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"Conserving Sumatran Wildlife Heritage for Sustainable Livelihood"

Institute for Research and Community Service
University of Lampung

3rd INTERNATIONAL WILDLIFE SYMPOSIUM

"Conserving Sumatran Wildlife Heritage for Sustainable Livelihood"

PROCEEDING

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RESEARCH AND DEVELOPMENT CENTER OF ENVIRONMENT
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PROCEEDING IWS 2016

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WELCOMING SPEECH FROM CHAIR PERSON OF THE ORGANIZING COMMITTEE

Distinguished guests,

- Minister of Environment and Forestry Republic of Indonesia, Dr. Siti Nurbaya or representing,
- Rector University of Lampung, Prof. Dr. Ir. Hasriadi Mat Akin, M.P.
- Honorable Keynote Speaker, Invited Speakers, participants, sponshorships, ladies and gentlemen

Assalamu'alaikum warohmatullohi wabarokatuh.
May God bless all of us.
Tabik pun.

It gives me great pleasure to extend to you all a very warm welcome to the 3rd International Wildlife Symposium (IWS 2016), here in Bandar Lampung.

Ladies and gentlemen, it is gratifying to note that symposium is designed to improve awareness on wildlife conservation and sustainability in order to improve the welfare of society. To increase the consciousness and understanding on the potenstial, economic value, and sustainable management of tropical wildlife through bioengineering application and to strengthen international scientific network of biological and related scientiests to share and exchange progress in various fields of wildlife research.

No matter how much we can do by ourselves on the institutional and national level, it is never enough. International level of collaboration work would be the best answer. Therefore I wish that this event which is attended by distinguished speaker and attendants from Malaysia, India, US, and Indonesia, would be a great opportunity for us to establish scientific collaboration between scientist internationally.

Hereby, on the behalf of Organizing Committee I acknowledge Dr. Siti Nurbaya, Minister of Environment and Forestry Republic of Indonesia or representing, and also to Mrs. Siti Nur Hidayati, Ph.D. (Middle Tennessee State University), as a keynote speaker, and also to the following invited speakers, Dr. Ashley Brooks (WWF Tigers Alive Initiativ), Dr. Barney Long (Global Wildlife Conservation), and drh. Dedi Candra (Way Kambas National Park) for willingness to share their valuable knowledge and scientific information.

To make this symposium happen, I would like to gratefully acknowledge to the valuable contributions from personal and institutional sponshorships including University of Lampung, Doctor Coffee, Aska Jaya, PT. Nestle Indonesia, Levi's Indonesia, and Rumah Kolaborasi (Ru-Ko). In particular, thanks a lot to the World Wide Fund (WWF) for supporting the financing of this symposium.

I would like also to take this opportunity to express my sincere thanks to the Head and Secretary of Research Institution and Community Service University of Lampung, for giving us opportunity and support to organize this symposium. Heartfelt thank is delivered to

steering committee, academic reviewers, organizing committee, for all participation and hard works. All of them have been working since the begining of the planning stage and they are still here today for all of us.

Despite our best efforts, it is inevitable that there is a lack in organizing this symposium and I proudly apologize to all invited speakers, oral and poster presenters, attendants, donators, and committee members.

Finally, I would like to offer my best wishes for a highly enjoyable, succesful, productive and fruitful symposium.

Thank you so much.

Dr. Erdi Suroso
Chair Person of the Organizing Committee

OPENING REMARKS FROM THE HEAD OF RESEARCH INSTITUTION AND COMMUNITY SERVICE, UNIVERSITY OF LAMPUNG

Distinguished guests

- Minister of Environment and Forestry Republic of Indonesia, Dr. Siti Nurbaya or representing,
- Rector University of Lampung, Prof. Dr. Ir. Hasriadi Mat Akin, M.P.
- Honorable Keynote Speaker, Invited Speakers, participants, sponshorships, ladies and gentlemen

Assalamu'alaikum warohmatullohi wabarokatuh.
May God give us health and happiness.
Tabik pun.

It is my great pleasure to welcome all speakers and participants to the 3rd International Wildlife Symposium 2016 (IWS-2016) held in Meeting Room 2nd floor Rektorat University of Lampung, Bandar Lampung, Indonesia. I recognize that this symposium is principally designed to enhance and strengthen the contribution of researchers to the wildlife conservation. The theme of this event is "*Conserving Sumatran Wildlife Heritage for Sustainable Livelihood*". Therefore, I wish that this event will be a great opportunity and wonderfull venue to lay down a cooperative framework and to internationally establish scientific collaboration among scientiests.

Hereby, I appreciatively acknowledge Dr. Siti Nurbaya, Minister of Environment and Forestry Republic of Indonesia, and also to Mrs. Siti Nur Hidayati, Ph.D. (Middle Tennessee State University), as a keynote speaker, and also to the following invited speakers, Dr. Ashley Brooks (WWF Tigers Alive Initiativ), Dr. Barney Long (Global Wildlife Conservation), and drh. Dedi Candra (Way Kambas National Park) for delivering their valuable scientific information.

My appreciation also goes to the Steering Committee, Academic Reviewers, and the Organizing Committee that spend almost their valuable time to review, manage and organize this symposium effectively. I also would like to gretefully acknowledge to the valuable contributions from personal and institutional sponshorship and funding to make this program happen.

Finally, I wish you all best wishes to have meaningfull and useful symposium. Thank you.

Wassalamu'alaikum warohmatullohi wabarokatuh.

Warsono, Ph.D.
Head of Research Institutions and Community Service

KEYNOTE SPEAKER
MINISTER OF ENVIRONMENT AND FORESTRY
REPUBLIC OF INDONESIA

AT 3rd INTERNATIONAL WILDLIFE SYMPOSIUM
Bandar Lampung, 18 October 2016

Distinguished Participants,
Ladies and Gentlemen

Assalamu'alaikum wr.wb
Good morning and May God bless us.

It is my great honor and pleasure to attend to this event and deliver my speak. Let me express my appreciation to University of Lampung in collaboration with WWF Indonesia for organizing this symposium. Hopefully from this symposium which brings together scientific community and field experts, where we share knowledge, experience and concern, can enhance and synergize our efforts to cope issues in various aspects.

Ladies and gentlemen,

Indonesia should be proud to be a country which has rich biodiversity, reported it reaches 47.910 species, that makes Indonesia is well known as mega biodiversity country. At the same time, Indonesia is responsible to promote sustainable use of biodiversity to improve society and country's well-being.

This responsibility will be challenging for Indonesia, considering our country as one of the hot spot of biodiversity loss. The threat mainly coming from habitat loss caused by encroachment, forest fragmentation and forest fires as well as coming from illegal logging, and trade.

Plants and wildlife are one of supporting elements for human life, which their existence hold important and irreplaceable roles. Having that said, I would like to take this opportunity to encourage all of us to protect and conserve the sustainability of wildlife and plants as heritage for the next generation and sustainable livelihood.

Ladies and gentlemen,

Strategy and policy of Indonesian Government to secure the biodiversity are directed into three focuses namely protection, preservation and sustainable use of ecosystem, species and genetic resources. National regulation has been enacted, to mention some, including UU 5/ 1990, UU 41/ 1999, UU 32/ 2009, PP 7/ 1999, PP 8/ 1999 as well as strategic and action plan of several endangered and umbrella species such as sumatran tiger, orangutan, rhino, sumatran elephant, javan eagle, tapir, proboscis monkey (*bekantan*), maleo, banteng and babyrousa.

Our global commitment on biodiversity conservation also reflected on ratification of several conventions such as Convention on Biodiversity (CBD) through UU 5/1994, Ramsar through Keppres No 48/1991, UNFCCC through UU No. 6/1994 and protocols such as Kyoto Protocol through UU No. 17/ 2004, Nagoya Protocol through UU 11/ 2013 and Cartagena Protocol through UU 2/ 2014.

We also aware that in this global era, efforts on the conservation of biodiversity always in the spotlight of international attention. Threats on the biodiversity, for example illegal killing of endangered species have and will always be connected with the issues of deforestation and habitat destruction and these will be the entry points for discrediting and black-campaigning against Indonesia, that in turn can be impacted to Indonesia's products in the global market. Thus saving the biodiversity requires active participation from all stakeholders including private sector.

Biodiversity including ecosystem and genetic resources can and should be utilized in a sustainable manner for human welfare such as for source of food, clothes, medicine, water, energy, and oxygen, for controlling climate and disease, ecosystem balance as well as for leisure.

Sustainable use of biodiversity, for example as I mention before for source of food has been a main discussion in many forums. With the growth of human population, it is a must to conduct study and formulate strategy to maintain our natural resources that can be utilized not only for our generation but also for our kids' generation and further. With this regard, Indonesia as mega-biodiversity country plays an important role as source of germplasm which may contain useful substance for human health or important for bioprospecting to increase country's revenue.

To illustrate, global trade on medicinal herbs reach approximately US$ 60 billion/year. While protection of coral to support genetic resources for research on medicine can provide revenue US$ 55-1.110 per ha/year in South East Asia (source: CBD). Indonesia revenue on export from traditional medicine (jamu) reach US$ 113 million, while for domestic reach US$ 100 million (source: BPOM 2007).

Ladies and gentlemen,

Despite having all of potency and opportunity, there are also threats and challenges facing our existing biodiversity:

Globally, these includes pressure from human population growth which require demand for land, food, energy and clean water; climate change; and increasing demand of genetic resources for food and energy.

Nationally, these includes illegal logging, forest fire, encroachment, illegal trade, declining of wildlife population, loss of habitat, invasive alien species, as well as low resources capacity and quantity (human and fund) and lack of integrated database.

Hence enormous efforts have been taken by Government Indonesia namely:

a. public awareness and campaign by involving religious leader and other groups for promoting religious and local wisdoms as well as local engagement.
b. to restore and protect the population at local level in their habitat to prevent further damage to the population.
c. Strengthen coordination among government institutions and networking with CSO's.

Currently Ministry of Environment and Forestry Indonesia with relevant law enforcement institutions (Police, General Attorney, Financial Transaction Reports and Analysis Center, and Financial Services Authority) have commitment to support "multi door law enforcement". By implementing multi door law enforcement initiative including applying of

corruption and money laundry act in line with environmental, conservation and forestry act is expected that it could strengthen deterrent effects.

Ladies and gentlemen,

As we are all aware, illegal activity related to environmental and forestry including wildlife illegal trafficking is now even more sophisticated, organized and transnational crime, which involves a large network of actors that make up its own chain. We cannot stop it alone. Therefore collaborative among relevant actor/ stakeholder is badly needed to tackle these issues in effectively.

We believe that global collaboration through bilateral, regional and multilateral cooperation can increase the effectiveness in combating illegal activities such as wildlife trafficking. Hence, Indonesia has involved in global collaboration such as:

a. Bilateral cooperation with Vietnam and USA
b. Regional cooperation in the framework of the ASEAN-WEN (Wildlife Enforcement Network)
c. London Conference, Kasane Conference, The Hague Conference on wildlife
d. Multilteral Cooperation: Interpol, CITES, Global Wildlife Programme
e. We also have cooperation with International and National NGO concern in combating wildlife crime, such WWF, WCS, etc.

In this moment, I would also inform that we are in the progress renewing our conservation act in order to increase effectiveness of conservation efforts including wildlife law enforcement.

Distinguish ladies and gentlemen,

To develop strategy on biodiversity conservation and sustainable use require strong research and scientific evidence which will be needed to convince government agency and related stakeholder to be aware and act on the right approach. Thus, active participation of scientific community in communicating their knowledge should be appreciated and facilitated such as through this event.

To conclude, the efforts for the conservation of biodiversity required the involvement of us all, not just the governmental institutions only, but also private sectors, NGOs, civil societies and scientific community. I sincerely hope that this symposium can provide a media for us all to share knowledge, experience and concern, and to synergize all efforts.

Wasalamualaikum Warahmatullohi Wabarohkatuh

Bandar Lampung, 18 October 2016

Minister of Environment and Forestry,

Dr. Siti Nurbaya

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PHYTOTELMATA SPECIES AND ITS DISTRIBUTION IN SOUTH PRINGSEWU, LAMPUNG

Putri Minggar Oktaviani, Emantis Rosa, Yulianty

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ABSTRACT

Phytotelmata is a unique morphological characteristic plant, it can keep waterbody that is use as breeding site for insect like mosquito. This research was done to identify phytotelmata and its distribution in South Pringsewu Village, Lampung on March 2016. Plant identification was in Botani Laboratory Biology Department Lampung University. Five phytotelmata species of 31 individuals were identify with two different types node (Ketiak Daun, KD) and tree holes (Lubang Pohon, LP). Value distribution and dispersal patterns of five species of plants have a value Ip>0 belonging to the clumped distrbution patterns.

Keywods : node (Ketiak Daun, KD), phytotelmata, pringsewu, tree holes (Lubang Pohon, LP)

1. INTRODUCTION

Indonesia is one country that has a high biological wealth of flora and fauna (Suryana, 2008). The high level of biodiversity causes traits and characteristics which are different in each region (Nandika, 2006). The existence of living beings in a place to be related to habitat and ecological niches. Living creatures that are in a habitat will be distributed to the appropriate areas for survival (Kramadibrata, 1996). Distribution can be interpreted as spread of any organism in a habitat. Spreading that occurs will cause patterns of spread of, ie the spread in various ways, random and clumped. Pattern - the pattern of spread can occur in both animals and plants, including plants phytotelmata (Indriyanto, 2008). Phytotelmata is a plant that can hold water in the body that can serve as habitat for breeding grounds by a variety of organisms, including insects (Kitching, 1971; Sota, 1996; Fish 1983).

Pringsewu is one of the districts with fairly rapid development and population growth are quite large. Increased population growth will be accompanied by development, particularly in housing construction. The existence of gardens around the housing will have an impact on the number of plant species that grows mainly phytotelmata types used by mosquitoes as breeding places naturally. Until now there has been no research on the distribution of plants phytotelmata and types of mosquitoes found in the District Pringsewu. Therefore, research is needed in order to know the type and distribution of phytotelmata in Districts South Pringsewu Village, Lampung in the hope of providing information to the public about the type and distribution of phytotelmata and the types of mosquitoes that inhabit it, and as a reference for relevant agencies in the efforts to control disease-carrying mosquitoes.

2. MATERIALS AND METHODS

This research was conducted in March 2016 South Pringsewu Village, Lampung. Identification phytotelmata conducted at the Botany Laboratory, Biology Department, Faculty of Mathematics and Natural Sciences, Lampung University. The tools will be used in this research is the 3200D NIKON cameras, thermometers, measuring cups, data sheets, stationery, sample bottles, large plastic, paper label, GPS, pH paper, volumetric pipette and hygrometer. Materials used are plant phytotelmata found. Location research is using *purposive sampling*. Sampling plant belonging to the plant criteria phytotelmata done directly. Data obtained from observations later in the analysis. To determine the distribution phytotelmata using the formula Morista Index (Krebs, 1989) are as follows:

$$Id = n\frac{\Sigma x^2 - \Sigma x}{(\Sigma x^2) - \Sigma x}$$

Information :

Id	:	Deployment Index Morista
n	:	Number of plots
Σx	:	Number of individuals of a species per sample plots
Σx^2	:	The sum of squares of each individual species plots
$X^2_{0,975}$	=	0,216
$X^2_{0,025}$	=	9,348

With the following provisions:

1. If the value of Ip <0 then a uniform distribution pattern
2. If the value Ip = 0, the pattern of random distribution
3. If the value Ip> 0 then the distribution pattern of clump

3. RESULTS AND DISCUSSION

a. Type and amount phytotelmata found in South Pringsewu Village, Lampung

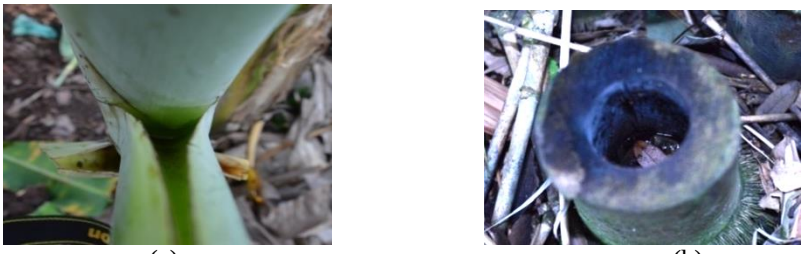
Observance of the kind phytotelmata in the village of South Pringsewu District of Pringsewu found three tribes and five types of plants phytotelmata. Phytotelmata types most commonly found are the type (LP) as many as 17 individuals. The average volume of water being stored in phytotelmata the highest type of tree holes (LP) of 30.52 ml (Table 1). The number of plant species most commonly found are Gigantochloa atroviolacea of Poaceae tribes of nine individuals who are able to accommodate a puddle of 160 individuals were found.

Table 1. Type and amount phytotelmata found in the village of South Pringsewu Pringsewu Subdistrict, Regency of Lampung Pringsewu

No.	Family	Plant Type	Type of Phytotelmata	Water Volume (ml)	Number of individuals	The total number of plants (individual)
1	Araceae	*C. esculenta*	KD	23	4	41
		A. macrorrhiza	KD	32,2	5	17
2	Musaceae	*M. paradisiaca*	KD	42	5	57
3	Poaceae	*G. apus*	LP	32,87	8	160
		G. atroviolacea	LP	28,4	9	160
Jumlah			**-**	**158,47**	**31**	**435**

Note: KD : Node ;
LP : Tree Hole

The observation of the type phytotelmata, found two types, namely the type KD phytotelmata (a) and type LP (b) (Figure 1).



(a) (b)

Figure 1. Types of phytotelmata found, (a) type phytotelmata node (Ketiak Daun, KD) and (b) type phytotelmata tree holes (Lubang Pohon, LP)

b. Distribution and dispersal patterns phytotelmata

Value distribution of five types phytotelmata found, on average, have a distribution value> 0. This value indicates that the distribution of phytotelmata found in the Southern District of Pringsewu Pringsewu village belonging to the type of clustered distribution patterns (Table 2).

Table 2. Results of the value of the distribution and pattern of spread in the village Pringsewu phytotelmata Southern District of Pringsewu

No.	Plant type	Distribution Value	spread pattern
1.	*C. esculenta*	1	Clump
2.	*A. macrorrhiza*	1	Clump
3.	*M. paradisiaca*	1	Clump
4.	*G. apus*	1	Clump
5.	*G. atroviolacea*	1	Clump

The identification results that have been committed against phytotelmata plants, plant species most commonly found are the type *Gigantochloa apus* (apus bamboo) and *G. atroviolacea* (black bamboo) of Poaceae tribes that as many as 160 individuals (Table 1). A large number of these plants is suspected because of the environmental conditions in accordance with the District Pringsewu environmental factors required by the bamboo plants to grow and reproduce. According to Sutiyono and friends (1996), bamboo plants will breed well if the air temperature ranges between 8.8°C-36°C and the humidity ranges between 40-85%. Temperatures in the village of South Pringsewu District of Pringsewu range 26-31°C and humidity ranging from 63-78%. It can be argued that the factor of temperature and humidity in the village of South Pringsewu District of Pringsewu suitable for the development of the bamboo plant. In addition to the temperature and humidity, soil type and texture is suspected to be a factor optimal plant growth bamboo. Sutiyono and friends (1996) adds that the bamboo plants can grow in all types of soil except soils located near the beach.

If seen from the history, the name of District Pringsewu from Javanese namely "Pringsewu" which means "Thousand Bamboo", so the District Pringsewu dubbed the City of Thousand Bambu. This may formerly District Pringsewu overgrown with dense bamboo plants and these conditions are still to be found (District Pringsewu, 2015).

M. paradisiaca plant species of the tribe Musaceae also found that as many as five people from 57 individuals (Table 1). This is likely due to environmental factors in the District Pringsewu support for the life of the banana plant, where the air temperature of about 26-31°C and the texture of the soil in such studies are clay and silty clay. According to Nakasone and Paull (1998), the banana can grow in an environment with a temperature of 15-31°C and the optimum temperature of around 27°C as well as soil texture can be planted banana plants in the form of clay, sand to heavy clay. Due to the environmental conditions that support, society deliberately planted banana plants so the plant is to be one of the featured commodities.

This is supported by data from Badan Pusat Statistics of Pringsewu that kind of fruits that lots produced in the District Pringsewu are bananas (BPS, 2015). Pringsewu a district whose land is quite widely used in the agricultural sector.

If seen from the numbers, the number of individuals that can hold stagnant water is fairly low when compared with the total number of plants, of which five species of plants found there are 31 people can accommodate a puddle of 435 individuals were found (Table 1). But suspected this amount can be increased if at the time of taking and observations in conjunction with the rainy season and the plants was not damaged by the activity of animals and humans.

To determine the distribution patterns phytotelmata, obtained from the analysis of the value of the distribution. Distribution value derived from analysis Morista Index (Katili, 2013), in this study the average - average> 0 showing the clumped distribution patterns. According to Indriyanto (2008) distribution patterns are common in both animals and plants are clustered pattern. Katili (2013) also

says that the distribution pattern mengolompok a pattern that often occurs in nature, this is due to the need for the same environmental factors. Plants will be clustered (grouped) in a region when soil and environmental conditions conducive to the growth (Campbell, 2010).

The distribution pattern of plants which groups can also be caused due to the reproduction the plants, such as plants that reproduce both by seeds wherein seed does not fall far from its parent and reproductive vegetative bud formation, where the shoots that grow not far from its parent (Campbell, 2000) , As the plant *G. atroviolacea* (black bamboo) and *G. apus* (apus bamboo) is the most abundant in this study had a vegetative reproduction (asexual) is a way of breeding involving only one parent and new individuals that appear to originate from the parent body , Vegetative reproduction is divided into two, namely natural and artificial. Vegetative reproduction is naturally there are several kinds, one of which is by way of the formation of buds. One such example is bamboo (Abdurahman, 2008).

4. COCLUSION

The conclusions that can be drawn from this study are:

1. The species most commonly found are the type *G. artoviolacea* and *G.apus.*
2. South Pringsewu village, sub-district administrative Pringsewu plant species are found to have a distribution value> 0 means have adequate clustered distribution patterns.
3. Type phytotelmata most abundant and capable of accommodating a puddle of water that is the type Node (KD)

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the author would like to thank the government Pringsewu southern village, friends who have provided advice, criticism and suggestions in this study and those who have helped in the implementation of this study. Thank you very much.

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