01114	0,000743
5 (70–84)	0,937	1	1	0
Kampong Lerang				
1 (≤24)	0,842	0,929507	0,895374	−0,00698
2 (25–39)	0,907	0,963285	0,946498	−0,00357
3 (40–54)	0,941	0,982558	0,996065	−0,00026
4 (55–69)	0,958	1,013703	1,0137	0,000913
5 (>69)	0,945	1	1	0
Kampong Wae Rebo				
1 (≤24)	0,871	0,941224	0,921239	−0,00525
2 (25–39)	0,925	0,978792	0,958887	−0,00274
3 (40–54)	0,945	0,979656	0,989451	−0,0007
4 (55–69)	0,965	1,010056	1,01005	0,00067
5 (>69)	0,955	1	1	0
Average				
1 (≤24)	0,848	0,930	0,901	−0,00661
2 (25–39)	0,911	0,968	0,952	−0,00319
3 (40–54)	0,941	0,983	0,995	−0,00035
4 (55–69)	0,957	1,012	1,012	0,000775
5 (>69)	0,946	1	1	0

Description: Mgj = the average of the level of age class knowledge j; RG = the level of retention of ethnobotany; RC = the level of cumulative retention; CA = the level of annual change

Conclusion

Manggarai Community in Ruteng Mountains has made conservation through the utilization of a variety forest plant and is the same as medium level of pressure to the forest because the utilization is not on one particular species and habitats that play a role in the maintenance of ecosystem. The decreasing of these traditional knowledge due to reduced time to interact with the forest that marginalize local knowledge of ethnobotany and closing access to forest

plant utilizatin. Therefore, forest management should accomodate traditional community to utilize forest plant to maintain the sustainable traditional knowledge.

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4. 3 Traditional and Sustainable uses of bamboos in Tambunan District, Sabah, Malaysia

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Introduction

Bamboo is a flowering perennial evergreen grass and the biggest grass in the world. Botanically, it belongs to the grass family or Poaceae (Gramineae) and in the Sub-Family of Bambusoideae. Bamboos are some of the fastest-growing plants in the world due to a unique rhizome-dependent system. Bamboos play an important role in local economies throughout the world and are of major national and international commercial importance in the Asia-Pacific region. It is estimated that 2.5 billion people depend on or use bamboo materials valued at US$ 7 billion per annum (Banik 1995).

Malaysian bamboo species constitute a non-timber forest product of major cultural and economic importance. Bamboo has a long history of being used for multiple purposes by the Malaysian rural people and this is also happened on the Dusun people in Tambunan District, Sabah. Among others, bamboo has served and still serves as construction material, food, material for agricultural tools, utensils and music instruments (Kulip, 1990, 1994, 2005 and 2015).

Bamboos are very important plant for rural areas throughout the world. The unsustainable harvesting and utilizing of bamboos are becoming serious problems worldwide and this need attentions. The existence of bamboos was also threatened by the loss of habitat,

whereby rural people converted their bamboo plantation into other profitable commodity such as Palm Oil and Rubber.

Locality of study

This study was conducted in Tambunan District, Sabah, Malaysia (Fig 1) which is located in the north Borneo Island. Tambunan is a valley district covering an area of 1,347 km. sq. in Interior Division, Sabah, Malaysia. It is located 80 kilometers east of the state capital, Kota Kinabalu by road. At an average altitude of 750 meters, this valley, which is part of the Crocker and Trus Madi mountainous ranges, experiences a mild tropical climate all year long. The valley is covered by highland to lower montane forest vegetations and peppered with terraced paddy fields and dense forest bamboos plantation. The total population is estimated 35,000 in 88 villages (Jabatan Perangkaan Malaysia, 2010). In the early 20th century, the social structure of the Tambunan Dusun was based on six sub-tribes, namely Tuhawon, Tagas, Tobilung, Tibabar, Gana, and Kohub (Gibon, 1986). Most of them are farmers and forest products gatherers.

Fig 1. map of Sabah showing the locality of study, Tambunan District.

Material and Methods

This survey was conducted by firstly doing the literature search then field data collections at various villages around Tambunan District. Interviews were conducted to several villagers on the local names and uses of bamboos in their area. The bamboos' scientific names were identified by the author by comparing specimens in Sandakan Herbarium (SAN) and referring taxonomical bamboo books.

Results and Discussions

There are 16 species and 2 varieties of bamboos found growing in Tambunan District at present, namely *Bambusa blumeana* (Tongkungon), *Bambusa vulgaris* (Tamalang), *Bambusa vulgaris* var. stricta (Tamalang Silou), *Dendrocalamus asper*, *Dinochloa scandens* (Wadan), *Dinochloa tricogona* (Wadan), *Dinochloa sublaevigata* (Wadan), *Gigantochloa levis* (Poring), *Gigantochloa balui* (Balui), *Racemobambos cockburnii* (Sumbiling Nulu), *Racemobambos sp*., *Schizostachyum brachycladum* (Wuluh), *Schizostachyum brachycladum* var. yellow culm (Ruhading), *Schizostachyum blumei* (Tombotuon), *Schizostachyum lima* (Sumbiling), *Schizostachyum pilosum* (Lampaki), *Schizostachyum pus* (Pus) and *Schizostachyum* sp.nov. (Pelupu). The most popular and multi-purpose use of bamboo is *Gigantochloa levis* or Poring, follow by *Schizostachyum brachycladum* or Wuhu/Wulu and *Bambusa vulgaris* or Tamahang/Tamalang.

There are three methods to make sure the sustainability of bamboo utilizations by the villagers in Tambunan:

1.0 Traditional Knowledge Systems

The Dusun people in Tambunan have a long traditions in keeping and utilizing bamboos and other natural resources in a sustainable manner to sustain their life. They follow their Customary Laws handed down by their fore-parents. There are two categories, namely: The

first one is Adat Kampung (Village Custom) which is on human – human relationship and the second one is Adat Pantang (Forbidden Custom) which is on human – nature relationship (Gidam 2016). There are two methods, namely with 'Sogit' and without 'Sogit'.

1. 'Adat Kampung' or Village Custom – with 'Sogit'

In the 'Adat Kampung' , if someone committed an offence, he/she will be punished by paying a 'Sogit' or a fine by the local authorities, these 'Adat Kampung' are gazetted in Sabah Native Customary Laws 1992. The concept of 'Sogit' is to make peace to the person he/she or environment that he/she hurt or damaged. Literally 'Sogit' in Dusun word means cool. This is to make sure peace and harmony is restored again.

There are two sub-categories of 'Sogit' or fine which are related to bamboos and other plants:

a) The first category is with Sogit to individual (Punishable to the individual wrong-doer by village authority or 'Ketua Kampung' (Village Head)/'Ketua Masyarakat' (Native Chief)/'Ketua Daerah' (District Chief). It is gazetted in the Native Customary Laws of Sabah 1992 (Warta Kerajaan, 1992). Anyone found guilty by the Native Courts must pay 'Sogit' or fine. The 'Sogit' usually in term of animal/salt/bowl. Failure, the person will be fine a sum of money or jail or both upon conviction. There are namely:

Part V. Burial Grounds and Death.

Section 27. Damage to grave yard. This includes plants. Example: No cuttings/ fellings of bamboos or other plants inside a grave yard without permission from Head of Village.

Part VI. Gross Misbehavior, Indecency and Mischief.

Section 41. Trespass. Enter any house or land without permission. Example: No enter to any house or land (forested or agricultural areas) and taking anything without permission from the owner.

Section 50. Felling trees. Example: Felling any bamboos or trees in any areas without permission.

Section 52. Disturbance to customary signification of property marked by a 'Tonduk'. Example: Any bamboo clumps or property which is marked by a sharped pointed pole or 'Tonduk' is forbidden to disturbed.

Part VIII. Birth & Customary Abstention.

Section 55. Prohibited act during 'Mobpuod'. Example: A husband/wife who just lost his/her spouse is forbidden to roaming around far from his/her home for a year. This is a mark of respect to the demise of his/her spouse. He/she will be forbidden to cut bamboos or any plants during the time of 'Mobpuod'.

b) The second sub-category is with Sogit to the whole village/community.

It is called 'Sogit Paus'. 'Paus' in Dusun is a type of mammal or Barking Deer (*Muntiacus muntjak*). Anyone found killed a 'Paus' during agricultural activities e.g. paddy/rice planting season or planting bamboos, the villagers who saw the dead 'Paus', will immideatly stop working for a day. No planting activity on that day. It is believed that if anyone ignored and continue planting bamboo or paddy, it will die.

2.0 'Kotumbayaan' - without 'Sogit' or punishment by authorities.

It is embedded in the Traditional Beliefs and Practices (Kulip, 2015 and Kulip et; al, 2016) .They are namely: Moginupus (Love & care), Monoruang (Welcoming a new born baby), Bambarayon (Paddy's spirits), Lintugi (Millipede), Hokiu (Wood Pecker bird), Gonsuri (Rat), Misarawang Tulan (Full moon), Rusod do Talun /Nulu (Spirits of the forests/ mountains) and Madsalud (Collecting herbs). Any person who ignored will be punished by 'Kinoingan' / 'Minamangun' or The Creator or God.

3.0 Government's rule

The administration and management of bamboo resources in Tambunan District were started by the Forestry Department of North Borneo (FDNB) in 1930's. During that time, the supply of matured Poring and Tamalang bamboos in this district was drastically low. This was because of the exploitation of bamboos for local use such as fire wood, building houses and fences was high during that time. There was no efforts by the locals to replant bamboos. The then Forestry Department of North Borneo, Tambunan Branch saw this and made a quick actions by imposing strict harvesting permits. One of the conditions of granting cutting bamboos was to do replanting. All Village Heads and Native Chiefs in this district were instructed to record all cuttings of bamboos and replanting new plants. Every one culm of Poring bamboo tree fell, someone had to replant 10 new plant of Poring bamboos. Village Heads were involved in recording all cuttings and replanting in each of their respective village (Annual Report on the Forestry Department for 1930, 1937 & 1939).

Conclusion

The Dusun people in Tambunan have a long tradition system of wise use of their natural resources including bamboos such as 'Adat Kampung' or Village Custom (gazetted in the Sabah Native Customary Laws) – with 'Sogit', 'Kotumbayaan' or Traditional Beliefs and Practices – without 'Sogit' and Government's rule which led to a sustainable use of bamboo resources in Tambunan District until today. This system has been safeguarded by them to create peace, a stable way of life and also to conserve and protect the natural resources including bamboos in order to use it sustainably.

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4. 4 A study on the forest-related traditional knowledge retained by Dong ethnic group

– A case of Dengcen village in Guizhou province, Southwest China-

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Abstract

Local communities have relied on traditional knowledge (TK) to manage forests and utilize forest resources for centuries, and the TK helped them keep the capacity of forest ecosystems in providing environmental services. Such forest-related knowledge (FTK) including local peoples' ecological knowledge, culture, religious belief and forest management know-how has been transmitted through generations. The erosion of FTK is identified counting against sustainable forest management. Nevertheless, states and trends of FTK as well as the causes of FTK erosion retained by local communities remain unknown due to the lack of research. This study aims to understand the situation of FTK retained by local community in China and further identify factors that have affected FTK retention. For this sake, the retention rate of FTK retained by a Dong ethnic group called Dengcen – which is located in Guizhou province in southwest China – was measured by utilizing Vitality Index of Traditional Environmental Knowledge (VITEK) method. Besides, there are four demongraphic or socio-economic factors have been demonstrated making contribution to the changes of FTK. We suggests, to help the FTK to be maintained, measures on both local level and gonvernment level should be conducted.

Keywords: traditional knowledge, indigenous knowledge, forest management, local community, local people, southwest China

Introduction

Forest-related traditional knowledge is a cumulative body of knowledge, practice and belief, handed down through generations by cultural transmission and evolving by adaptive processes, about the relationship between living beings with one another with their foret environment (Berkes *et al.* 2000).

Over the course of last few decades, unprecedented global deforestation and forest degradation have been continuing at an alarming pace. Against such a backdrop as well as considering the origins of the environmental problems, many questioned whether modern forest science and technologies of resource managemet is up to the task of maintaining sustainable forest environments (Parrotta, Youn and Camacho, 2016. 刘金龙， 张明慧，和志鹏， 谷苹, 2013). Knowledge and practices have been used by local or indigenous communities to mange and utilize forest resources for centuries, without jeopardizing the capacity of forest ecosystems to provide material and non-material services for futre generations. Therefore, there is a growing interest in the role of forest-related traditional knowledge in ensuring the sustainable utilization and management of ecosystems services (Boafo et al., 2015).

Methodology And Data Collection

The data was obtained through field survey in Dengcen village from 16th July to 26th July in 2016, 9th Jan to 21st Jan in 2017. The study site is located in the southeast of Qiandongnan Miao and Dong Autonomous Prefecture in Guizhou province, covering 108°51’ - 108°54’E, 26°10’ - 26°13’N.

This study apply to Vitality Index of Traditional Environmental Knowledge (VITEK)

which is a tool for measuring the retention and change of TEK. In additional, Mann-Whitney U Test and One-way ANOVA are used to find out the differences in FTK retention under influences of several contributory factors.

Results And Discussion

Decline of FTK from the oldest generation to the youngest one is indicated by this study through VITEK statistics. Moreover, one's age, gender, experience of living in urban area, and education level are demonstrated having influences to FTK retention. Each demongraphic or socio-economic factor has been influencing FTK retention by different ways.

To help the FTK to be maintained, this study suggests that FTK education program for young local people and community-based ecotourism should be developed at local level. In addition, refined education system and policy of culture diversity conservation should be implemented by gonvernment.

Conclusion

This study is the first practice of VITEK methodology in the field in China. According to the results, erosion of FTK within a local community is demonstrated, which is similar with the results of previous research conducted in Yunnan province, China (Z. Yuan et al., 2014). The sharp declines and long-standing erosion of FTK with complicated causes should raise concern on FTK retention.

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Poster

1. Analyzing the key drivers of tree planting from local people with Bayesian Networks in Cao Phong District, Hoa Binh Province, Vietnam
2. Traditional Knowledge of Orang Asli Documentation Efforts: Towards Commercialization of Some Selected Potential Medicinal Plants Species in Peninsular Malaysia
3. Present Status and Types of Maeulsoop (Village Groves) in the Republic of Korea
4. Complementary Planting of *Quercus acutissima* stands from a Pungsu Perspective in Korea
5. Wau - A Malaysian Kite Made From Bamboo

Analyzing the key drivers of tree planting from local people with Bayesian Networks in Cao Phong District, Hoa Binh Province, Vietnam

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Keywords:

Tree planting decision, farm household, success drivers, success indicators, dependent variables, independent variables, Bayesian networks

ABSTRACT

Known as the climate and watershed protection role, tree planting is an important reforestation activity in forestry sector. In coping with significant deforestation and forest degradation in Cao Phong district, Hoa Binh province, Vietnam, a massive reforestation projects have been implemented such as the 5 Million Hectare Reforestation Program, the Program 747 (472) which provided some money to farmer to plant some forest seedlings, and The Afforestation and Reforestation Clean Development Mechanism (AR-CDM) which were contributed substantially to the forest cover in Hoa Binh province in the last several decades. Even though there have been a lot of attempts and investments in reforestation in the area, an interaction of household characteristics, and socio-economic factors with tree planting decision are still little comprehension. To gain an understanding, 100 households in Cao Phong district, Hoa Binh province, Vietnam were selected by stratified

random sampling method and interviewed based on five groups of factors (household characteristic factors, farm characteristics/resource endowments, biophysical factors, socio-economic factors, institutional and policy factors) which were influenced by tree planting decision as well as the area of forest will be planted. By using bivariate analysis, and Bayesian networks (BNs), the research has investigated and determined 4 successful indicators which effect the decision of farm households to plant trees. The results found that the medium households group contribute the highest percentage in tree planting. Besides, the household characteristics and socioeconomic factors have returned effects on the success of reforestation programs. This study provides comprehension in tree planting decision of local people and recommendations for increasing forest in research area.

Traditional Knowledge of Orang Asli Documentation Efforts: Towards Commercialization of Some Selected Potential Medicinal Plants Species in Peninsular Malaysia

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Abstract

As a party to Convention on Biological Diversity (CBD), Malaysian government through Forest Research Institute Malaysia (FRIM) has implemented a national project on documentation of medicinal plants used by Indigenous People (Orang Asli) in Peninsular Malaysia since 2007. To date, FRIM has scientifically documented medicinal plants based on traditional knowledge (TK) of all 18 Orang Asli sub-ethnic groups. In each study area, the documentation process involved namely; i) rapid rural appraisal, ii) awareness workshop, and iii) socioeconomic survey. iv) Based on the survey findings, two phases of training workshops on preparing herbarium specimens scientifically were conducted. These lead to plants identification and the development of database on medicinal plants used by Orang Asli in Peninsular Malaysia. In the process of documenting their TK, Prior Informed Consent (PIC) is crucial to ensure full collaboration from the Orang Asli sub-ethnics and success of the project. Selected medicinal plants species collected during the workshop were subject to further lab analyses to reaffirm the traditional uses and also to examine whether there is any other new biopotential value (such as anti-cancer). To date, 91 medicinal plants species were selected for chemical and biological screening in FRIM. A total of 33 species were discovered to have more than three (3) bioactivities which may include anti-microbe, anti-oxidant, anti-inflammatory, anti-diabetic and anti-cancer. Based on lab analyses, prototype products were developed from selected species – a way forward to commercialization. To assess the commercialization potential of the selected species, availability of their resources also need to be surveyed. Subsequently, this leads to an inventory of these 33 potential plants in its natural state. With assistance of local Orang Asli, the inventory is to identify the distribution of these medicinal plants in the nearby forest. Efforts were also geared towards collection of germplasm for plant propagation and tissue culture activities.

Keywords: Traditional knowledge, medicinal plants, documentation, inventory

Present Status and Types of Maeulsoop (Village Groves) in the Republic of Korea

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Introduction

Industrialization and urbanization in modern society have caused various environmental problems and accelerated changes of climate and the natural ecosystem. It is the ecological knowledge and resources management practices handed down from the traditional society that have gained attention as a means of solution for the environmental problems as well as management and distribution issues of resources. Korean traditional villages took '*baesanimsu* (背山臨水, mountain at the back, stream at the front)' as the basic principle for location and land use, and this condition had much benefited villagers as being located within a well-secured watershed to obtain water, be protected against the wind and get resources. The traditional villages have been adapted to local natural condition and been in a harmonious relationship with the surrounding natural ecosystems in order for the spatial arrangement to be remained for a long period of time.

Definition of Maeulsoop

Maeulsoop (Korean Village Groves) is a forest which was created in the process of Korean people fighting against a monsoon and harmonizing the affluent village with the environment.

Also, It is a forest that could be part of the village landscape, or co-owned, protected and managed by villagers. Amongst these village forests, some are classified and called as 'traditional village groves' if they have historical and cultural characteristics that stands out and they have been passed down.

Function of Maeulsoop

A village grove is often a place where villagers come to find emergency medicines and where they grow and harvest mushrooms and edible greens for their daily usage. Fallen leaves of the forest, in addition, are used as manure. It also covers the front and sides, so that the village can be protected by a typhoon in summer or cold dry wind in winter. A village grove makes microclimate of the village more temperate. And it can lead surface water to flow more naturally by preventing water from being flooded or providing it when needed for farming since the grove is closely located by ponds or streams. A village grove is a common meeting point where the villagers gather and a shelter for the people during hot summer. Further, it is a sacred sites as a holy place the villagers protect and perform ancestral rites periodically.

Biodiversity of Maeulsoop

Big trees such as pine tree and zelkova are the ones that grow near the groves. Also, many species of birds like mandarin duck, scops owl, owl, woodpecker, great tit, and starling that normally live deep inside a mountain and build a nest in hollows of tree trunks and branches inhabit the area, so that they can be seen near the village. A village grove plays an important role not only as a stepping-stone for birds that fly long distances, bridging the gap between big mountains, but also as an inter-acting habitat for various species of insects such as firefly that travel between streams, farmland and forests.

Types of Maeulsoop

Village groves could be classified into 4 types; *sugu* (水口, a mouth of watershed) where the village is located or sugumagi (a complement that protects the outlet) where the left and right side of a mountain ridge is afforested, hills, meoi (isolated mountain), *biboyeopseung* (裨補厭勝, a grove made with intent to suppress a bad spirit around the village). The oldest village

grove of Korea is Daegwan-lim(大館林), is thought to be created with levees by Gowoon Choi Chiwon (孤雲 崔致遠) in order to prevent floods during his term of office as a governor of Cheonryeong-gun during the reign of the Queen Jinseong (887-897). This 205,842 ㎡ big grove built about 1,100 years ago has tree species such as sawtooth oak, cork oak, Asian hornbeam, abundant-flower meliosma, tallow tree, zelkova and hackberry, etc. The grove is protected as natural monument No. 154.

Present status of maeulsoop

National Institute of Forest Science investigated organized information for the village groves in 1,400 regions as of March, 2017 and found that small groves were in the majority with groves smaller than 1 ha accounted for 78.7% of the total. Major plant species of the village groves on the list were pine trees and zelkovas. The groves were managed by the village and local government. And ‘sugumagi’ was the most common type of village grove.

Keywords: Baesanimsu, Sugumagi, Biboyeopseung, Meoi, Zelkovas

Complementary Planting of *Quercus acutissima* stands from a Pungsu Perspective in Korea

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Iabstract

Korea utilized acorns as a substitute for other staple crops during the harsh times about 6,000 years ago. Among the six main oaks, people preferred to use the acorns of *Quercus acutissima* (QA). This study was conducted to suggest a habitat suitability model of QA using presence data and to analyse with response variables such as annual mean temperature, elevation, precipitation of warmest quarter and percent forest cover within circle of 500 m radius. We also analysed the number and areas of patch size of QA stands delineated in the fifth digital forest type map. We initially surveyed the dbh (diameter at breast height) at seven sites of QA stands in Seoul to understand the stand structure and predict the future age structure of QA stands. Total 63,364 patches were identified in South Korea with an estimated size of 105,335 ha, and it amounts to 1.7 percent of total forest areas in South Korea. Habitat suitability of QA was highly explained by the annual mean temperature (ranging from 11 to 12 degrees in Celsius), altitude (below 800 meters), the precipitation of warmest quarter (from 400 to 1,000 mm) and the percentage of forest cover within a 500 m (more than 10%). The average dbh of QA stands ranged from 25.6 to 43.2 cm at seven sites in Seoul. There was no significant difference in dbh distribution among seven QA stands. Distribution pattern of dbh showed lower ratio of small-sized dbh trees. We found the literature mentioned the human planting of QA stands aga during low rice production in dry seasons. The amount of irregular precipitation

would be a limiting factor to maintain constant rice production in monsoon climate regions, however, Korean ancestors have been adapting and transferring the complementary planting of QA stands to supplement the low amount of food available from generation to generation. Therefore, at a Pungsu perspective, complementary planting of QA stands could be interpreted as the resilience mechanism to maintain crop production in monsoon climate, where a main factor determining rice production, i.e., dominant staple food crop, is the amount of rainfall.

Keywords: Socio-economic viewpoint, complementary planting, acorns, *dotori*

Wau - A Malaysian Kite Made From Bamboo

Anwar UMK, Hamdan H, Nordahlia AS and Mohd Faizul MS

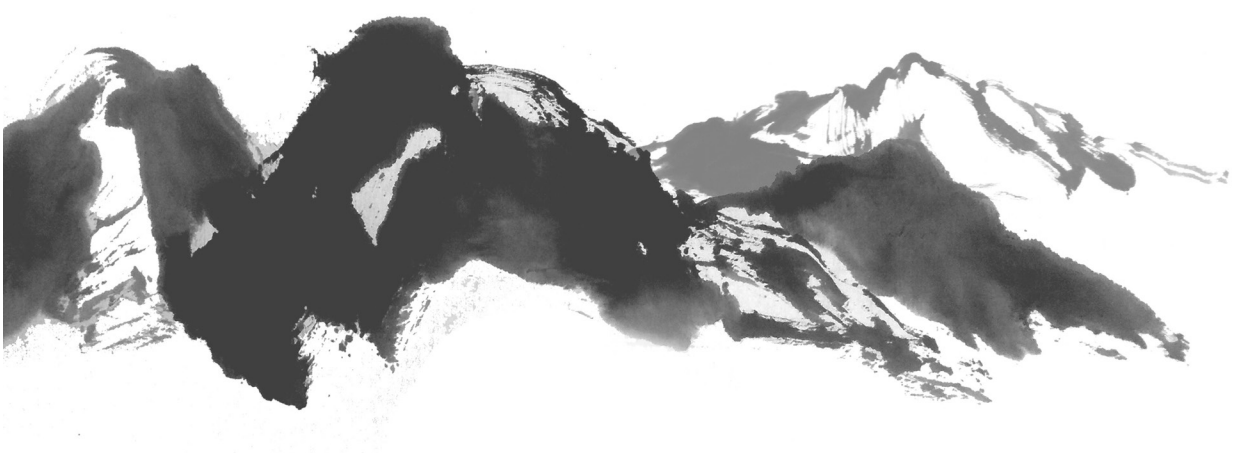
Iabstract

Bamboo is a non-timber forest product commonly used by the local and indigenous communities in Malaysia. Its use is closely associated with local culture which is often expressed in proverbs and sayings. The saying "Bending the bamboo from its shoot" conveying the educational message of educating the children while they are still young. The proverb "Like bamboo and the river bank" describes the strong bond among the people. Bamboo is made to make a wide range of products of which one of them is the popular kite called wau. Wau is the name given to Malaysian kite and is one of Malaysia's national symbols. It has been used as a corporate logo for Malaysian Airline System (MAS) and also appears on Malaysia bank note. There are different types of wau and the most popular is wau bulan. Wau bulan got its name from the crescent moon-like shape of its lower section (bulan means "moon" in Malay language). The main frame of the wau is made from bamboo strips. Then a layer of strong paper with several coloured patterns is used. Normally, wau decoration is based on nature or Malay folklore. The price of a wau can be as low as USD 10 to a few hundred dollars depending on its size and decoration. For some entrepreneurs, wau making can be a lucrative source of income. Aside from flying, the wau are often used as decorations in restaurants and house interiors. Local wau competitions are held from time to time depending on the season. An international wau festival and competition would be held annually in Skudai, Johor with participants from all over the world.

Keywords: kite, bamboo, Malay traditional

Workshop

1. Opening Address
2. Introduction of Folk Culture Workshop's history and results
3. Ethnobotany of Manggarai Etnic in Ruteng Mountains, Flores, Indonesia
4. Ethnobotany Of Kepuh (*Sterculia Foetida* L.) On Sumbawa Community, Nusa Tenggara Barat, Indonesia
5. Transmission Of Oral Traditions Among The Indigenous Temuan Community In Peninsular Malaysia



Opening Address

Kyosang, Koo

Asian Center for Traditional Forest Knowledge, NIFoS

Ladies and gentlemen, I would like to welcome all of you to Seoul, Korea.

It is a great pleasure that **National Institute of Forest Science and APAFRI** co-host the 3rd regional workshop entitled as "Proverbs, Old Sayings and Community Rules related to Climate Change and Forest Management in ASEAN Countries"

Let me extend my gratitude to **Dr. Sim Heok Choh and Dr. Gan Kee Seng, Executive Secretariat of APAFRI**, and participants for attending this workshop. Also, I would like to thank the moderator, speakers and all the distinguished guests for being here with us today.

Human beings have passed down proverbs, old sayings, and community rules across generations in preparation for unpredictable natural disasters. This traditional forest knowledge compares past and present ecology, and it possesses unlimited value as a storytelling resource and cultural assets of forests.

The fourth workshop today, which presented the results of two years of ecosystem services comparative survey workshop and one year proverb and legendary survey workshop, although it was a rudimentary step, I would like to evaluate it as a big stepping stone to connect public awareness and capacity building at the next step.

In particular, Asia, where 260 millions of indigenous people (370,000 worldwide, two-thirds) live, is a treasure of the traditional forest knowledge itself, and the proverbs, old sayings and community rules of TFK, those are meaningful to make a connection among generations, and to provide the future value of society in a changing modern society such as climate change and natural disaster.

In the future, I hope that the ANTFOK (Asian Network of TFK) will take a leap forward and that various education programs of APAFRI and AFoCO cooperatives will be implemented based on the important value of fair distribution and sharing.

I hope that all of you will be able to fully appreciate the TFK and culture in Asia and platform for research and communication for humanity through this workshop.

Thank you.

Introduction of Folk Culture Workshop's history and results

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ABSTRACT

Paris Agreements on 12nd December, 2015 at COP21 meeting will change modern society to practically environmental-friendly economy and. One hundred ninety five countries had joined to make an agreements, and this international movement will affect the economy and socio-culture system of Asia area. IPs at high altitude could provide practical solution against climate change, however their lands can be shrunken due to global warming and over use of useful resources by civilized peoples.

Two thirds of the world's indigenous peoples live in Asia, it is no more than 2,000 civilizations and languages. They include groups that ore often referred to as *tribal peoples, hill tribes, scheduled tribes, janajati, orang asli, masyarakat adat, adivasis, ethnic minorities or nationalities*. Irrespective of their legal status or the terminology used, many indigenous peoples of Asia experience non recognition of their cultural identity, exclusion and marginalization .

In 2015, most of indigenous peoples recognized that they have possessed average 8.7 provisioning services, 6.0 regulating services, 2.4 cultural services and 3.7 supporting services from forests (Table 1, Figure 1). Korean and Japan possess low number of provisioning services from forests, however two countries have endeavored to develop and use cultural services such

[1] UN A/HRC/24/41/, Report of the Special Rapporteur on the rights of indigenous peoples, James Anaya

as eco-tourism and local festival. So, 2015 data on TFK for ES can be important to characterize the IP of Asia. Human beings have passed down proverbs, old sayings, and community rules across generations in preparation for unpredictable natural disasters. This traditional forest knowledge compares past and present ecology, and it possesses unlimited value as a storytelling resource and cultural assets of forests.

ACTFOK (Asian Center for Traditional Forest Knowledge) was established at NIFoS (National Institute of Forest Science) in 2012. ACTFOK has been supported workshops and conferences since 2013 to activate regional scientific workshop and conserve indigenous peoples who have been transcending important regional wisdom and knowledge in Asia region. The fourth workshop today, which presented the results of two years of ecosystem services comparative survey workshop and one year proverb and legendary survey workshop, in 2016, folk culture including proverbs, old sayings and community rules had been collected and analyzed. In particular, Asia, where 260 millions of indigenous people (370,000 worldwide, two-thirds) live, is a treasure of the traditional forest knowledge itself, and the proverbs, old sayings and community rules of TFK, those are meaningful to make a connection among generations, and to provide the future value of society in a changing modern society such as climate change and natural disaster.

As a result, Kerinci community of Indonesia showed high percentage of supporting services of collected proverbs, but Maggarai did similar percentage of each service. Ifugaro community of Philippines represented high percentage of provisioning and cultural services of proverbs, but Tagbanuas of Philippines did high percentage of cultural services. In the case of Vietnam, ecosystem services of folk cultures showed the highest value in the order of supporting, cultural and regulating services. Malaysia peninsula showed high percentage at cultural services at the folk cultures. At the dataset of Malaysia saba, percentages of old sayings were high at four indigenous peoples. In conclusion, this elementary survey was not fully recorded to compare the folk culture, but there was a diverse pattern of ecosystem services embedded in the folk culture, especially there was a difference of percentage among proverb, old sayings and community rules in the same country. Though our same data sheets for collection of folk cultures, it is not enough to compare survey results among regions. Therefore, more detailed questionnaire should be prepared in consideration with socio-economic characteristics of indigenous peoples.

Tabel 1. Number of four services relating with folk cultures at studied indigenous peoples

Country	Community	Provisioning service		Regulating service		Cultural service		Supporting service		Total
		No.	%	No.	%	No.	%	No.	%	No.
Indonesia	Kerinci	4	16.7	3	12.5	5	20.8	12	50.0	24
	Maggarai	8	26.7	8	26.7	6	20.0	8	26.7	30
Philippines	Ifugaro	9(2)	45.0	1(1)	5.0	9(2)	45.0	1(1)	5.0	20(3)
	Tagbanuas	3(2)	23.1	3	23.1	6(2)	46.1	1	7.7	13(2)
Vietnam	Thais	2	4.7	13	30.2	13(1)	30.2	15(1)	34.9	43(1)
Malaysia Peninsular	Old sayings	3	9.4	9	28.1	18	56.3	2	6.3	32
	Proverbs	1	7.7	0	0.0	11	84.6	1	7.7	13
	Community rules	0	0.0	0	0.0	28	100.0	0	0.0	28
	Total	4	5.5	9	12.3	57	78.1	3	4.1	73

Tabel 2. Number of old sayings, proverbs, and community rules at Saba, Malaysia

Malaysia, Saba	Old sayings		Proverbs		Community rules		Total
	No.	%	No.	%	No.	%	No.
Nambayan	10	32.3	11	35.5	10	32.3	31
Kerokot	14	63.6	7	31.8	1	4.5	22
Toboh	5	38.5	6	46.2	2	15.4	13
Sunsoron	3	60.0	2	40.0	0	0.0	5
Total	32	45.1	26	36.6	13	18.3	71

Ethnobotany of Manggarai Etnic in Ruteng Mountains, Flores, Indonesia

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ABSTRACT

Manggarai etnic in the mountains of Ruteng have ethnobotany knowledge in the utilization of forest plant to meet their needs. Loss of traditional knowledge would have negative impacts on forest resources, because the indigenous people would have less knowledge on sustainable ways to manage the existing forest resources. This study aims to analyze the level of knowledge of ethnobotany, retention rate, and the rate of change of the annual retention on the indigenous people in the Ruteng mountains. This research was conducted in the Kampong Mano, Lerang, and Wae Rebo, Manggarai District within the Province of Nusa Tenggara Timur in July 2014 to July 2015. The data was obtained through Focus Group Discussion (FGD) semi-structured and in-depth interviews and were analyzed for the level of ethnobotany knowledge, ethnobotany retention index, testing the significance of the factors that affect the level of knowledge with Kruskal Wallis test and Man Whitney. The results of this study shows that the Manggarai communities in the Mountains of Ruteng have local knowledge to meet daily needs, especially food, and medicine through the utilization of forest plant. The level of ethnobotany knowledge is high because the indigenous people still depent their live to forest resources, practice traditional rituals, and inheritance knowledge. The ethnobotany knowledge of young generation decreased that can be indicated forest degradation because the indigenous people would have less knowledge to manage and utilize forest resources.

Keywords: ethnobotany knowledge, forest plant, Manggarai tribe, Ruteng, traditional

INTRODUCTION

Ethnobotany is the study of the interaction between human and plant resources (Cotton 1996; Minnis 2000; Anderson *et al*. 2011; Pei 2013) and important in the conservation of forest plants (Pei 2013). Local communities has interacted with the forest for hundreds of years and are dependent on forest resources so as to have the knowledge of how to use sustainable forest plants (Pei et al., 2009; Pei 2013). A small, compact and unique local community is a self-sustaining community capable of sustainably managing forests as a result of the experience of living dependent and in harmony with nature for hundreds of years.

The loss of local people who have traditional ecological knowledge and socio-economically dependent on the fulfillment of life is one of the causes of tropical forest destruction (Rai & Lalramnghinglova 2010). One effort to prevent the loss of local knowledge is to know the level of local knowledge, retention, and annual changes based on ethnobotany approaches because plants have an important role for local communities. This study aims to describe the ethnobotany knowledge, analyze the level of knowledge of ethnobotany, retention rate and the rate of change of the annual retention on the Manggarai ethnic.

METHODS

This research was carried out for 6 months from July to December 2014. The sample location includes three *kampong* (small traditional village), two *kampong* located around Forest Ruteng, namely *kampong* Mano (8.578° - 8.609°S and 120.528° - 120.552°E), *kampong* Lerang (8.652° - 8.660°S and 120.549° - 120.568°E) and kampong Wae Rebo (8.752° - 8.778° and 120.274° - 120.291°) in the Forest Todo (Figure 1).

The data was obtained through survey, participant observation, focus group discusion (FGD) and in-dept interviews with informants set based on the status and role in the community by purposive and snowball (Sugiyono 2010). The number of respondents 90 people according to age classes and traditional village (kampong). Age-class assessment is based on the ability of local community knowledge acquired during late adolescence or early adulthood, around the age of 15 years (Zent 2009).

Measuring the level of knowledge and ethnobotany using the formula (Philip Gentry 1993a, 1993b): Testing the significance of the factors affecting the level of knowledge of ethnobotany with non-parametric statistical significance (0.05): 1) Kruskal Wallis test, to test the knowledge of ethnobotany differences between kampong and age classes; 2) Man Whitney test, to test the knowledge of the differences of men and women. Measurement of ethnobotany retention index and the level of sustainability using the equation Zent (2009):

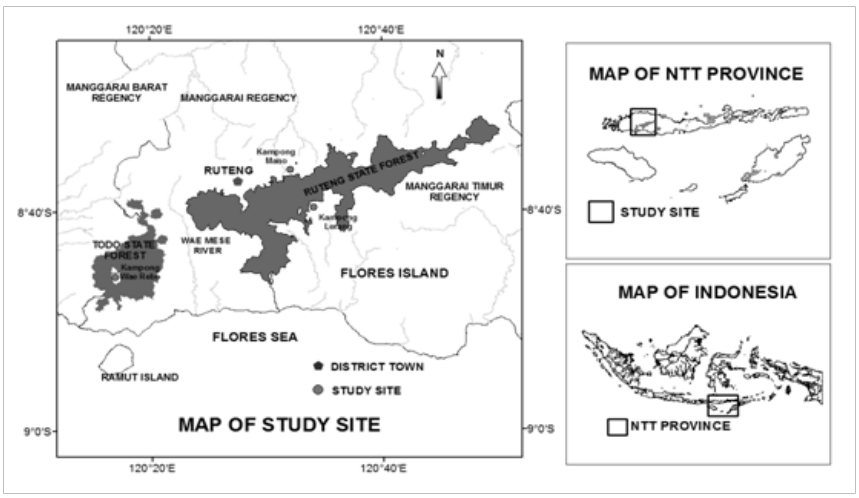

Figure 1 Map of study sites

RESULTS AND DISCUSSION

Ethnobotanical Knowledge of Manggarai Tribe in Ruteng Mountains

Number of forest plant species are utilized by Manggarai people in Ruteng Mountains as many as 161 species (75 families) are divided into 12 kinds of utilization (Table 2). The number of species over 60% in as many as 276 species of forest plant in Ruteng Forest (Wiriadinata 1998), 252 species (Verheijen 1977). Usefulness group that has the highest number of plant species are 73 species of medicinal plants (28,57%) and food 40 species (15,87%). People still use the medicinal plant parts of bark, leaves, roots, and all parts of herbs to cure as many as 40 kinds of diseases.

Tabel 2. Species and Family of Usefulness Forest Plant

Usefulness Plant	Number of Species	Number of Family
Food	40	22
Beverage	4	4
Medicine	73	46
Wood Buildings	32	15
Poison	5	5
Dye	2	2
Equipment and craft materials	34	8
Firewood	31	18
rope material	14	9
Fodder	8	4
myths, legends and rituals	6	4
Ornamental plants and fences	7	6

Level of Knowledge, Retention and Annual Change of Knowledge in Ethnobotany

The average level of knowledge of ethnobotany (Mg) of respondents is quite high, which is between 0,848 to the age class (AC) 1 up to 0.957 at AC 4 (Table 3). Kruskal Wallis test results on residence factors showed the P value = 0.173 (> 0.05), meaning that the difference residence does not cause a difference in the level of knowledge. Mann Whitney test for gender differences in factors indicate the value of P = 0.000 (<0.05), meaning that there are differences in the level of knowledge of ethnobotany men and women. This is because the men in charge of taking forest product while the women do the work at home and help work in the garden.

Kruskal Wallis test on the different of age classes (AC) indicates the value of P = 0.000 (<0.05), meaning that each AC have different levels of knowledge. Lowest knowledge level is at AC 1 and increasing until AC 4 because of the increasing experience in the utilization of forest plant species and interaction with the outside community as researchers and tourists. At AC 5 decrease in the level of knowledge due to aging that causes memory loss (Zent 2009).

The retention rate (RG) is a local community's ability to retain knowledge of ethnobotany (Zent 2009). The lowest RG is AC 1 because of the young age of causes have not been actively involved in traditional institutions and the lack of experience in the forest. Manggarai Community people decreased knowledge of ethnobotany. RG on all AC affects the annual rate

of change in knowledge of ethnobotany (CA). Thelowest CA is the AC 1 and AC 2. The CA of AC 1 is -0.00661 per year, it means that after next 151.29 year, ethnobotanical knowledge will be lost at AC 1. CA of AC 1 is -00 319 per year, its means that after next 131.48 year, the ethnobotanical knowledge at AC 2 will be lost. The decreasing of traditional knowledge due to reduced time to interact with the forest as a result of changes in work activities, such as tourist guide, or porters, and formal education that marginalize local knowledge of ethnobotany.

Table 3. The level of knowledge, retention index, and annual change knowledge of ethnobotany

Age Class	MGj	RG	RC	CA
Kampong Mano				
1 (10–24)	0,829	0,920239	0,885808	−0,00761
2 (25–39)	0,901	0,962626	0,950717	−0,00329
3 (40–54)	0,936	0,987656	0,998707	−0,0000862
4 (55–69)	0,948	1,011144	1,01114	0,000743
5 (70–84)	0,937	1	1	0
Kampong Lerang				
1 (≤24)	0,842	0,929507	0,895374	−0,00698
2 (25–39)	0,907	0,963285	0,946498	−0,00357
3 (40–54)	0,941	0,982558	0,996065	−0,00026
4 (55–69)	0,958	1,013703	1,0137	0,000913
5 (〉69)	0,945	1	1	0
Kampong Wae Rebo				
1 (≤24)	0,871	0,941224	0,921239	−0,00525
2 (25–39)	0,925	0,978792	0,958887	−0,00274
3 (40–54)	0,945	0,979656	0,989451	−0,0007
4 (55–69)	0,965	1,010056	1,01005	0,00067
5 (〉69)	0,955	1	1	0
1 (≤24)	0,848	0,930	0,901	−0,00661
2 (25–39)	0,911	0,968	0,952	−0,00319
3 (40–54)	0,941	0,983	0,995	−0,00035
4 (55–69)	0,957	1,012	1,012	0,000775
5 (〉69)	0,946	1	1	0

Description: Mgj = the average of the level of age class knowledge j; RG = the level of retention of ethnobotany; RC = the level of cumulative retention; CA = the level of annual change

CONCLUSION

Manggarai Community in Ruteng Mountains has made conservation through the utilization of a variety forest plant and is the same as medium level of pressure to the forest because the utilization is not on one particular species and habitats that play a role in the maintenance of ecosystem. The decreasing of these traditional knowledge due to reduced time to interact with the forest that marginalize local knowledge of ethnobotany and closing access to forest plant utilizatin. Therefore, forest management should accomodate traditional community to utilize forest plant to maintain the sustainable traditional knowledge.

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Ethnobotany Of Kepuh (Sterculia Foetida L.) On Sumbawa Community, Nusa Tenggara Barat, Indonesia

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Introduction

Kepuh (*Sterculia foetida* L.) is a species that spread evenly all across in Indonesia. This species was known had multiple benefits in fulfilling community needs such as food, health, entertainment and others (Heyne 1987; Bawa 2010). It believed that kepuh spreading evenly but in fact today it is getting hard to find. In various acts of illegal logging, the change the function of the area into a residential neighborhood, as well as the conditions on the germination of dormant causing kepuh increasingly difficult to develop.

Kepuh in local wisdom of Sumbawa community has its own place, it can be seen from their interaction with Kepuh (Supardi *et al*. 2006). This form of local wisdom need to be assessed as an effort of documentation and preservation of local wisdom in the future.

In facts, declining of kepuh population needs attention or conservation efforts. One approach in the conservation efforts is kepuh utilization by traditional communities. Value on kepuh was believed to be the trigger of conservation action by the public. In order to obtain such information, the study was conducted with the aim of analyzing the condition of kepuh populations and identifying local wisdom in Sumbawa in utilizing kepuh. This information will be used as input and consideration in decision making process of kepuh conservation (sustainable use) in the future.

Methode

The research was conducted in 12 subdistricts in Sumbawa, West Nusa Tenggara, Indonesia namely Sumbawa, Unter Iwes, North Moyo, Moyo Hilir, Moyo Hulu, Lenangguar, Lopok, Lape, Maronge, Plampang, Empang and Tarano. The data collection was conducted in June 2014 s / d in May 2015.

The data collected in this study was divided into two parts, namely the condition of the population of kepuh (kepuh population, distribution pattern and kepuh associations) and the utilization of kepuh (food and medicines).

Forms of kepuh utilization by the community in the Sumbawa District is obtained by means of semi-structured interviews using snowball sampling method. Respondent selection begins with the search key figures (key informant), one or two people like the village chief or shaman who is considered a lot of information about kepuh, then based on information from key figures, we adding other informants (Denzin and Lincoln 2009). This is done until the conditions of data / information obtained saturated (no additional new information).

Results and Discussion

Kepuh as one of the plants that are spread evenly throughout the territory of Indonesia, a sign that God has equipped the plant with many benefits and can be used by many people. This gesture is reinforced by the word of God that none of His creation futile.

Kepuh in the folk wisdom of Sumbawa has a lot of benefits from the roots to the leaves, whether the benefits of food and medicines. These following paragraph will describe each of these benefits.

Food

Kepuh food benefits derived from the seeds. These seeds used as seasoning in various kinds of dishes typical of Sumbawa. Starts from Sepat, Singang (goulash), sirasang, Siong Sira, Cooking (soup) and other variety of other dishes. Seed processing kepuh as seasoning is done by first peeling its skin and roasting and then refined. Bulging with seeds mixed with salt and cayenne and other secret spices (choice if you want to add), it turned into a seasoning called “sira wir”. The name is a blend of wir sira, which means salt and savory meaning (sense created by the

kepuh seed oil). Sira wir is mixed into different types of cuisine. In addition to self-produced, in the district. Sira wir ponds are also traded in the market. One small plastic sira wir costs Rp. 1000 - Rp. 3000.

Kepuh which has been roasted seeds can also be eaten, it resembles a peanut. Contraindications of kepuh excessive consumption of seeds can cause dizziness. Dizziness is believed to be due to the kepuh seeds contain a lot of oil. In order to eliminate the dizziness after consuming the seeds kepuh, first soaked in water use salt prior to the baking or roasting. This method is believed to be potent eliminate the dizziness after consuming the kepuh seeds stout directly. Kepuh seeds can also be used as variety of snacks (cake), one of which chips kepuh. Kepuh seed processing into chips is like making chips melinjo. Seeds that have been roasted or boiled and mashed. 3-4 seeds were united into one mashed chips. After mashed, this crisp and sun dried. Dry chips is then fried and ready to be served. In addition to seeds which can be used as a variety of snacks pastry turns the fruit skin (shell) also can be used as kue. According to Purwati (2010), fruit and peel kepuh can be used as ingredients to make a cake.

Medicinal

Sumbawa community famous with their local wisdom was also used as a kepuh media / public treatment facilities. When people know Sumbawa with oil, then one of the mixture should be present in the oil timber is kepuh. According to some sandro (shaman), this kepuh timber shall be among 44 types of wood are included in the mix of oil manufacture Sumbawa. Wood kepuh regarded as “dea” timber (preferred) in a mixture of oil Sumbawa.

Sumbawa oil is already well known everywhere. This oil is used to treat a variety of diseases, both external and internal medicine diseases, both medical and non-medical. Raw materials used for the manufacture of Sumbawa oil is not haphazard. The material consists of various types of wood taken from the mountains (jungle) even at sea. Wood used depends on the instructions obtained by each sandro were made. Intake of raw materials and the manufacture of oil Sumbawa is only done in the month of Muharram. This is because there is a belief in the month of Muharram, God gives grace treatment on earth. So to get that grace then hereditary Sumbawa oil only made this month.

According Supardi *et al*. (2006), while taking medicine from a first sandro read and salawat

recited to the Prophet Muhammad as much as three time as petition safety. Selection and part of medicinal plants taken according to the type of disease to be treated, depending on the knowledge and belief of each sandro. Further Supardi *et al*. (2006) explains, there sandro who took the medicine from plants by position backs shadow and her reflection. Some also do it facing Mecca and some are taking by pulling the plants. Of pharmaceuticals derived from the bark of plants, sandro usually take from the bottom toward the top. It is intended that the disease is lifted together with the bark peeled media.

As a medicine, kepuh in the Sumbawa District intimately with a sense of mystique. Most people believe in Sumbawa that kepuh trees is inhabited trees / tree demon. The form is great with a wide canopy, making the tree look haunted.

Convinced non medical illness must be opposed by non-medical (mystic), making kepuh often used as an antidote to the spirits of disruption. Good trance, witchcraft and magic as burak, sekancing, lome-lome, sword pekir, bawi koro, koro daggers and others, can be treated using material from kepuh.

Shell kepuh also often used as a container (fishing) neutralizing (ai pelawar), former mama (Kunya tradition betel) former mama (Kunya tradition betel) to be marked on the baby's head (slap). Tepak a way that used to treat baby keeps crying, especially at nightfall. The shell is used because it is believed that the baby crying in the disruption caused by spirits.

Evidence that kepuh into the medicine also demonstrated in open bura (box P3K) Sumbawa community. Since time immemorial people Sumbawa used to keep the preparation of medicines in the open bura. One of the contents that must exist in open bura is a material derived from wood kepuh.

Kepuh used to treat diseases other than non-medical, is also used to treat medical disease. Starting from malaria, cough up blood, bladder stones, fertilizer hair, detoxifying, increase endurance and stamina, headache / migraine, stiff, shortness of breath, asthma, stings of wasps / bees, boils, sores, healing after childbirth, appetite enhancer , and even breast cancer. According Purwati (2010), all parts of the plant kepuh can used as a mixture of herbs.

The bark is used to treat ulcers, sores, blood cleansing postpartum, appetite enhancer, cope with crying babies and spew blood. How easy is kepuh protruding rod, taken together then pounded ginger. Juice of water and drunk. For appetite and a crying baby, bark and pounded

rice kepuh along like scrubs (temar), rubbed all over the body. Kepuh skin is also used as an antidote to poison and fractures. As an antidote, skin kepuh plus “kasela” skin, skin “ketanga”, bark and yellow kemang pounded together, squeezed water and then drunk. As for fractures, skin pounded together with turmeric smeared on the fracture. Spew treatment to blood, skin stem bark kepuh plus islands, crushed and then filter drinking water.

Root seedlings grow kepuh used for endurance and increase stamina. In fact there is a mention that the strength of the same kepuh with earth peg. Therefore some people consider the Sumbawa kepuh as ginseng. Processing is performed after kepuh roots first dried and then boiled in three cups into a glass.

The shell of the burned kepuh believed to reduce dizziness (rolled earth) after affixed to the forehead. Eggshell kepuh also used as “pejula” (container results mamaq “betel nut” parents). Betel is placed in the shell and then rubbed on the head and chest of the person with asthma / shortness of breath. Meanwhile, stew or squeeze the leaves can be used for bathing. This method is believed capable of treating sick with malaria and pegalinu. Kepuh also believed to be potent eliminate swelling caused by bee stings. Eye rings made of wood kepuh attached to any part of the sting, gently bitten areas that will not swell.

Breast cancer disease, kepuh can be used section seeds. Together with a few other ingredients, namely ginger, “Selaparang mira” (a type of grass), “pusuk jeliti”, kepuh finely ground. Using chicken feathers that have been falling, collision result is then applied to the part swell. Fossil kepuh also used in several places in the eastern part of the district. Sumbawa. Wood fossil kepuh placed on jug of drinking water. Fossil wood placed in a jar of water are believed to function as a neutralizer of bacteria.

According to Bawa (2010), oil of seed ethanol extract kepuh potential as free radical agents of 85.05%. in the 60th minute. Kepuh potential as an antioxidant also expressed by other researchers, both part of the seed (Galla 2012) and leaves (Manivannan *et al.*, 2011). This shows that the seeds and leaves kepuh potential supplement is developed into a free-radical scavengers that have an impact on the emergence of various diseases such as cancer, premature aging, inflammation and coronary heart disease. The disease appears due to free radicals can react with proteins, lipoproteins, and DNA (Asih *et al*. 2010).

According Purwati (2010), the results of research in India is known that sterkulat acid in

the seed oil kepuh reach 71.5 to 72.0%. Sterkulat acid can be used as an ingredient of various industrial products such as cosmetics, soap, shampoo, fabric softener and paint. Sap of kepuh potential as an anti-bacterial. Research Kudle *et al.* (2013) showed that the sap can inhibit various activities microbial strains, including Escherichia coli, Pseudomonas putida, Bacillus subtilis, Staphylococcus aureus, Klebsiella pneumoniae. Kepuh sap is acting as an antibiotic against various types of microbes. In addition to the sap, leaves kepuh easy also has potential as an antimicrobial (Singh and Vidyasagar 2014, Vital *et al*. 2010)

Kepuh plant also serves as a medicine in cattle. Kepuh leaves that have been crushed, by people believed to function healthy horse hair. Besides the leaves are also believed to treat pain in the eyes of the buffalo. When taken squeeze water kepuh leaves can treat such symptoms of tuberculosis ("jangkek") in horses.

Conclusions

Sumbawa local wisdom about kepuh can be seen from the utilization of kepuh in the field of food and medicines. In the field of food kepuh used as seasoning named sira wir well as the materials for various types of chips and other snacks. Utilization as a medicine, the kepuh is believed to cure a disease of non-medical and medical, ranging from witchcraft, magic or a disease such as malaria to cancer. Medical activity that using kepuh material could be seen from the manufacture of kepuh wood oil Sumbawa which is recognized as a "dea" timber (preferred) in a mixture of oil Sumbawa.

Dissemination of the importance and benefits of kepuh (*Sterculia foetida* L.) as a multipurpose plants and plants threatened with extinction in the wider community is a priority that we have to do. Further and advance research particularly in improving the life chances of the kepuh become important as the other steps in conservation efforts kepuh.

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Transmission Of Oral Traditions Among The Indigenous Temuan Community In Peninsular Malaysia

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Extended Abstract

The Concern

Out of the population of 31 million in Malaysia in 2016, the indigenous Orang Asli (with a total population of 178,197 in 2010 or an estimated population of 207,000 in 2016) accounted for 0.6%. Comprising 18 sub-ethnic groups, the Orang Asli indigenous community lives within or at the fringes of forest and depends in varying degree on forest resources to sustain daily livelihood (Lim 1997). Over time, the indigenous community has developed and nurtured cultures from their co-existence with the forest environment. For many generations, in their interaction with the forest, the indigenous community learns how to manage the forest resources and deal with severe situations such as climatic disturbances. These knowledge which have been handed down the generations, is collectively known as Traditional Ecological Knowledge (TEK), which has been defined as "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" (Berkes *et al.* 2000). TEK is often associated with the indigenous communities (Berkes 1993).

Proverbs, old sayings and community rules are therefore an effective way to learn about the

TEK of rural population in Malaysia. A better understanding of the proverbs, old sayings and community rules can contribute to solving the problems of modern society, especially in terms of sustainable forest management. However, globally and in Peninsular Malaysia, there is very little research done on collecting and understanding proverbs, old sayings and community rules as means of documenting TEK. In the meantime, there is global general gradual loss of TEK among the indigenous peoples worldwide (Gomez-Baggethun *et al.* 2013, Reyes-Garcia *et al.* 2013) as forest-dependent societies modernize and urbanize. Such challenge is also faced by the indigenous *Temuan* community in Peninsular Malaysia.

The Study

In 2016, the Social Forestry Program at Forest Research Institute Malaysia conducted a study on the oral traditions among the indigenous Temuan community in Peninsular Malaysia. The gathering of proverbs, old sayings and community rules of the Temuan enables better understanding on how oral traditions are transmitted from one generation to another.

FRIM research team gathered a total of 73 oral traditions (comprising 32 old sayings, 28 rules and regulations and 13 proverbs) from 20 Temuan elders (50% males and 50% females) aged 50 and above in six villages. Of the 73 oral traditions, by ecosystem services, the most important are cultural services which accounted for 78% of all oral traditions, followed by regulating services (12%). These two services account for 90% of all 73 oral traditions. Oral traditions for provisioning services and supporting services comprised only 10% of the Temuan oral traditions (Lim *et al.* 2017).

How Oral Traditions Are Transmitted

Staying in the same locality within or adjacent to the forest helps in oral tradition transmission. In general, the Temuan settlements could be considered comprising mainly if not all Temuan in one locality. The daily *lingua* franca among the villages is none other than the Temuan language itself. The same medium of communication facilitates oral tradition transmission.

The religious beliefs and practices of the *Temuan* community in relation to the natural environment also help in oral tradition transmission. The *Temuan* community basically believes in the existence of a high god, i.e. *Tuhan*. It is believed that certain large stones, rivers, tall

trees and mountains are the abodes of the unseen ghosts and spirits, referring to as *nenek-moyang, penunggu, datuk, hantu* (ghost). For the *Temuan* community, the forest has come to be identified with distinct modes of human survival and ways of life that have evolved into distinct cultural systems (Hood 1993). For example, diseases and sicknesses are related to the evil spirits and their activities and hence villagers normally approach the medicine man or ritual curing specialist for treatment (Gomes 1982). Such religious beliefs are translated into the oral traditions to be passed on from one generation to another.

Transmission of oral tradition is passed on through the basic social organisation unit, i.e. the nuclear family. A number of related families form a village and it is common to find families in the village bound by kinship and affinal ties. The nuclear family is responsible both procreation and socialisation of children, inculcating them with the basic cultural values of the *Temuan* (Gomes 1982). In short, the *Temuan* child continues the life-long process of educating himself by progressively being involved in all other spheres of life in the village as well as in the forest, with members of the older generation as well as with others who may play with him and who take the products of the forest as the "natural" items to use in daily life (Dunn 1975). The residential unit of the family is the household, which usually include adopted children and elderly relatives. Household leadership is usually in the hands of the senior man of the family (Lee 1976).

Temuan's source of knowledge on various oral traditions is passed down orally from generation to generation via daily livelihood practices. The most effective way of this form of cultural transmission is when children follow their parents or grandparents to the forest. Household heads normally bring their wives and children when going to the forest for various activities (Gomes 1982). Hence, young *Temuan* are taught directly or indirectly on the oral traditions when they follow the elders performing hand-on activities such as farming, fruit tree cultivation) and harvesting non-timber forest products to meet daily needs (Carey 1976, Gomes 1982, Zalilah & Tham 2002). These provide the best opportunities for the elders to casually impart indigenous rules, proverbs and old sayings. Such practical experience in the real forest environment is most effective in oral tradition transmission.

Close relationship among family members is important in oral tradition transmission. The source of traditional knowledge is from community elders (grandparents and parents). It is a

common sight to see old and young sitting in front of their houses talking to each other during the evening and at night. It is during such relaxing situation that the elders would share their life experience, knowledge and news with the family members.

Marriage among *Temuan* of different villages means the wider use of such traditions. Given a choice, the *Temuan* people prefer to choose their spouses from the same ethnic community. In this study, it was found that the marriage among *Temuan* occurred among villagers in Kampung Orang Asli Sungai Buluh, Kampung Orang Asli Bukit Lagong, Kampung Orang Asli Rasau. This thus facilitates cultural transmission as the spouses share the same language and culture. Social interaction among the *Temuan* in different villages facilitate the transmission of oral traditions.

Cultural transmission is possible as the *Temuan* have a clear system of leadership. The batin is the headman of a number of small villages in a specific area, consisting of people spread over various villages in a region and who can trace descent through a common ancestor. The batin, who has supreme authority, is responsible for overall administration of the villages, ranging from settling dispute to acting as a bomoh (shaman) i.e. the traditional medicine man. His leadership also acts as custom advisor facilitating cultural transmission.

Has Social Change Affected Oral Traditions Transmission?

Social change has affected the transmission of oral traditions. Since Malaysia's independence in 1957, the *Temuan* community has generally experienced social-cultural and economic transformation. Over the last six decades (1957-2017), social change has resulted in lesser dependence on the forest ecosystem for livelihood. The *Temuan* community is gradually moving away from forest dependence to that of engaging in non-forestry activities. In general, the living standard of the community has improved. Children have better chance to attend schools compared to their parents. Their ties with the forests become less and loose. Consequently, such change has affected the transmission of oral traditions from one generation to another. Knowledge of oral traditions collected from 68 *Temuan* youths between 15 and 49 years old from three *Temuan* villages showed that not all have heard of oral traditions. Of 18 old sayings related to cultural services, those in the age group of 15−19 have shown lower percentage (42-83%) in terms of whether they have heard the old sayings compared to the 40-49 age

group (75-100%). Overall, between 44 to 96% of all 68 respondents has heard of these 18 old sayings. For respondents who have heard of the oral traditions, they generally understand their meanings. Between 90 to 100% of youths who have heard of cultural service oral traditions 18 (old sayings) agreed to them.

Conclusion

The 2016 study findings showed that the indigenous *Temuan* community manages to pass down forest-related oral traditions from one generation to another as the community are closely tied up with common settlement, close family relationship, marriage, close interaction with forest, inter-village communication and shared religious beliefs. However, there is a hidden risk that the oral traditions may dwindle in importance as the community urbanizes and young generation gets better education thus interacts less with the forest. Cultural transmission would also be affected when the new generation (especially males) marries non-*Temuan* who might not be able to play a role in educating young children with *Temuan* oral traditions. While globalization, urbanization and social change is unavoidable, the subsequent strategy in the transmission of oral traditions of the indigenous community might lie in applying scientific flavour to traditional knowledge explanation and practices.

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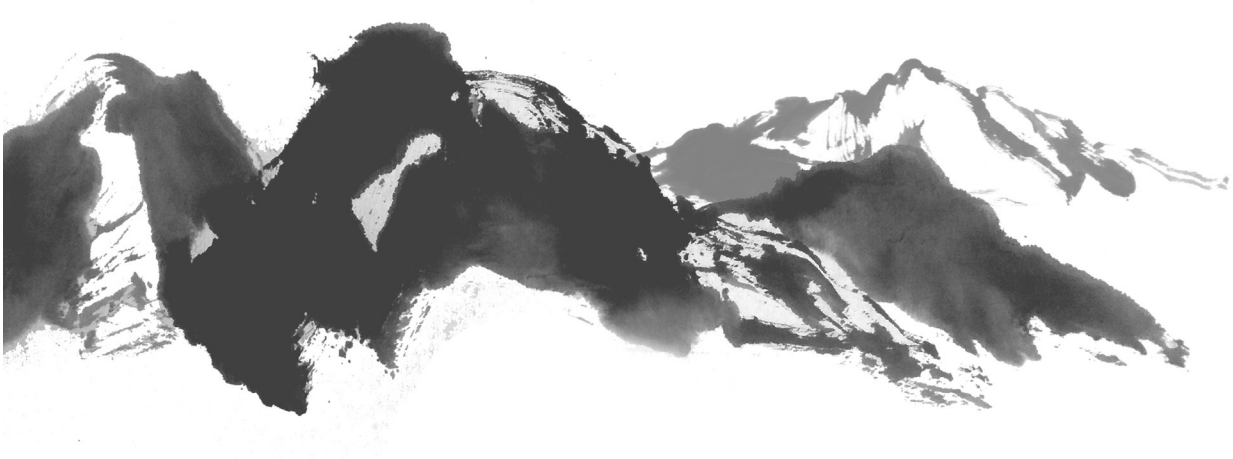
Field Trip
11.02~11.03



◆ Field Tour: 2~3 November

Time	2 November 2017
08:00–11:00	Move to **Forest Medicinal Resources Research Center, YeongJu.**
11:00–12:00	Introduction of **Forest Medicinal Resources Research Center**
12:00–13:30	Lunch
13:30–14:30	Move to **Buseoksa Temple, YeongJu**
14:30–16:30	Tour at **Buseoksa Temple, YeongJu**
16:30–17:30	Move to **Hahoe Traditional Folk Village (www.hahoe.or.kr)**
17:30–19:00	Dinner
19:00–19:30	Check-in **GAGYEONGJAE and DEOKYEOJAE**
Time	**3 November 2017**
08:00–09:00	Breakfast
09:00–09:30	Move to **Buyongdae Cliff**
09:30–10:00	Enjoy the **View at Buyongdae Cliff**
10:00–10:30	Move to **Hahoe Traditional Folk Village**
10:30–12:30	Take a Walk at **Hahoe Traditional Folk Village**
12:30–14:00	Lunch
14:00–15:00	View the Performance of **Hahoe Mask Dance Drama**
15:00–19:30	Move to Seoul

Andong City

Andong - the home of traditional Korean culture - is blessed with cultural items from virtually every period of Korean history. There are many wonderful wooden cultural artifacts, which had preserved the memories of the past, allowing us to appreciate the culture of Korean ancestors. People have lived in this area since the ancient times, and as a result, the richness of Korea's magnificent folk culture has been integrated into Korean daily live.

Buseok Temple

Buseok Temple boasts Korea's oldest wooden building, dubbed "Muryangsujeon," five national treasures, six treasures, and two provincial tangible cultural heritages, among many other heritages. It is one of the country's ten major temples.

HaHoe village

Founded in the 14th-15th centuries, Hahoe and Yangdong are seen as the two most representative historic clan villages in the Republic of Korea. The villages were located to provide both physical and spiritual nourishment from their surrounding landscapes. Moreover, Hahoe Village has conserved many cultural heritages which show Korean traditional living cultures and ancient architectural styles.