

Keynote Speaker:

International Conference on Biodiversity

**Organized by the Society for Indonesian Biodiversity in collaboration with
the Universitas Negeri Gorontalo and Universitas Sebelas Maret
August 20, 2016**

**Strategy of Conservation Coastal Biodiversity
Through Strengthening the Basic of Education
(A strategy for elementary school level)**

Prof. Dr. Ramli Utina, M.Pd

INTERNATIONAL CONFERENCE ON BIODIVERSITY

Society for Indonesian Biodiversity
State University of Gorontalo & Sebelas Maret University
Gorontalo, Indonesia, August 20-21, 2016

Certificate of Appreciation

Awarded with thanks to:

Prof. Dr. Ramli Utina

In recognition of his/her significant contribution as:

Keynote Speaker

of

International Conference on Biodiversity

Gorontalo, Indonesia, 21st August 2016

Prof. Dr. Sukana, M.Sc., Ph.D.

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**INTERNATIONAL CONFERENCE ON BIODIVERSITY
SOCIETY FOR INDOONESIAN BIODIVERSITY &
STATE UNIVERSITY OF GORONTALO
GORONTALO, INDONESIA, AUGUST 20, 2016**

Subject: Invitation for ICB Gorontalo (August 20, 2016)

Prof. Dr. Ramli Utina
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Dear Sir,

We are writing to formally request that you serve as the Keynote Speaker at the **International Conference on Biodiversity**, which will be held in the Campus of Universitas Negeri Gorontalo (UNG), Gorontalo, Indonesia on **August 20, 2016**. As a leader in the conservation biology and development, we are sure that the participants at the conference will appreciate hearing your perspectives on our theme:

Policies on Environmental Development and Sustainable Use of Biodiversity.

The Conference is organized by the Society for Indonesian Biodiversity, in collaboration with the Universitas Negeri Gorontalo (UNG) and Universitas Sebelas Maret (UNS), as well as Biodiversitas and Nusantara Bioscience journals.

We hope that you will consider serving as our Keynote speaker for this conference. Feel free to contact us for more information. We look forward to your presence and guidance.



Gorontalo, 20 July 2016,

-Chairman,

Ahmad Dwi Setyawan
NIP. 196905171997021005

SECRETARIAT ADDRESS

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Strategy of Conservation Coastal Biodiversity Through Strengthening the Basic of Education (A strategy for rural elementary school)

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Why coastal biodiversity ??

- Indonesia has 95.000 kilometer coastline, has 3 million hectare mangrove forest (about 23% in the world) (Giri et al., 2011).
- Great diversity of coastal ecosystems with potential species biodiversity;
- Mangrove (vegetation/fruit) potential for a food, medicine, herbal;
- Biodiversity of fish, shrimp, shellfish in coastal ecosystem as source of protein, and provide income for society;



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- Mangrove forests as carbon storage;
- Coastal ecosystem and biodiversity for ecotourism;
(Whale Shark in Botubarani; Olele beach, Bajo community living in the floating village of Torosiaje);



coastal biodiversity and its ecosystem should be preserved and maintained in order to provided and sustainable to support community life.

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Coastal biodiversity problem:

- Indonesia has lost 40% of mangrove forest, so that Indonesia has a speed of mangrove destruction in the world (Campbell & Brown, 2015).
- Logging, conversion;
- Reclamation;
- Explosives for fishing;
- Pressures on biodiversity and its ecosystem shows **the ecological crisis**;



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THE SOLUTION:

- ⊙ Ecological crisis closely related to the human character and behavior toward environment, and using of biological resources beyond the capacity to growth.
- ⊙ Human character and care behavior to the environment should be built since the children age (Piaget);
- ⊙ Curriculum of elementary school year 2013, *the learning ecosystem in natural science meant to build character and behavior to care the environment.*



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- ◎ Teacher have to construct teaching materials sciences and learning media in the context of coastal environments, including the values of local wisdom that developed in coastal communities;
- ◎ Contextual learning of ecosystem and biodiversity through direct objects in the coastal around the school.



Go SMarT (Gorontalo School of Mangrove Tomini)

Long term programme of **Center for Coastal Ecology based on Local Wisdom** State University of Gorontalo:

Go SMART:

- a) Construct **mind sett** of people in order to care/aware coastal resources.
- b) Programme; formal school and non formal setting.
- c) Activities of Go Smart, i.e:
 - ✓ Women empowering in coastal rural, (training utilization of mangrove fruit for food);
 - ✓ Research: carbon stock on mangrove forest, coastal biodiversity.
 - ✓ Aquaculture based on Bajo local wisdom in Torosiaje;
 - ✓ SMART = **sahabat mangrove terdidik** (mangrove friendly educated); non formal programme for kids in coastal society.



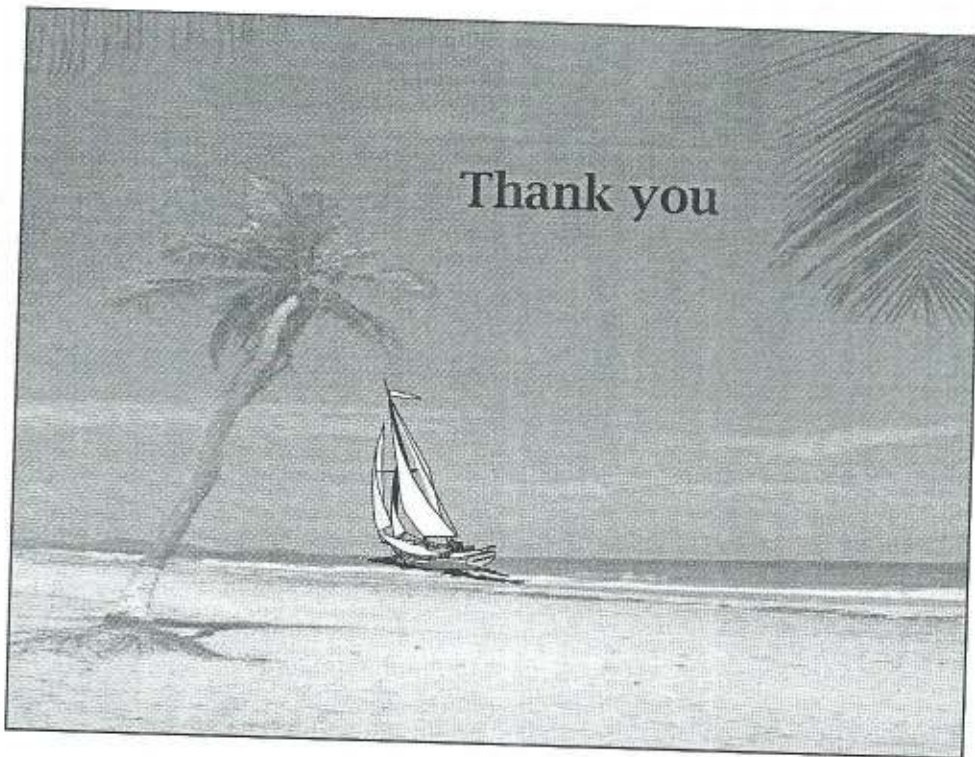
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Conclusion;

- a. Creation of character and care behavior to the coastal ecosystem and biodiversity that can be formed since elementary school through the strengthening the values of science competencies and strengthening cultural values and local wisdom in learning natural science subject matter.
- b. Expected to form a generation that care the environment. It is part of a mental revolution.



Thank you



**Strategy of Conservation Coastal Biodiversity
Through Strengthening the Basic of Education
(A strategy for elementary school level)**

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Abstract

The ecosystem and biodiversity in the coastal of Indonesia as a great resources for living society. Mangrove vegetation, seagrass and diversity of biotic species as food resources, medicine, in addition the mangrove ecosystem as carbon storage. Conservation of mangrove and its ecosystem for biodiversity recovery has been performed. However, biodiversity in coastal ecosystems exploited continuously and ignores the recovery of biological resources, and even damage the coastal ecosystem as an impact of logging, conversion, reclamation, and explosives for fishing. Two major factors that causing the current ecological crisis, namely; human behavior towards nature, and use of natural resources beyond the capacity to grow. Human character and environmental care behavior should be formed since the child age. Process of thinking of childrens are still depends on what was seen and learned from their environment. In the curriculum of elementary schools, learning of ecosystem concept in the natural sciences subject matter meant to build character and environmental care behavior of children, in addition to understanding the concept of ecosystem itself. Learning process in the scientific approach prioritizes the real science process that occurs in natural, such as coastal ecosystem, while the children's understanding the ecosystem that underlies of forms environmental care behavior needs to be strengthened by the values of cultural or local wisdom of coastal society. This paper attempts to review the coastal biodiversity conservation through strengthening basic level of education in elementary school on coastal rural. Learning science in elementary school is strengthened by understanding of science processes in the coastal environment and the cultural values or local wisdom in coastal society.

Keywords: *conservation, biodiversity, human behavior, basic education*

Background

Indonesia has a long coastline, has a great diversity of ecosystems with high biodiversity potential as a resource for the community and economic growth. The coastal area has biodiversity in mangrove, seagrass and coral reefs, as well as the ecosystem services that support economic development and people's lives.

Types of mangrove vegetation has the potential for a food, such as fruits kind *Bruguiera* that can be used as flour for foodstuffs, the manufacture of a variety of pastries and cakes (PKEPKL, 2014), and the fruit of mangrove species *Avicenia* can be shaped beverage syrup that is mixed with the essence of corn (PKEPKL, 2013).

In the other, the true mangroves and mangrove associates used as herbal, medicinal and cosmetic raw materials. Bajo coastal communities Pohuwato utilize mangrove and seagrass

as traditional medicine as venomous fish poisoning (Ristoja, 2012). Seagrass is used as raw material for a craft that has economic value.

The coastal ecosystem has the biodiversity of aquatic biota that are useful for food and medicine. Aquatic biota in the coastal ecosystem has been used as a food source of protein, such as fish, shrimp, shellfish. Gorontalo coastal communities cultivate shellfish into various forms of food such as chips, crackers, (Solang, 20014). Local communities harvest shrimp, shellfish, crabs, and a variety of fish species of mangrove ecosystems, and provide income and household food (Armitage, 2002).

Mangrove processed fruit based products for food, medicine and cosmetic materials would require mangrove fruit available continuously, so that, encourages people to plant and conserve mangrove forests. This means, if people need the mangrove fruit then no logging for mangrove trees. Therefore, local people obtain access to mangrove preserve in an effort to reduce the carbon emissions that impact on global warming and climate change (PKEPKL UNG, 2014).

Another potential of mangrove forests is the ability of mangrove forests for carbon storage, so that, mangrove forests should be protected and maintained in order to address the carbon emissions into the atmosphere (Research Nurain).

The great potential of mangrove, causing Indonesia responsible for the reducing of carbon emissions on global warming issue REDD +). Mangrove forests store up to four times more carbon than most other tropical forests in the world. (Daniel et al, 2011). Each year the mangrove forests can absorb 42 million tons of carbon in the air or gas emission of carbon equivalent to 25 million cars (Ardianto, 2011).

The bottom surface of mangrove ecosystems Indonesia storing large amounts of carbon: 78% of the carbon stored in the soil, 20% of the carbon stored in living trees, roots or biomass, and 2% is stored in dead trees or uprooted (Murdiyarso et al., 2015).

Another function of coastal ecosystem is ecotourism; (Whale Shark in Botubarani; Olele beach, Bajo indigenous community living in the floating village of Torosiaje). Therefore, the natural resources in coastal areas should be preserved and maintained biodiversity of coastal ecosystems that can be provided and used sustainably to support community life.

However, the utilization of coastal biodiversity as a source of food and livelihoods of residents have exceeded capacity growth. People exploit fish resources by explosives in the coral reef area in the reason of the pursuit of the selling price. Domestic waste disposal into coastal and marine.

Degraded mangrove forest area, mainly due to conversion of coastal area, reclamation for settlements and social facilities. In the past three decades, Indonesia has lost 40% of mangrove (FAO, 2007). That is, Indonesia has a speed of mangrove destruction in the world (Campbell & Brown, 2015).

Conversion reduces not only the extensive mangrove areas but have damaged the ecosystem of mangrove, seagrass to the reef ecosystem. The behavior of the population may result in damage to the ecological system in marine and coastal area, so threatening the sustainability of biodiversity itself.

Our research showed that the pressure on mangrove forest ecosystems mainly from the human desire for conversion of mangrove forests into residential areas, into ponds, demand for timber and other commercial activity.

The pressures on biodiversity show that the ecological crisis is closely related to mankind's view of the reality of nature (Utina, 2012). There are two factors that causing the current ecological crisis, namely; (1) Human behavior towards nature, (2) Using of natural resources beyond the capacity to grow.

In this case, quality of human resources is closely related to character and human behavior towards nature and the environment. Humans interact with the elements of the physical environment to form an ecological system called an ecosystem. In the ecosystem there are elements of the biotic and physical environment (abiotic) that form functions as a natural resource. Malfunctioning for one or more elements in the ecological system will have an impact on the functioning of other subsystems (Cunningham, 2003).

Perceptions and human behavior towards the environment that impact on improving the harmony of human relationships with the environment, or otherwise. Character and behavior to care on the environment should be built since the children at the basic level of education.

Cognitive development according to Piaget, children are concrete operational stage which logically process still depends on what he/she saw. Kids on the level of education in elementary schools built the logic of thinking from anything seen and learned from around the nature (Suparno, 2011). Kids imitative and behave like those seen in the surrounding environment, including socio-cultural environment in the lives of families and the communities surround.

This presentation aims to bring us conserve biodiversity through efforts to build environmentally conscious characters begin from early childhood. Characters care about the environment is formed of basic education by giving strengthening science and local knowledge at primary school. With the formation of character concerned about the environment and the resources it is expected to become the next generation for the preservation of natural resources and biodiversity. This paper discusses coastal conservation of biodiversity through the strengthening of basic education in primary schools coastal areas

Result and Discussion

Ecological studies centered on human and nature as a system (ecosystem) which form a relationship for life. Position of human in the ecological system does not ignore the role of other living things, human being also does not outside the system, but it does mean that humans and their behavior is part of an ecosystem.

To maintain the ecological system in order to achieve the balance of this relationship is absolutely necessary condition is the existence of human behavior that led to the harmonious relationship between man and his environment

in community life grows tradition, habit or behavior that develops due to closeness humans with the natural surroundings and the challenges it faces.

Tradition and this behavior is inherited and in society is quite effective in managing natural resources and conservation efforts. This is a local wisdom that characterizes the lives of people

Local wisdom as the actions and behavior of human beings towards something objects or events that occur in a certain space. Empathetic feelings and deep concern for the environment, as well as how to think critically about what is happening in the environment is seen as the intelligence of ecological (Jung, 2010; Utina, 2010), which is manifested in attitudes and actual behavior and attitudes of solidarity with nature (Sternberg, 2004).

The substance of local wisdom in ecological intelligence is coming into effect values believed to be true by a society and crystallizes on the behavior of the community life.

The real action, attitude and human behavior toward the environment containing values of ecosystem conservation.

These values can be crystallized into teaching at the elementary school level, which is expected to have an impact on learner behavior change, and continually shaping people's behavior.

Efforts to conserve resources and coastal biological diversity not only with the technical handling of conservation such as vegetation planting mangrove or coral transplantation project, but simultaneously with constructing human perception and build awareness of nature and ecological behavior so that people keep the balance of nature.

Important performed earlier than is molding the character and behavior of human beings who are able to manage resources and ecosystems by applying the principles of conservation.

In Curriculum of elementary school (2013), the learning ecosystem in lesson of natural science meant to **build character and behavior of child to care for the environment**, in addition to understanding of the concept of the ecosystem itself.

This ecological system can be learned direct through objects found in the environment around the school. Elementary school in the coastal region, many objects of study such as mangrove forests, seagrass beds and coral reefs and the ecological system. The process science learning with scientific approach that focuses on the process of science is real and empirical occur in nature. Therefore, science learning is expected to improve understanding of concepts sciences as well as the responsibility of the children will be attitude towards the environment.

Elementary school in the coastal areas utilizes the biodiversity resources as an object of learning. Diversity of biological resources in the mangrove, seagrass and coral reef is a media and learning resources. Components of ecosystems and ecological processes on coastal area can be observed and understood as part of child, and closeness of his life with bio-physical component in the coastal environment.

In the study of coastal ecosystems in elementary school, children's understanding of the order of ecosystem components that underlie the creation of character and behavior of care for the environment and biological resources need the values of social-cultural and local knowledge developed in the community (Subiantoro 2011; Utina, 2012) ,

The class teachers prepare teaching materials and learning media science in the context of coastal environments including the value of local wisdom that developed in coastal communities. Contextual learning is done in accordance with the natural conditions and social behavior that centered on learners (Zeidler et al, 2005; Nu-angchalerm, 2010). Learning with problem based learning utilize learning resources of coastal ecosystems and socio-cultural systems around the child (Utina et al., 2014).

Characters care for the environment and natural resources are established early in elementary school is expected to crystallize into character and developing the next generation in social and cultural life conducive to social life. Therefore, is formed the generation that could utilize the coastal resources without ignoring sociocultural values and local wisdom that ensures the conservation of natural resources and biodiversity.

Conclusion

Building character care for the environment starting from early childhood. Characters care biodiversity coast can be formed since elementary school education through the strengthening of the values of science competencies and strengthening cultural values and local wisdom in learning science. Expected to form a generation that care about the environment. It is part of a mental revolution.

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