

Oral Presenter:

**International Conference on Mathematics,
Natural Sciences and Education
(ICoMaNSEd 2015)
Manado, August 8 2015**

Prof. Dr. Ramli Utina, M.Pd

CERTIFICATE

This is to certify that

Ramli Utina

Has participated on

International Conference on Mathematics,
Natural Sciences and Education (ICoMANSEd 2015) as

ORAL PRESENTER

Manado, Indonesia, August 08th 2015

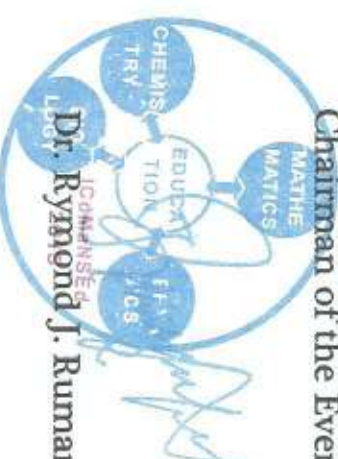
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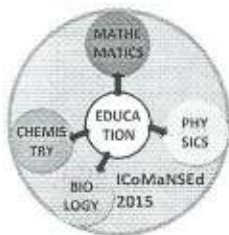
Carl

Prof. Dr. Cosmas Poluakan, M.Si

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Dr. Rymond J. Rumampuk, M.Si





**Annual Meeting of Mathematics and Natural Sciences
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In Conjunction With:

**International Conference on Mathematics, Natural
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Organized by:

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August 7-9, 2015, Aryaduta Hotel Manado, Indonesia,

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August 03, 2015

Subject: Invitation for Presentation

File No.: 152a /FMIPA-UNIMA/MatricesFor IITTEP – ICMNS2015/I/2015

Dear Mr. Ramli Utina
State University of Gorontalo

This is an official Letter of Invitation for you as **Oral Presenter** in “*Annual Meeting of MatricesFor IITTEP – International Conference on Mathematics, Natural Sciences, and Education (ICoMaNSEd 2015)*”. These event will be held on August 08, 2015, at Aryaduta Hotel, Manado, Indonesia.

Please note that the desirable duration for oral presentation is 9 minutes, and 3 minutes for question and discussion. Oral presenter should prepared his/her powerpoint presentation for the allocated time.

If you have any questions, feel free to contact the conference secretariat at icomansed2015@unima.ac.id or icomansed2015@gmail.com.

Thank you very much for your cooperation.

Sincerely yours,
Dean of Faculty

Prof. Dr. Cosmas Poluakan, M.Si.



Dr. Rymond J. Rumampuk, M.Si.

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July 22, 2015

Subject: Acceptance for Presentation

File No.: 067/ICoMaNSEd/FMIPA/UNIMA/2015

Dear Prof. Dr. Ramli Utina, M.Pd.

State University of Gorontalo

Our pleasure to announce you that your abstract entitled: **"Restoration Mangrove Ecosystem through Scientific Values Strengthening of Bajau Local Wisdom in Torosiaje Gorontalo"** (PaperID: 067Bio) has been accepted as **Oral Presentation** by the Scientific Committee of *"Annual Meeting of MatricesFor IITTEP – International Conference on Mathematics, Natural Sciences, and Education (ICoMaNSEd 2015)"*.


Scientific Committee encourages presenter to submit full paper and to pay the registration until July 31, 2015. Your submitted full paper will be appeared in the conference proceeding which will be published with ISBN and indexed by Google Scholar. We strive to prepare the proceeding in order to meet the standards of optimal quality. Therefore, we humbly advise authors to prepare abstract and full paper according to the guidelines of writing (template file attached), so that the consistency can be achieved. For the sake of publication of good quality proceeding so that your brilliant idea gave rise to many people, we hope you will pay attention to the abstract recommendations from the reviewer (attached together with this letter). After payment of registration, then the committee will send you the Letter of Invitation.

If you have any questions, feel free to contact the conference secretariat at icomansed2015@unima.ac.id or icomansed2015@gmail.com.

Thank you very much for your cooperation.

Sincerely yours,
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RESTORATION MANGROVE ECOSYSTEM THROUGH SCIENTIFIC VALUES STRENGTHENING OF BAJAU LOCAL WISDOM IN TOROSIAJE GORONTALO

Paper ID : 067Bio

Topic : Biology

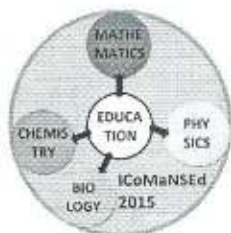
Abstract

Restoration of coastal ecosystems cannot be separated from the local people. Local wisdom of Bajau implies to the restoration of coastal ecosystems. Local wisdom needs to be strengthened with the understanding of the values of science, specially for Bajau younger so that they are involved in the preservation of the value of local wisdom and coastal ecosystem restoration. This article reveals the best practices in learning and community empowerment of mangrove ecosystem restoration through local wisdom scientific values of Bajau communities in preservation of coastal mangrove ecosystems. The goal is, strengthening the local wisdom with an understanding of the meaning of science values that encourages coastal communities to continue mangrove ecosystem restoration. The method used exploration of forms and meaning of local wisdom in the preservation of mangrove ecosystem, and Focus Group Discussion to understanding scientific concepts in sense of local wisdom on mangrove ecosystem. Target communities is Kelompok Sadar Lingkungan Paddakauang Desa Torosiaje Jaya Kabupaten Pohuwato, Gorontalo. The results are, first: identified the form of local knowledge Bajau and scientific meaning of conservation mangrove. Second: achievement of understanding of science in the sense of local wisdom to the group of environmentally conscious. Third, the establishment of the motivation of Bajau people to build a natural laboratory conservation of coastal ecosystems in the coastal village of Torosiaje Jaya.

Keywords: bajau, local wisdom, mangrove, ecosystem restoration

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**PEER REVIEWER FORM
ICoMaNSEd 2015**

Paper ID : 067Bio

**Title : Restoration Mangrove Ecosystem through Scientific Values Strengthening of
Bajau Local Wisdom in Torosiaje Gorontalo**

Topic : Biology

Here are the results of general review from the reviewer team for your abstract:

| No. | Criteria | Comment |
|-----|---|--------------------|
| 1. | Abstract material relevant to the theme of this conference | Yes |
| 2. | Paper title is quite obvious and represents the content | Yes |
| 3. | Abstract written in accordance with the specified systematics (completeness, format, and number of words) | Yes |
| 4. | Suggestion for abstract addition or subtraction | See recommendation |
| 5. | Informatively written of keywords and abstract | Yes |
| 6. | Standard written language | Yes |

Recommendations for Author(s):


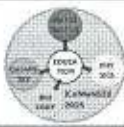
No comment.

Final Decision:

Accepted.

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**RESTORATION OF MANGROVE ECOSYSTEM
THROUGH STRENGTHENING SCIENTIFIC VALUES OF
BAJAU LOCAL WISDOM AT TOROSIAJE GORONTALO**

Mustamin Ibrahim, Ramli Utina, Abubakar Sidik Katili

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Research Centre for Coastal Ecology based on Local Wisdom, State University of Gorontalo*

*International Conference on Mathematics, Natural Sciences, and Education (ICoMaNSEd 2015)
Faculty of Mathematics and Natural Sciences, State University of Manado*

International Conference on Mathematics, Natural Sciences, and Education (ICoMaNSEd 2015), Unisma Manado, August, 2015

Introduction

- ✓ Human activities in coastal area such as reclamation, fish ponds and housing, on the one hand provide a good impact on economic growth and employment, but on the other hand have a bad impact on the mangrove ecosystem and other environmental services;
- ✓ This shows that importance of applying the principles of sustainable management that are expected to accommodate the interests of the local people in order to overcome the threat of coastal ecosystems and natural resource;
- ✓ Bajau people living in the coastal area, they have local wisdom which has values for conservation coastal ecosystems. Mangrove forest in the settlement of Bajau are well maintained;
- ✓ Local wisdom of Bajau needs to be strengthened with the understanding the values of ecological science, specially for Bajau younger, so that they are involved in preservation of local wisdom values and coastal ecosystem restoration;

Objectives

Strengthening the local wisdom with an understanding of the meaning of ecological science values that encourages coastal communities to restoration mangrove ecosystem sustainability.

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Method

- The community target is "Kelompok Sadar Lingkungan" (KSL) (*Awareness Environmental Group*) on Bajau communities at Torosiaje District Pohuwato, Gorontalo
- Identifying local wisdom in form of local knowledge and traditions which implies the restoration and preservation of the mangrove ecosystem;
- Focus group discussion (FGD) and assistance to kelompok sadar lingkungan (KSL) so that they have an understanding science values on mangrove restoration on their local knowledge and traditions;
- Building a field laboratory ecology as a means of strengthening local wisdom ecosystem restoration

Result and Discussion (1)

- a) Identified the forms of local knowledge Bajau and its scientific meaning in restoration of mangrove.
- b) *Mamia kadialo*; the traditional of Bajau for fishing journey up to several days and even months. Along this moment, families are left at home is prohibited to dispose of ash kitchen, washing cookware in marine waters, discard water chili. if the traditions are violated then the fishing journey would have disastrous.
The values of ecological science is; some species of marine organisms lethal due to ash. Bajau people are prohibited to pollute the sea waters.

Result and Discussion (2)

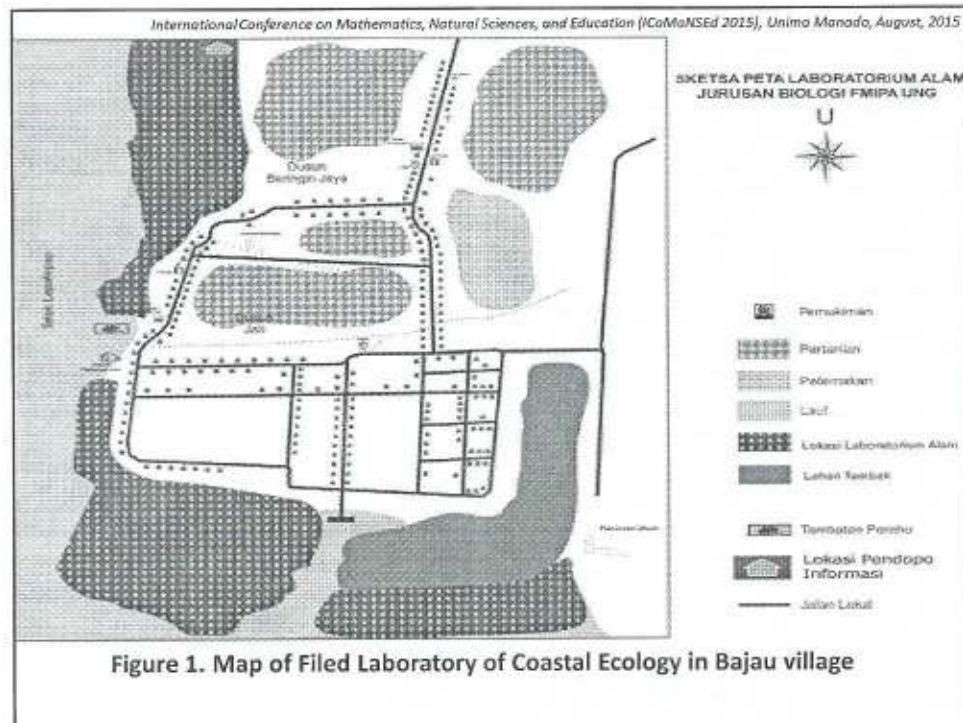
- c) Bajau people should not be cut down the mangrove trees that is still growing or too young, that are believed to interfere with the spirits.
Scientific values meaning an attempt to maintain and preserve mangrove ecosystem. Mangrove should not be felled unless already can be utilized.
- d) Restriction to consume turtle meat, it is could be disaster. Turtles are believed to help Bajau people, therefore turtles should not be killed.
Scientific meaning is to preservation of wildlife.

Result and Discussion (3)

- e) Some of Bajau people still use simple method to fishing, such as arrow to certain size fish that already be consumed.

Scientific meaning is; fish and biota have opportunity to reach adult stage and the breeding phase;

- f) Local name of mangrove were given strengthening by scientific names, that is: *Avicennia* sp (bajau; apapi), *Rhizophora apiculata* (bajau; bangkau dinda), *R. mucronata* (bajau; bangkau lila), *Sonneratia alba* (bajau; pappa lila), *S. caseolaris* (bajau; pappa dinda).

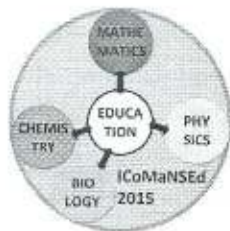


CONCLUSION

- a) Local knowledge and traditions in local wisdom of Bajau has scientific values for mangrove ecosystem restoration and coastal resources;
- b) The local wisdom Bajau communities can be preserved by giving strengthening scientific value;
- c) Field laboratory of ecology mangrove become an important means for the restoration of mangrove forest ecosystems, coastal preservation and strengthening of scientific value for local wisdom.

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THANK YOU



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RESTORATION MANGROVE ECOSYSTEM THROUGH SCIENTIFIC VALUES STRENGTHENING OF BAJAU LOCAL WISDOM AT TOROSIAJE GORONTALO

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Abstract

Restoration of coastal ecosystems cannot be separated from the local people. Local wisdom of Bajau implies to the restoration of coastal ecosystems. Local wisdom needs to be strengthened with the understanding of the values of science, specially for Bajau younger so that they are involved in the preservation of the value of local wisdom and coastal ecosystem restoration. This article reveals the best practices in learning and community empowerment of mangrove ecosystem restoration through local wisdom scientific values of Bajau communities in preservation of coastal mangrove ecosystems. The goal is, strengthening the local wisdom with an understanding of the meaning of science values that encourages coastal communities to restoration mangrove ecosystem sustainability. The method used exploration of forms and meaning of local wisdom in the preservation of mangrove ecosystem, and Focus Group Discussion to understanding scientific concepts in sense of local wisdom on mangrove ecosystem. Target communities is Kelompok Sadar Lingkungan (KSL) at Torosiaje District Pohuwato, Gorontalo. The results are, first: identified the forms of local knowledge Bajau and its scientific meaning in restoration of mangrove. Second: achievement of understanding of science in the sense of local wisdom to the group of KSL. Third, the establishment of the motivation of Bajau people to build a field laboratory conservation of coastal ecosystems in the coastal village of Torosiaje.

Keywords: *bajau, local wisdom, mangrove, ecosystem restoration*

1. Introduction

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Coastal ecosystems in several regions in Indonesia decreased as an impact of the management of ecological systems that has not oriented to the sustainable use of coastal resources. Mangrove forests have resulted in a decrease in the carrying capacity of marine and coastal environment, which looks at the decline in fishing production and other problems of the environmental services (Sukarjo and Malongi, 2012). This problems due to human activities such as reclamation, industry, transportation, housing and other activities (Utina, 2008). On the one hand, this activity contributes to economic growth, employment and business opportunities. This shows the importance of the application of sustainable management principles that are expected to accommodate the interests of the population and overcome the threat of the sustainability of natural resources (Utina *et al.* 2014).

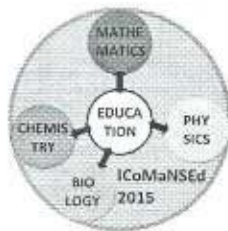
Bajau community most inhabited in the three villages in Tomini bay coastal of Gorontalo region, that are Desa Torodiaje, Torosiaje Jaya, and Bumi Bahari. Ecosystem of mangrove, sea grass beds and coral reefs are still preserved and maintained properly in the environment of settlements of Bajau. Covers of mangroves canopy is 80-91%, density 5700-6000 trees/ha, distribution of sea grass almost evenly especially outside mangrove areas, except in the traffic lane boat (Djamaluddin, 2011; PKEPKL, 2015). These conditions were supported by local wisdom of Bajau community that contains values of coastal ecosystems restoration. Bajau community has emotional closeness and local knowledge in marine and coastal natural resources, then to be the attitude, and ecological behaviour.

Bajou communities have local knowledge in forms of traditions and local knowledge that still sustained and maintained by people of Bajau. *Mamia kadialo*, that is traditional fishing with boating (Bajau: *Soppe*) for groups of fishermen Bajau up to several days, weeks or a few months and then return to their village. During the fishing journey, his wife and children at home is prohibited to dispose of ginger water and ash washing kitchen or cooking appliance to the sea. The violated of this tradition, that can impact an accident to the husband in the fishing journey. This tradition meaningful scientific values for the ecological preservation of marine and coastal environment (Alwiah and Utina, 2010).

Ecological values in local wisdom needs to be strengthened in order not to be crushed by global impact and the challenges of life. Bajau communities in Torosiaje

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has established Kelompok Sadar Lingkungan (Environmental Awareness Group)) which is engaged in community development for the management conservation of coastal region. Activities of this group that are cultivate the land and providing for the preservation of mangrove seedlings in Torosiaje coastal area and other areas for conservation needs. This group effort has a positive impact for the restoration of coastal ecosystems. Currently, Torosiaje as a Tourism Village, with it also the people earn an extra income from tourist services (Ibrahim *et al*, 2013).

The problem is, mangrove forest in outside of the Torosiaje coastal area had has declined due to landscape clearing for fishing ponds. Bajau community tends to pressure and influenced by people from the surrounding villages who wants to clearing the landscape for fishing ponds. Someday, Bajau community and the new generation will be affected by the surround community due to degradation of the values of local wisdom for the preservation of ecosystems and coastal resources (Utina *et al*, 2014).

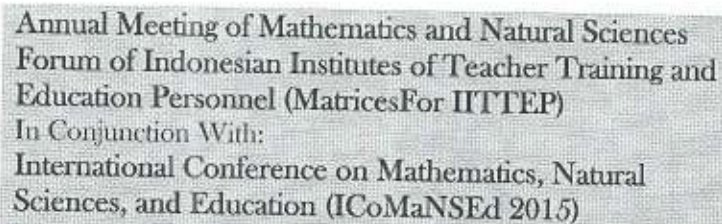
Local knowledge, traditions and local values in Bajau community relating to the practices of mangrove and coastal ecosystem restoration, needs to be supported by the scientific values relevant to the values of local knowledge and traditions. Thus strengthening the preservation values of the Bajau local wisdom. Bajau people needs to acquire knowledge of the scientific concepts or scientific values that explains the practices mangrove ecosystem restoration. Scientific knowledge in local wisdom values for further, Bajau people are expected to strengthen the practice and local knowledge in managing resources and mangrove ecosystem restoration, so that these ecosystems remain sustainable and can be utilized in a sustainable manner for the welfare of society (Utina, 2012; Ibrahim *et al*, 2013).

For that purpose it is necessary the role of universities which have the scientific capacity of ecology, environment and society. Universities developing local knowledge values into practice of mangrove ecosystem restoration through advocacy to the KSL that has been stated in Bajau villages, then built a field laboratory of coastal ecology as an infrastructure to strengthening the practice of mangrove ecosystem restoration and preservation of coastal natural resources.

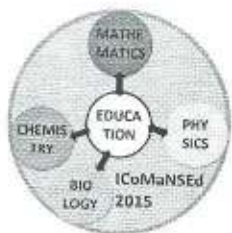
2. Materials and Methods

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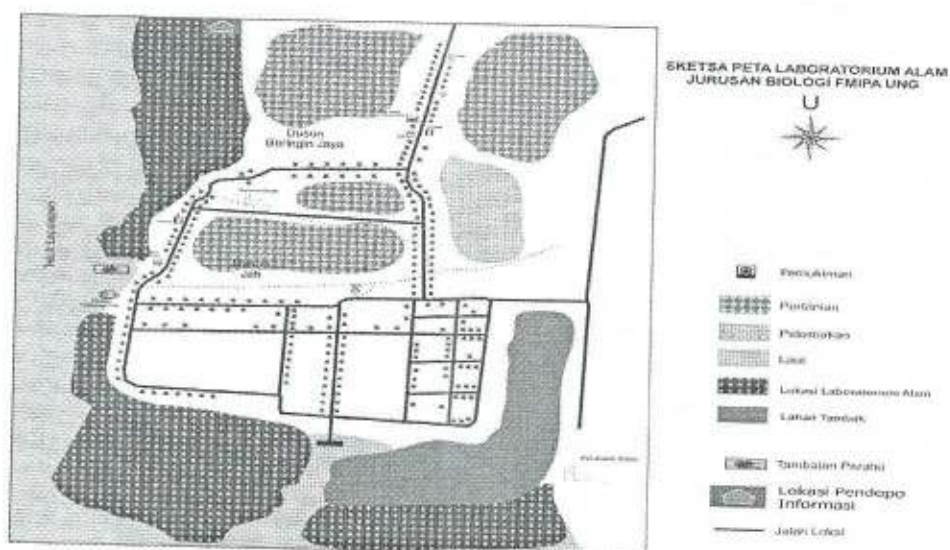


Figure 1. Map of Filed Laboratory of Coastal Ecology in Bajau village

3. Result and Discussion

Advocacy for learning scientific concepts reinforce the local wisdom values of Bajau community in mangrove ecosystem restoration and coastal resources. The approach through the identification of local knowledge and tradition Bajau which has values of mangrove ecosystem restoration and coastal resources. Results of strengthening scientific values of local wisdom can be described in local knowledge about preservation of mangrove, fishing rules, prohibition of killing animals, and local name of mangrove species.

Mangrove tree which is believed to cure the sick (Bajau; tibaanca). People believes that should not be cut down mangrove trees is still growing or too young. People reluctant to activities that could damage the mangrove areas that are believed to interfere with the spirits. Scientific values meaning an attempt to maintain and preserve mangrove ecosystem. Mangrove should not be felled unless already can be utilized.

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Mamia kadialo, restrictions that can not be done by families at home and those who were at fishing journey when the group underwent fishing tradition. Among other restrictions that prohibited such dumping into marine waters; rice washing water, charcoal or ash, cigarette ashes, chili water, ginger, lemon and also the cooking utensil washing water. Such materials should be stored and disposed on the coastal land. People believes, if these restrictions are violated, then the group who was fishing journey will meet storms and disasters. The scientific meaning that the rice washing water can pollute the environment due to the water contains starch (carbohydrates) would be toxic for some animals. Active carbon of ash would be excess to some animals (Alwiah and Utina, 2010).

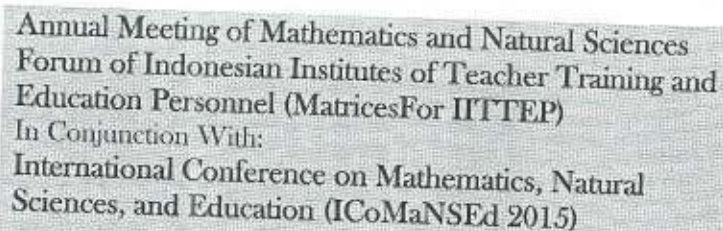
Restriction to consume turtle meat, it is could be disaster. Turtles are believed to help Bajau people, therefore turtles should not be killed. Scientific meaning is to preservation of wildlife (Utina, 2012). Some of Bajau people still use simple method to fishing, such as using cotton thread without eye hook (Bajau; bina). The use of a simple fishing equipment as a method selectively to fishing a certain size and already be consumed. Scientific meaning is, fish and biota opportunity to reach adult stage and the breeding phase. Biological resources marine have chance to increase the population in order to maintain the species. Bajau communities has an ecological intelligence that necessary be developed and strengthened by the scientific values (Alwiah and Utina, 2010; Utina, 2012).

Species of mangrove for research and learning objects restoration, as well as ecotourism. Local name mangrove vegetation were given strengthening by scientific names, that is: *Avicennia* sp (bajau; apapi), *Xylocarpus granatum* (bajau: tatambu), *Nypa fruticans* (bajau; tuho), *Bruguiera gymnorrhiza* (bajau; Munto lila), *B. parviflora* (bajau; Munto dinda), *Ceriops tagal* (bajau; tingar), *Rhizophora apiculata* (bajau; bangkau dinda), *R. mucronata* (bajau; bangkau lila), *Sonneratia alba* (bajau; pappa lila), *S. caseolaris* (bajau; pappa dinda). Scientific understanding of mangrove species will help the community explain to the researchers and users of field laboratory area even for foreign tourists who entered in the region ecotourism area.

4. Conclusion

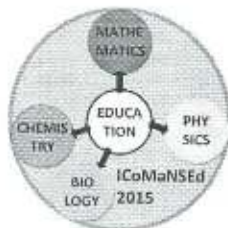
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Pendapatan Perempuan Melalui Usaha Pangan Rumah Tangga Berbasis Olahan Buah Mangrove di Torosiaje Kabupaten Pohuwato Provinsi Gorontalo [Mangrove Rehabilitation and Women Income Improvement through of Food Process Based on Mangrove Fruit]. Small Grant Facility-Mangrove for the Future (MFF) 2014. Danida Denmark, IUCN and Wetlands International Indonesia. pp.123. [Bahasa Indonesia]

Sukarjo, S., and Alongi, D.M., 2012. *Mangrove of the South China Sea: Ecology and Human Aspects of Indonesia's Forest*. Nova Science Publisher Inc. pp.237

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Utina, R., Katili, A.S., Ahmad, J., Ibrahim, M. 2014. Konservasi Hutan Mangrove Melalui Diversitas Pangan Olahan Buah Mangrove di Pesisir Kabupaten Pohuwato Gorontalo [Mangrove Forest Conservation Through Diversity Food Processed of Mangrove Fruit in Coastal Pohuwato Gorontalo]. *Proceeding of 1st National Seminar on Bioscience*. December 29, 2014. Udayana University. Indonesia. pp.79-83. [Bahasa Indonesia]

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