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Model of Empowerment Arad Nets Fisherman Towards Responsible Fisheries to Improve The Welfare of Fishermen

Sulistyowati

***Corresponding author email:** ibusulis1@yahoo.com*

Abstract

This study aims to describe the profile of fishermen, Arad's empowerment strategy, and model of empowerment of fisherman of Arad net to "responsible fisheries" to improve the welfare of fishermen in the waters of Batang Regency. This research use mixed method, that is combination of two approaches that is qualitative and quantitative approach. Techniques of data collection were obtained through questionnaire (questionnaire), FGD. Data analysis using qualitative descriptive. To determine the Model of Fishermen Empowerment Strategy using SWOT and AHP analysis. The study was conducted in March - September 2014. Based on SWOT analysis of Strategy of Fisherman Empowerment of Arad Network to Responsible Fisheries to improve fisherman's prosperity by doing Controlling, monitoring the carrying capacity of the environment and the catch of shrimp through improving the quality of fishing resources. Where the role of fishermen determines the pattern of resource utilization and sustainable management. The success of fisheries development requires perception, participation of fishermen and the role of goverment to accommodate all needs, and future management expectations. Based on the results A'WOT is obtained : Arad fishermen empowerment model to Responsible Fisheries, through socio-ecology-based Empowerment, Co-management-based empowerment, Responsible-Fisheries Empowerment Development, Empowerment of fisherman skill to improve the welfare of fishermen

Keyword: Models of empowerment, fisherman Arad nets, responsible fisheries

1. Introduction

Batang district has increased shrimp catch, because this fertile area that is supported by the gulfs of three rivers Batang district has increased the catch of shrimp the Sambong river, the river Juragan and the Baya river (Compatibility of physical, chemical, and biological characteristics coastal waters with shrimp habitats are thought to be closely related to the abundance of these resources (Naamin,1987). But behind the wealth of natural resources potentia coastal and coastal areas have a variety of fundamental problems namely the use of tools l the destructive catch is Arad's net and its human resources are still marginal.

Arad nets has a high effectiveness in catching shrimp it is necessary to limit the use of Arad nets and limiting the number of catches according to Dahuri (2003) and guidelines from the directorate general of fisheries which refers to the Code of Conduct for Responsible Fisheries the level of capture of a stock of resources should not exceed 80% of the value of MSY. In order to face the open fisheries management activities(Open access) in Batang district waters and the increasing need for fishing families and determine the type and level of government oversight to be applied then the need for optimal management of shrimp resources based on fishermen to"Responsible Fisheries" to improve the welfare of fishermen.

This study aims to describe the profile of fishermen Arad's empowerment strategy Arad's empowerment strategy "Responsible Fisheries" to improve the welfare of fishermen in the waters of Batang district.

2. Methods

This research is a case study aimed at intensive study of background and interaction among social units that exist in the research subject (Arikunto, 1985). Profile of respondents and the level of empowerment of fishermen used descriptive statistics. Field data collection is taken systemically through questionnaires (quantitative) and in-depth interviews/in depth interview (kualitatif) as well as focus group discussions(Focus Group Discussion) and direct field observations to better understand the occur real conditions that occur and the needs of the perceived development of fishermen in the fiel secondary data collection is done by document analysis method.

The study was conducted in March - September 2014. In some areas of potential use of Arad nets, namely Kedung Segog Sub-district (TPI Roban) sub-district, Kedawung subdistrict Banyuputih (TPI Celong), Sidorejo Gringsing Sub-district (TPI Siklayu) Batang district. To know the level of socio-economic empowerment with random sampling as much as ± 30%(± 105 orang) of the existing population (Arikunto, 1985).

Primary data were collected by researchers directly from the source through survey techniques with direct interviews using questionnaires of Arad net user respondents in Batang district (Sekaran, 2006).

The role of fishermen determines the pattern of sustainable use and management of resources. To know the relationship between Fishermen Perception variable, Government Role And Participation on sustainable management of shrimp resources Hypothesis testing is done by using multiple linear regression model. Being for perception, behavior and participation of fishermen taken by purpose as many as ± 30 people consisting of head of group of fisherman user of Arad Coming from the four villages. The data used in this analysis is the primary data used attitude scale or rating scale or Likert scale (Sugiono, 2006). SWOT and AHP analysis is used to determine the strategy of empowering fisherman Arad network. Using purposive sampling method with population from various institutions either government (district level), Private (NGO) and universities, where the District Government is formal institutions deemed to have close links in the utilization and management of coastal and marine areas. Respondents are regents, Marine and Fisheries Service, Bappeda, Forestry, Conservation, as many as ten people.

3. Results and Discussion

1. Social Economic Profile of Fishermen.

The results showed that Arad fishermen were all male, human resources are still marginal, especially in the field of education, majority education level still finish primary school (± 81%), who did not complete primary school (± 9%), SMP (± 9%), and SLTA (± 1%). Working as an average fisherman has been 18 years, which works only on capture fisheries ± 35%, working in capture fisheries sector, and agriculture ± 35%, as fishermen and laborers ± 21%, fishermen and trades ± 5%, fishermen and workshop ± 2% and fishermen are also farmers ± 2% pond. With a long sail 6 hours / trip a week 6 times to sea (trip or day).

The average shrimp catch is 11.5 kg / trip (day) with a selling price of Rp 75.000, -.The level of empowerment of fishermen nets Arad tend to be less(< 50%), this can be seen from the business aspect (30%), market aspect (24.13%), access technology (17.25%), Access to lobbying ability (24.83%), Stakeholder role (26.39%), Preparation of climate change (6.9%), Business sustainability (16%). This is because Arad fishing nets Generally low-educated So to access the technology less able (hereditary technology), less able to seek capital by lobbying, and is static. Human resources of the fishermen are classified as low, effect on his mindset (Daud, R. 2009). Fisherman's age is generally over 40 years old, so that when after fishing easily tired, The catch is only sold on the existing basket. The number of dependents of the family is a source of energy In carrying out activities usahatangkap, Where in general fishermen have 2 family dependents As many as 53 people equals 50% (Sulistyowati, 2014). According to Salikin (2003), the need for labor comes from outside the family environment Not too necessary because 70% of fishermen have children who can help them / contribute.

Profile of respondents to alternative fishermen empowerment fishermen Arad on shrimp resource management of respondents (99%) are civil servants at several research-related institutions. Respondents are the ones who are authorized to provide alternative empowerment strategies Arad fishing nets over 50 years of age, male sex educated S1 amounting to 8 people S3 a number of 2 people, so expect to get the best solution for alternative and priority strategy of empowering fisherman of Arad net which is reponsible fisheries on the management of shrimp resources to improve the welfare of fishermen.

2. Arad Nets Fishing Status

In fact, the data of catching tools of arad web and arad catch catch In Batang district there is / registered means this fishing gear including legal fishing gear used by fishermen (legal fishing) because there is a SIP / Permit of Arrest. Department of Fisheries and Marine Batang regency refers to Decision of the Director General of Fisheries Number: IK. 340 / DJ. 10106/97 Date: October 23, 1997, Arad nets do not include trawl nets so it is not prohibited its use, In the field of use with mesh size <2.5 cm Then this Arad web includes destructive fishing tools because other small fish are caught (Sulistyowati, 2004).

Based on the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 2 / Permen-Kp / 2015 Concerning the Prohibition of Hela Trawling (Trawls) And Pulling Pulls (Seine Nets) In the territory of Indonesian Fisheries Management, Except Arad net because it is intended for small / traditional fishermen.

3. The **Role of Fishermen and Government Against Arad Fisheries**

The role of fishermen determines the pattern of sustainable use and management of resources. The success of fishery development requires the perception of fishermen and the participation of fishermen to accommodate all the needs and expectations of future management.

4. Perception of Fishermen on Shrimp Resource Management

Information on the level of perception of fishermen in the management of shrimp resources in Batang Regency Obtained through interview. Various factors include perception, the role of fishermen determine the pattern of utilization And sustainable resource management. The perception of fishermen on arad fishery fishery can be seen in Table 1.

Table 1. Perception of Fisherman on Arad Fisheries Management

No.	Category	Value	Variation	Answers	Frequency %
1	Very Good	4	13 - 15	2	6,66
2	Good	3	10 - 12	6	20,00
3	Enough	2	7 – 9	13	43,33
4	Poor	1	4 - 6	9	30,00
5	Very Bad	0	0 - 3	0	0,00
	Total			30	100,00

Based on Table 1 above, the perception of fishermen on shrimp resources (*Penaeus spp*) in Batang district as a whole has enough perception level until very good with perception enough to have the highest level of 13 people (43.33%).

Table 2. Results of Arad Fishermen User Understanding

Skor	Category	Value	Nominal
2	Very Good	2 x 4	8
6	Good	6 x 3	18
13	Enough	13 x 2	26
9	Poor	9 x 1	9
0	Very Bad	0 x 0	0
	Total		61

Based on Table 2, the total score obtained from the study was 52 (85.24%) from enough to excellent in meaningful understanding meaning that fishermen users know, understand and know the use of Arad nets, and the impact of its use but the fishermen have not understood the legal umbrella that govern it.

5. Fishermen's Participation on Shrimp Resource Management

The participation of fishermen on the management and utilization of shrimp resources will determine the effectiveness, efficiency and independence attitude. Fishermen will be invited to respond to various activities of empowerment and empowerment that have been done by stakeholders.

One of the manifestations of fishermen's participation is the establishment of KUB named MAESO RUKUN MAKMUR in 2005 Who has made an agreement to keep the Ujungnegoro KKLD From more severe damage, although fishing communities are not sure the boundaries of conservation areas and the basis of regional management regulations, only in the implementation can not be maximized because of limited infrastructure, in addition to the supervision of the government or law enforcement officers are also not maximal. Fishermen In the coastal waters of Batang district access to the *fishing ground* are further away from ± 4 miles to ± 10 miles means that access to the catchment area is reduced. The Government (Fisheries and Maritime Office) knows but does not prohibit, Means ensuring their accessibility to improve living standards, so that the participation of fishermen is high enough 89,99%.

6. The Role of Government in Shrimp Resource Management

The management of fishery resources will work well If there is an active involvement of the government in supporting the management effort. Based on scores obtained from the research were 79, So the level of government's role towards the sustainable management of shrimp resources (79 : 120) x 100% = 65,83%, which means the government's role in the management of shrimp resources is very high.

Batang district government is instrumental in the management of shrimp resources proven the issuance of decree of the Regent Number: 523/283/2005 Year 2005 about the establishment of Marine Protected Area of Ujungnegoro-Roban Coastal Region of Batang Regency which was updated with Bupati

Batang Regulation Number 47 Year 2011 on the Amendment of Bupati Batang regulation Number 7 Year 2010 on the Management of KKLD / Ujungnegoro Coastal Park of Batang Regency.

To know the relationship between perception variable, fishermen participation and government role on sustainable management of shrimp resources on sustainable management of shrimp resources Based on the results of multiple linear regression model analysis obtained:

1) Determinant Test.

Based on the results of regression calculations can be seen that coefficient of determination (adjusted R2) obtained by 0.854, meaning 85.4% Participation can be explained by the perception of fishermen and The role of Government and 14.6% is influenced by other variables.

2) F test (joint test).

Based on the results of statistical calculations show the value of F arithmetic 85.848 with significance of 0.00, The significance value is less than 0.05. This means that the participation of respondents can be explained by the Perceptions and Roles of the Government.

3) t Test

a) Relationship Perception of fishermen with the participation of fishermen.
The result of perception test on participation is t value = 2,141; Sig. 0.041 (p <0.05). Then Hypothesis 1 is accepted. Higher perceptions of respondents will provide better Participation as well.

b) Government Role Relationship with Fishermen Participation.
Test results Government's Role of Participation Obtained t value = 7,266 with sig 0,000 (p <0,05), then Hypothesis 1 is accepted, means the increasing Government's Role of respondents will provide better Participation as well.

7. Empowerment of Arad nets fishermen who are reponsible fisheries on Sustainable Shrimp Resource Management in Batang District

Arad fisherman's empowerment on the management of shrimp resources in Batang Regency faced with internal and external factors.

Internal Factor Analysis (IFAS)

Internal factor analysis includes strengths and weaknesses. Strengths and weaknesses in the empowerment of fishermen in fishery resource management in Batang district include :

Table 3. Internal Strategic Factors of fishermen empowerment on ecosystem management of shrimp resources to catching with Arad nets

Code	Factor Internal Strategies Power	Weight (W)	Rating (R)	Score
S1	Potential shrimp resources kg/ year	0,106	3	0,328
S2	The existence of Kretek and Karang Maeso Coral at KKLD	0,122	3	0,366
S3	Local Community Institution	0,112	3	0,336
S4	Has a long coast line	0,112	3	0,336
S5	Appropriate habitat conditions	0,112	3	0,336
	Total	0,564		1,702
	Weakness			
W1	Business Capital Limitations	0,093	2	0,186
W2	Traditional catch marketing	0,093	2	0,186
W3	The mesh size is too small	0,077	2	0,154
W4	Low level of education	0,093	3	0,279
W5	Arad fisherman still traditional	0,087	3	0,261
	Total	0,443		1,066
	IFAS			**0,636**

Based on Table 3 the priorities for weaknesses are low human resources (priority I), simple catching facilities and infrastructure (second priority), over fishing resource utilization rate (priority III), traditional catch marketing (priority IV), and the mesh size is too small (priority V).

Table 4. Shrimp Fishery Management Strategy by Combination of Strength, Weakness, Opportunity and Threat Factors.

IFAS / EFAS	**Strenghts**	**Weaknesses**
	1. Potential shrimp resources 29,032 kg / year 2. The existence of Coral Maeso and Kretek Coral 3. The existence of Local Fishermen Institution. 4. The habitat condition is still good 5. The carrying capacity of ecosystems in coastal waters of Batang distric is suitable for shrimp habitats	1. Level of utilization of shrimp resources *over fishing* 2. Traditional catch marketing 3. Size The eyes of the net are too small 4. Human Resources is still low. 5. Using traditional fishing gear
Opportunities 1. Shrimp is a leading commodity export 2. Government policy of Batang distric in fisheries management 3. Open market share 4. Stake holders support for fisheries development 5. Strengthening institutional capacity	**S – O Strategi** 1. Improving the quality of fishing resources 2. Control and supervisor the carrying capacity of the environment and the catch of shrimp	**W – O Strategi** 1. Guidance of responsible shrimp fishing 2. Improving the quality of fishermen with training 3. Improve and equip facilities and infrastructure
Threats 1. Overfishing utilization rate. 2. Perceptions and participation of fishermen are still low 3. Existencof fishing by outsider. 4. Trends decline in environmental carrying capacity. 5. MEA Market Competiti on	**S – T Strategi** 1. Diversification of fishery business 2. Enforcement of supervision and control of the catch of shrimp resources 3. Alternative livelihood training	**W – T Strategi** 1. Restrictions on the number of ships and catches 2. Development of shrimp fishing technology

8. Strategy Alternative of Arad Fisherman's Empowerment In Shrimp Resource Management

Based on the result of SWOT analysis to get the priority of decision making on the empowerment of fishermen on the management of shrimp resources in Batang district, the priority / ranking of SO strategy alternative is ranked 1 with the score 3,521, is control and supervision of environmental supporting capacity and shrimp catch and then the quality improvement of fisherman.

9. Formulation of Priority Strategy of Fisherman Empowerment of Arad Network on Shrimp Resource Management with AHP

The priority of Arad's fishing strategies based on AHP results shows :

1) Based on socio-ecology Empowerment.

Responsible Fishermen Empowerment Will Be Good Successfully Based on Socio-Ecology (33.1%), through controlling and monitoring the carrying capacity of the environment and catches through improving the quality of human resources.

2) Co-Management based empowerment.
The concept of the Co-Management-based empowerment approach is 24.1%, which is the joint empowerment management between several stakeholders (community, government and university) to the ongoing responsible fisheries towards the shrimp resource ecosystem.

3) Development of Responsible-Fisheries Empowerment
Development of fisheries-responsible fisheries empowerment of 24.1% by conducting shrimp-catching guidance in accordance with legislation.

4) Fisherman skill of empowerment

The empowerment of fishermen through the provision of motivation and encouragement to the fishermen to be able to explore their potential and dare to act to improve the quality of life, through education for awareness and ability themselves. According to Sudantoko (2010), the empowerment of fisherman's skill is done to be able to actualize themselves as actors (actor) that determine their group in order to improve their welfare.

4. Conclusions

Based on the data analysis, the discussion and the results of the research that has been done can be drawn the conclusion as follows : Alternative Strategy of Fishermen Empowerment Arad Nets to the Responsible Fisheries on Sustainable Shrimp Resource Management by controlling and supervising the carrying capacity of the environment and the catch of shrimp and increasing the quality of fisherman resources.

Arad fisherman empowerment model for Responsible Fisheries through socio-ecology based empowerment, Co-Management based empowerment, Responsible-Fisheries empowerment development, empowerment of fisherman skills.

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