

## Value system of *pasi* as a type of community based management of fisheries resources in Lease Islands, Maluku, Indonesia

Delly D. P. Matrutty

Utilization Fisheries Resources Study Programme, Department of Aquatic Resource Management, Fisheries and Marine Science Faculty, Pattimura University, Ambon, Maluku, Indonesia. Corresponding author: D. D. P. Matrutty, dellypaulin@yahoo.com

**Abstract.** Value system of *pasi* is one of community based management of fisheries resources in Lease Islands, Maluku which is maintained, practiced and strengthened in community. It was believed that this system had conservation values of exploited fisheries resources. The objectives of the present study were to formulate the value systems of *pasi* concept and to determine how much the system contained management of fisheries resources. Data were collected by using focus group discussion, interview, and observation and then analyzed descriptively. The relationship between each value with conservation composite was determined based on high score and percentage. The identification of basic values in *pasi* system was categorized into 3 (three) component values namely: ecological, social and technology basic values. All three basic values component were simplified to be value component or composite which having very strong relationship to conservation of fisheries resources in the area, mainly sustainability component with the value was >90%. The results showed that value system of *pasi* had very high conservation element which needs to be maintained as a community based of fisheries management in Lease Islands.

**Key Words:** basic values, ecological, social, technology, conservation, *pasi*, Lease islands.

**Introduction.** Community life of Lease Islands, Central Maluku Regency could not be separated from coastal resources and sea with the local values (tradition) which were generated from a generation to next generation. Tradition or fishing habit since long time ago from their ancestor has been kept by local community especially something unique and specific. One of the interesting uniqueness is local values which applied by Lease communities on specific locations, known as *pasi*. *Pasi* is fishing ground for *bae* fish (*Etelis* spp., *Aphareus* spp. and *Pristipomoides* spp.), a species of red snapper which belongs to Lutjanidae family. The word *pasi* comes from 'pas' which means exactly where the fish is, whereas *bae* means good or specific. *Bae* fish became a special banquet or main course for kings of the villages in Lease and also for the communities during special ceremony or happy day (Matrutty 2011). Additionally, the maximum sustainable yield (MSY) of *bae* fish is 400.33 individual/year in Lease Islands (Matrutty et al 2013). This species is one of the important economically fish and has a high price due to its taste and became favorite seafood locally, regionally and internationally (Andrade 2003).

The community of Lease Island has understood the importance of sea and its resources. In this case, the community has acknowledged *pasi*, as a traditional wisdom managed an area or fishing ground for *bae* fish. This wisdom has been agreed as symbol for a unity and solidarity for the community since their ancestors. So, in utilizing the resource, *pasi* has special treatment with special conditions and regulation which containing special value as well. Although some values have been lost or forgotten along with development of science and technology, some values are still found in some village communities' custom in Lease Islands. This has been kept by the communities as ethics and responsibility as well as respect to nature and heritage of their ancestors. This condition could be seen by various unwritten prohibition by fishers in this area. Values

which were established and kept by Lease community on *pasi* and *bae fish* to be assumed contain values of management of fisheries resources.

According to Marini (2000) cited in Macionis (2009), value is evaluative believe which synthesize affective element and cognitive of man and to be oriented to the world he lives. In addition, Maio et al (2003) stated that value not only comes from inner side but also from social community group. Ruddle (1999) explained that Indonesian have a model of community based management which affluent to utilize marine resources as a communal by applying customary right for land and penalty from community.

Community fisheries based management try to answer the main problem by coastal community through active participation. The term 'based' could be meant that the main actor of resource utilization is community who has to be good manager to its resources (Tulungen et al 2002). The indicators of community fisheries based management are biodiversity maintaining and protection of community social identity which is consistent with local culture and consistent with local aspiration (Nikijuluw 2002).

Generally, people only know about *sasi* as a kind of community fisheries based management in Maluku and it becomes object of various researches (Bailey & Zerner 1992; Novaczek et al 2001; Nikijuluw 2002; Pical 2007). Maluku has some traditional wisdom in managing fisheries resources, other than *sasi*. They also have some other terms of socio-culture values that have been embedded in the community. One of them is *pasi* fisheries in Lease islands, Central Maluku Regency. It is believed that the system contains sustainable values in exploitation of fisheries resources. The objectives of the present study were to formulate the value systems of *pasi* concept and to determine how much the system contains management of fisheries resources.

**Material and Method.** The research was conducted in Lease Islands, Maluku Province from July 2011 to June 2012. Data were collected by two approaches as follows: firstly, Focus Group Discussion which focused on religious leaders, custom leader and village government. Data and information needed from the group discussion were ownership and business of *pasi* as well as tradition or community habits in utilizing *bae fish* in *pasi*. Secondly, were observation method and unstructured interview based on research topic (Annex 1).

Direct interview was done to the fishers who really utilize *pasi* (60 respondents), fisher's wife (30) and fisher's children (20). The observation was conducted on the method of fish capture in *pasi*, began from preparation on the land, headed and arrived in *pasi* and fishing as well as going back. The observations and interviews were also done on fishing gear used, type, size and depth of fish caught. Samples were determined purposively by taking samples from a population based on special justification (Sugiyono 2001). The value systems of *pasi* fisheries were analyzed descriptively based on values component (ecology, social and technology). Social values component and its composite were analyzed following social values by Pranadji (2004), whereas ecology and technology values component and their composite were formulated by the researcher. The relation between basic values and its sustainable composite were done by giving positive (+) sign from one to three. One positive sign has given score 1 (one). Three positive signs (+++) explained strong relation, two positive signs (++) explained moderate relation, and one positive sign (+) explained weak relation. The conditions of score determination/ basic values with its composite were defined as follows:

if strong relation and good implementation	=	+++
if weak relation and good implementation	=	++
if strong relation and weak implementation	=	++
if weak relation and weak implementation	=	+

The relation between basic values and its sustainable components were calculated by comparing score reached of each component divided by total score of a component then multiply by 100% which has the equation as follows:

$$X = (n_i/N_i) \times 100\%$$

where: X = strength relation;  $n_i$  = total score reached by each component;  $N_i$  = total score of components;  $i = 1-4$  (number of components).

## Results and Discussion

**Identification of systems value of *pasi* fisheries.** There are 3 (three) value components which resulting from local value identification endowed hereditarily by local society of Lease Islands in relation to *pasi* as a specific fishing ground of bae fish namely, ecological basic value (EV), social basic value (SV) and technological value (TV) (Tables 1-3). Ivancevich et al (2005) stated that value systems are effective desire, awareness lead to behaviour, heredited from one generation to next generation and they are communicated through education, religion, family, community and organization. A value system is a correlation among all relevant concepts that integrate each other; the perspective about positives and negatives values based on a certain believe. Additionally, value is a picture of three basic needs of people, namely: (a) as biological based on needs of the living, (b) social interaction criteria to co-ordinate among individual, and (c) social institution demand for group prosperous and their sustainability (Schwartz 1992). The explanations of three value components in *pasi* fisheries system are descibed as follows below.

**Ecological value system component.** The sustainability of a fishing ground is determined by number of value which has been practiced in daily life of local community. There are 7 (seven) identified ecological basic values which implied in *pasi* fisheries system. These values and their explanation can be seen in Table 1.

Table 1

*Pasi* ecological basic value and its explanation

No	Ecological basic values	Value explanation
1.	Discipline	Obedient to regulation
2.	Hard working/diligent	Fishers didn't use destructive fishing gear which is easily to get fish but causes damages to the environment
3.	Self esteem	Ashamed, low self esteem, and expelled by society if against regulation in <i>pasi</i> (contaminate, used bomb for fishing)
4.	Look after	Together control, protect against acts which could damage <i>pasi</i> environment
5.	Care	No use of destructive fishing gear which damages <i>pasi</i> environment (bomb and fish anesthetize)
6.	Think about future (long-term vision)	If <i>pasi</i> environment is damaged, there will be no product for next generation (sustainability of <i>pasi</i> fisheries)
7.	Rational/impersonal	Not having exploitative mind in utilizing <i>pasi</i> resources

From 7 (seven) EV there are 4 (four) value components of sustainability which gives a picture that these values contained management of fisheries resources component. These components are productivity, cleanliness, beauty and sustainability. Each component is defined as follows: (1) productivity - value component which could be used collectively to encourage enthusiasm to be autonomous in natural resources production for human basic need; (2) cleanliness - value component which could direct and guide individual and community collectively to look after and care about environment and natural resources; (3) beauty - value componet which encourages enthusiasm and spirit of community which consider nature as an art; (4) sustainability - value component which could be used as a guideline in order to bring into reality justice, respect to humanity and living right for next generation.

**Social value system component.** Social value is something related to welfare of all people by effective consensus among them, so social value is highly respected by many people (Williams 1979). In the life of Lease community, *bae* fish is a fish with very high quality because it is consumed by local community in special ceremony, ceremonial meal and so on. There were 12 basic social values (SV) identified which contain *pasi* fisheries system. Values and their explanations are presented in Table 2. Apart from 12 SV, there are 4 (four) values component/conservation composite which show the strength of these values: productivity, justice and respect, solidarity and sustainability. Each composite is

defined as follows: (1) productivity - value component which could be used collectively to encourage enthusiasm to be autonomous in natural resources production for human basic need; (2) justice and respect - value component which could direct and guide individual and community collectively to build up social prestige; (3) solidarity - value component which encourages solidarity or group across ethnic/religion/group for next generation; (4) sustainability - value component which could be used as a guideline in order to bring into reality justice, respect to humanity and living right for next generation.

Table 2

*Pasi* social basic value and its explanation

No	Social basic values	Value explanation
1.	Ashamed & self esteem	Ashamed, low self esteem, and expelled by society if against regulation in <i>pasi</i>
2.	Hard working/diligent	Try to reach <i>pasi</i> area by using rowboat (no machine)
3.	Discipline	Obedient to regulation
4.	Thrifty & productive	Relatively low income due to limited production but it should meet family need
5.	Open to changes	Selective to outside effect
6.	Respect	As an individual no full right to <i>pasi</i>
7.	Co-operation	Difficult to predict exactly <i>pasi</i> area, need to cooperate with other experienced fisher
8.	Highly empathy	To allow other fishers from different community to utilize <i>pasi</i>
9.	Rational/impersonal	Not having exploitative mind in utilizing <i>pasi</i> resources
10.	Patient and gratitude to God	Happy to receive and do regulation even though having limited in fulfill family need
11.	High trust	No special controlled relatively in <i>pasi</i>
12.	Long-term vision	Think about next generation

*Technology value system component.* There are 9 (nine) technology basic values (TV) identified which containing in *pasi* fisheries system (Table 3). Apart from those 9 (nine) values, there are 4 (four) value component/conservation composite which describe the strength of those value contained management of fisheries resources component which are defined as follows: (1) productivity - value component (composite) which could be used collectively to encourage enthusiasm to be autonomous in natural resources production for human basic need; (2) environmental friendly - value component which made to be a guideline for individual and collective community who utilize marine resources by maintaining its environment/habitat; (3) quality - value component which could be used collectively to encourage enthusiasm to have highly competitive in producing excellent product; (4) sustainability - value component which could be used as a guideline in order to bring into reality justice, respect to humanity and living right for next generation.

Table 3

*Pasi* technology basic value and its explanation

No	Technology basic values	Value explanation
1.	Economically (material)	Simple construction and cheap, easily to get
2.	Without by catch	No other species caught relatively
3.	Legal fish caught	Legal size more than minimum
4.	Selective	Only caught red grouper(bae fish)
5.	Easily to operate	No special knowledge to build up and to use
6.	Energy saving	No fuel
7.	No damaging to environment and habitat	No used destructive fishing gear
8.	No caught protected fish	No haul protected fish
9.	No dangerous to fisher & other people	Small risk

Four composite of three three basic value component (ecology, social and technology) as explained above are value systems which describe relationship between values as strong unity and containing conservation component.

**Relationship analysis between basic values of pasi and conservation value component (composite).** The analysis was aimed to know relationship between basic values of pasi (EV, SV and TV) and value component (composite) which plays a role in maintaining aquatic resources conservation in pasi surrounding area. The relationship between each basic value and its conservation composite is explained as follows below.

*Relationship between EV and conservation value component (composite).* Composite EV consisted of productivity, cleanliness, beauty and sustainability with seven basic values. The strength of each composite and its resources conservation could be known by the strength of relationship of each basic value and its composite. The strength or synergy interaction between ecological basic values and conservation values component (composite) are shown in Table 4, whereas its percentage of the relationship is presented in Figure 1.

Table 4

The relationship between ecological basic values and conservation values component (composite) according to its strength level

No	Ecological basic values	Conservation values component (composite)			
		Productivity	Cleanliness	Beauty	Sustainability
1.	Discipline	+++	+++	+++	+++
2.	Diligent/hard working	+++	++	++	+++
3.	Ashamed & self esteem	+++	++	+++	+++
4.	Look after	+++	++	+++	+++
5.	Repair	++	++	++	+++
6.	Think about future	+++	++	++	+++
7.	Rational/impersonal	++	++	++	+++

Note: +++ = very strong relationship, ++ = moderate relationship, += weak relationship.

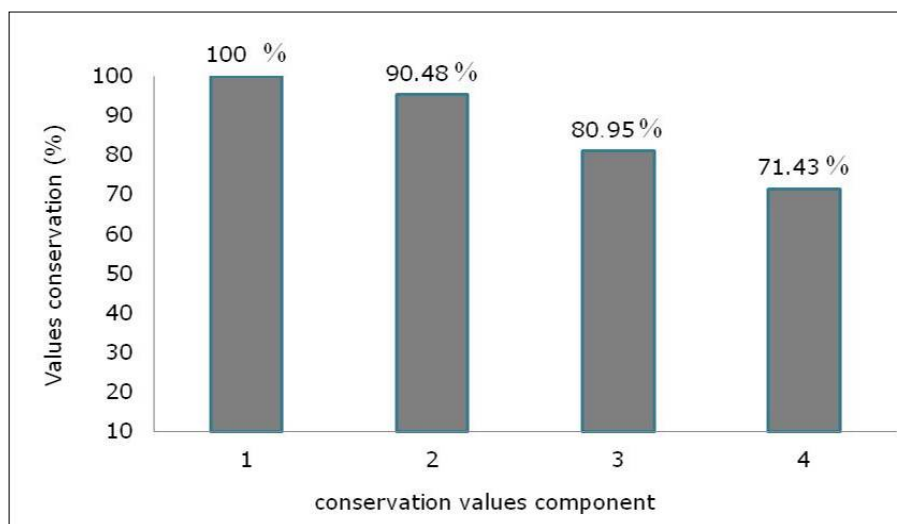


Figure 1. The relationship percentage between ecological basic values) and its composite: sustainability (1), productivity (2), beauty (3), and cleanliness (4).

From ecological point of view, Lease community has very high basic value because the utilization of *pasi* fisheries resources is done unexploitatively, so sustainability of the resources is very important to them. This was indicated by the strongest relationship between basic values and all values component (composite) of sustainability. This analysis showed that Lease community who has and maintains ecological basic values

had very high contribution (100%) to conservation of exploited fisheries resources (Figure 1).

*Relationship between SV and conservation value component (composite).* The relationship between social basic values and each conservation component is shown in Table 5.

Table 5

The relationship between social basic values and conservation values component according to its strength level

No	Social basic value	Conservation values component (composite)			
		Productivity	Justice & respect	Solidarity	Sustainability
1.	Ashamed & self esteem	+++	+++	+++	+++
2.	Diligent/Hard working	+++	+++	++	+++
3.	Discipline	+++	+++	+++	+++
4.	Thrifty & productive	++	+++	+++	+++
5.	Open to changes	++	++	++	+++
6.	Respect	++	+++	++	++
7.	Co-operation	++	++	+++	+++
8.	Highly empathy	++	++	+++	+++
9.	Rational/impersonal	+++	+++	+++	+++
10.	Patient and gratitude to God	+	++	++	++
11.	High trust	++	++	+++	+++
12.	Long -term vision	++	+++	+++	+++

Note: +++= very strong relationship, ++= moderate relationship, += weak relationship.

It can be seen in Table 5 that in term of social value in relation to conservation, Lease community put more value for sustainability of the resource compare to productivity. Figure 2 shows that percentage of the relationship between productivity and conservation based on 12 social basic values is only 77.78%, while its percentage of the relationship between conservation and sustainability is 97.22%.

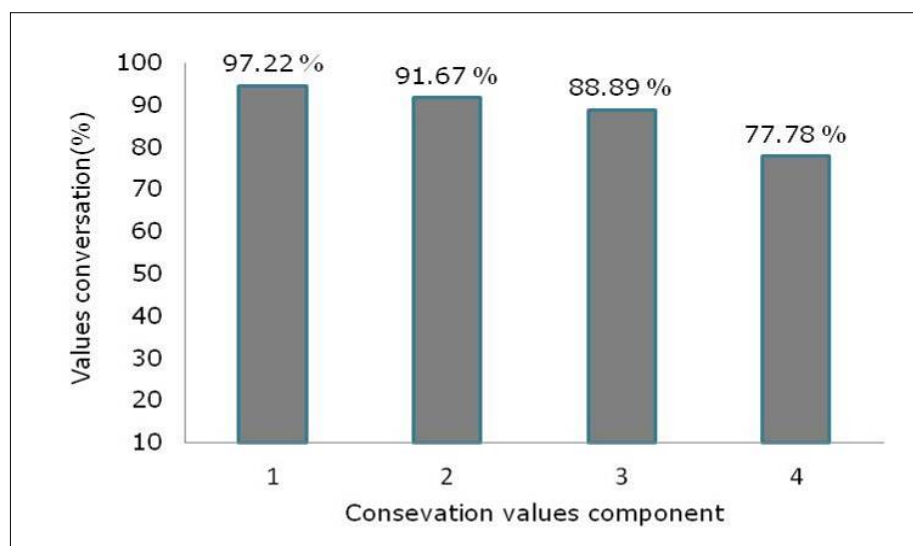


Figure 2. The relationship percentage between social basic value and conservation composite: sustainability (1), solidarity (2), justice and respect (3), and productivity (4).

*Relationship between TV and conservation value component (composite).* Technology value composite consisted of productivity, environmental friendly, quality and sustainability with nine basic values. The strength of each composite to the conservation of resource is known from strength of each basic value to its value component

(composite). The strength or synergy interaction between technology basic values is presented in Table 6.

Table 6

The relationship between technology basic values and conservation values component according to its strength level

No	Technology basic value	Conservation values component (composite)			
		Productivity	Env. friendly	Quality	Sustainability
1.	Economically (material)	++	+++	++	+++
2.	Without by catch	+++	+++	+++	+++
3.	Legal fish caught	++	++	++	++
4.	Selective	++	++	++	++
5.	Easily to operate	++	+++	++	+++
6.	Energy saving	++	+++	++	+++
7.	No damaging environment and habitat	+++	+++	+++	+++
8.	No caught protected fish	+++	+++	+++	+++
9.	No dangerous to fisher & other people	+++	+++	+++	+++

Note: +++ = very strong relationship, ++ = moderate relationship, + = weak relationship.

The strength relationship between productivity as well as quality value components and conservation based on 9 (nine) technology basic values have the same percentage as high as 81.48%. The high relationship occurs between environmental friendly and sustainability components to conservation i.e. 92.59% (Figure 3). The analysis showed that from technology point of view, value component (composite) of productivity has weak relationship to conservation. This is probably due to simple technology used and low catches. Additionally, these value practiced by community mainly focused on sustainability.

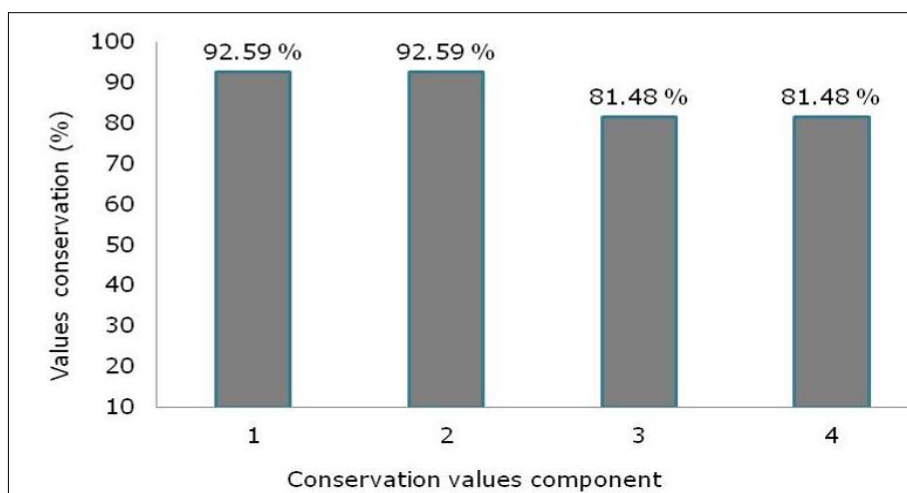


Figure 3. The relationship percentage between technology basic values and conservation composite: sustainability (1), environmental friendly (2), quality (3), and productivity (4).

The explanation about habits of fishers who utilize *pasi* as fishing ground of red grouper or *bae* fish indicated that it contained values which guided fishers to do social interaction. These values influence fishers in utilising *bae* fish which having a special symbol in community life. These values are maintained in one strong system and influence behaviour of fishers in utilising and maintaining natural resources in their surrounding. Rokeach (1973) and Kamakura & Novak (1992) state that existing values and their influences on the community behavior are not only from single value, but these values also become one unity or inside one system. These systems are arranged from

maintained values and influence fishers to do special things if they are in red grouper (bae fish) fishing ground or *pasi*. Therefore, this system is called Value System in *Pasi* Fisheries.

The analysis of each composite of all value system components showed that sustainability composite contributed more than 90% for ecological system component, even as high as 100% to resources conservation. This indicated that *pasi* fisheries value system contained very high element of management of fisheries resources. This evidence shows that *pasi* fisheries value system is one of the community based management of fisheries resources (Bailey & Zerner 1992; Novaczek et al 2001; Nikijuluw 2002; Pical 2007).

**Conclusions.** Value system of *pasi* fisheries contained basic values of ecology, social and technology. Those three components contain composite values which have very strong relationship with conservation of the resources specifically sustainability composite with value > 90%. This provides evidence that value system of *pasi* fisheries contains highly components of fisheries resources management. It means that value system of *pasi* fisheries not only contains social value but also biological value which could guarantee sustainability of the resources.

**Acknowledgements.** I want to thank J. A. Pattikawa for his suggestion in preparation the manuscript.

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Received: 21 March 2015. Accepted: 04 May 2015. Published online: 04 June 2015.

Author:

Delly Dominggas Paulina Matrutty, Faculty of Fisheries and Marine Science, University of Pattimura JI. Mr. Chr. Soplanit Kampus Poka Ambon, 97233, Indonesia, e-mail: dellypaulin@yahoo.com

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How to cite this article:

Matrutty D. D. P., 2015 Value system of *pasi* as a type of community based management of fisheries resources in Lease Islands, Maluku, Indonesia. *AAFL Bioflux* 8(3):342-351.

Questionnaire

1. What is *pasi*?
2. From whom did you know about *pasi*?
3. What is interesting in *pasi*?
4. What kind of benefits you get from *pasi*?
5. What is the role of the women, as the wife of the fisherman of *bae* fish?
6. Are you proud to be the son or daughter of a fisherman?
7. As the child of a fisherman, do you help your father in his fishing activity? What kind of help and when did you do that?
8. In your opinion, is that *pasi* as the fishing ground of *bae* fish need to be maintained or protected? Why?
9. How did you maintain or protect *pasi*?