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Rapfish Analysis to Assess the Status of the Sustainability of Capture Fisheries Systems in Bone Bay

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Abstract: ***Fisheries management area of indonesia (WPPRI-713) which includes sea area strait makassar, the gulf of bone saw, the flores and the bali having broad territorial waters approximately 483.666 km2.The gulf of bone saw is one WPPRI-713 set as the national marine leading (entity: the fishing ground (FG) best resources to potential sustainable fish about 144.320 tons / KKP-RI, 2008); the migration and regional fg the potential (Mallawa & Mahfud, 2009); contributions 12,06 % fisheries get (PT) (national committee, 2015).However as a result of the global climate change and exploitation constantly to meet human life whose population is growing, that current, the gulf of bone saw experience symptoms of over-eksploitasi.So to know the latest performance of capture fisheries systems get pelagic analysis was conducted in multi-dimensi rapfish.The analysis rapfish show that on the whole nearly failling grade (sustainable index 53,76%), with description each dimension are, ecological 48,52%, economic 56,31%, social 56,29%, technology 58,01%, ethic and government 48,69%. This result is very important to be a considerant to the gulf of bone body in construct the sustainable strategy.***

Keywords: WPPRI-713, Sustainability , capture fisheries systems , multi-dimensi , rapfish , ecology , economy , social , technology , ethics and government , fisheries catch , skipjack , Bone Bay

1. Introduction

The results of the study ***Worm B . et al , (2006)***, indicates that the conditions fisheries resources the world as is being experience symptoms of level of the destruction of resources fisheries (***Figure 1***) it is indicated by; in-stabilitas resources maritime, the quality of water declining exponentially as to the decrease diversity and productivity resources fish and the decline in the economic fishermen.Even in more detail, ***Pitcher et al .(2009)***, study about performance capture fisheries systems at 33 countries including indonesia .The results of the analysis status the sustainability of [1shows that the four nations (Norway, New Zealand, USA, iceland is located to the status of 'good' (index sustainability: 70 %); Spain be on condition 'limit of good' (index sustainability: 70 %); and 3 state Canada, South Africa, Japan) is located to the status of 'acceptable' (index sustainability: 60 % to 70 %) and 17 countries (Mexico, France, Ecuador, UK, India, China, Argentina, Pakistan, Brazil, **Indonesia**, Morocco, Taiwan, Turkey, Russia, Myanmar, Vietnam, Thailand) (index sustainability: 40 %).

Aimed to know the state status capture fisheries systems in more detail, then done research that looked at specifically condition status the sustainability of capture fisheries systems get pelagic in the waters Bone Bay that is part of WPPRI-713.***The purpose*** of this research is to find status the sustainability of multi-dimensi (ecology, economic, social, technology, ethics and the government) of capture fisheries systems get pelagic in Bone Bay.The results of information is very important easy to consideration for the government or management board Bone Bay in determining strategy sustainable management.

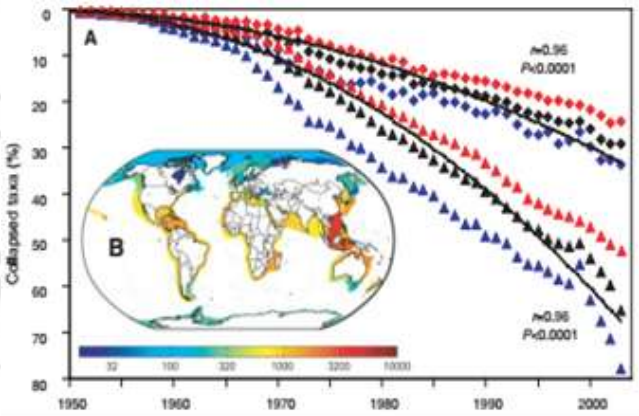


Figure 1: Performance global capture fisheries systems
Source: ***Worm B. et al, (2006)***

2. Methods

2.1 Area Study

Time research starting from planning and design research, determines the focus research, data collection, data analysis, and interprestasi data and presentation of the results of the study been implemented for a years February 2016 - February 2017.The scope of the study areas is Bone Bay , this area were chosen because they Bone Bay is access to the sea that has been set destining for extraction of common (an activity the utilization of economic) and is the area in the most potential national maritime directed for the benefit of their food needs human as well as boosting economic growth for the area (***Peraturan Pemerintah Nomor 26/2008; Peraturan Presiden Nomor 88/2011***).Broad these waters more or less 38.421,21 km^2 , covering the gulf the northern part of up to the southern part of the gulf of limited to coordinate 50 40' 05" South Latitude .The area were

divided into 92 grid namely the grid A1 – O5 with broad grid 12 x 12 m (***Figure 2***)

2.2 Methods

Analyze of status keberlanjutansistem fisheries get pelagic in Bone Bay in multi-dimensi (economics, ecology, social, technology, ethics and the government) so this research using data collection method secondary (statistics fisheries), the draft regulation and policies on and to get certain information and a statement of good to a certain problems in the study areas so methods used to collect the data is through observation (observation and interview). The data in analysis by using the method analysis Rapid Apraisal for Fisheries (RAPFISH). Method of analysis rapid appraisal for fisheries (rapfish) used to analyze status sustainability and arranged strategy resource management fisheries get skipjack in Bone Bay , based on analysis rapfish approach multi-dimensional scaling (MDS).Mds is statisticstechnics are capable of performing the transformation of multi-dimensi into dimensions lower using software program raled sbh (***Pitcher and Preikshot 2001***).Analysis in the methods of rapfish covering analysis rapid appraisal (RAP-analysis), analysis lever (leverage analysis) and Monte-Carlo analysis.

The field of analysis MDS by using rapfish used in this research include; ecology, economic, technology, social, ethics / of government (Table 1), where most of attributes and indicators discussed to define fisheries get in Bone Bay is the result of a review of; ***Pitcher (1999); PRPPSE (2002); Hartono (2005); Murillas (2012); and Asrial et al (2015)***. To give a current status from the condition of fishery catch skipjack in Bone Bay on the respective dimensions it is used a plot ordinasi two dimensions (***Ananthan & Ramasubramanian, 2016***). While a diagram a kite (***Figure 3***) used to illustrate the status of the sustainability in multi-dimensi namely by means of comparing the performance of each dimensions (***Garmendia et al. 2010***).

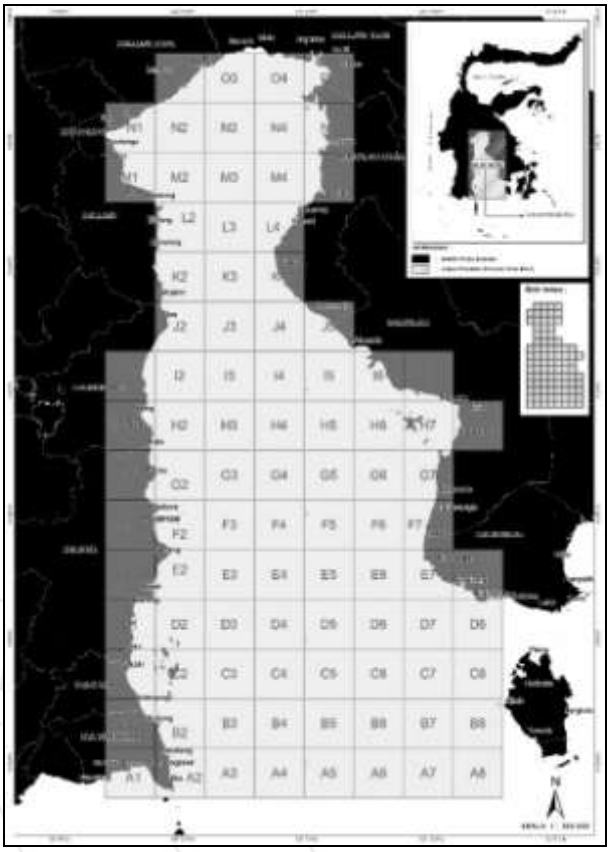


Figure 2: Area Study – Bone Bay

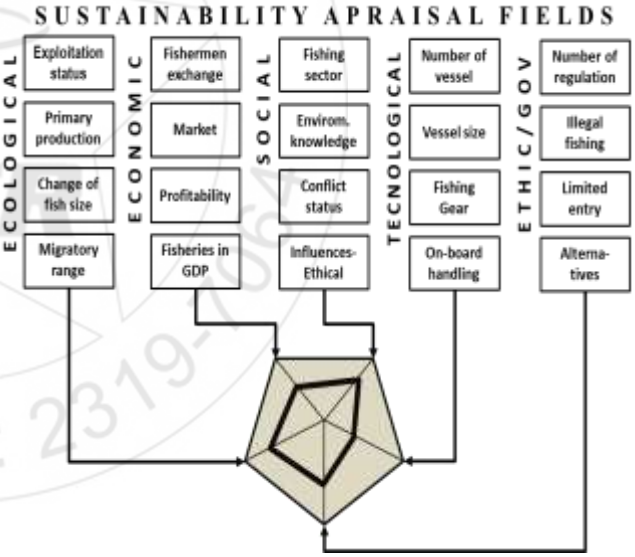


Figure 3: The analysis mds - rapfish for analysis the status of sustainability aquaculture systems get pelagic in Bone Bay

Table 1: Dimensions and attributes for basic ecology, economic, technology, social and ethics used to evaluate status the sustainability of capture fisheries systems get pelagic in Bone Bay.

Dimensions	*Attribute*	*Explanation*	*Scoring Guidelines*	*Good*	*Bad*	*Source*
ECOLOGY	Exploitation status	The lower level of exploitation fisheries resources in the / unit analysis , so the risk / a threat to the sustainability of fisheries / unit in the analysis is the less Assesses exploitation status scored on an FAO-like scale; assess using local experts, stock assessment, Kobe plot or consult FAO website for status (except collapsed)	0; 1; 2; 3 FAO-like scale: under-exploited (0); fully- exploited at approximate MSY (1); heavily- exploited well beyond MSY (2); or over-exploited well beyond MSY to collapsed (3) [can consult FAO website for status]	0	3	*Pitcher, (1999) dan Dwiponggo (1988)*
	Primary	Primary production plankton a factor the main	(0):konsentrasi klorofil a > 10	0	2	*EAFM, 2012*

	production	support the lives of every creatures in ecosystems the waters / aquatic ecosystem .Hence the higher fertility rate a territory / unit (analysis and it is a ecosystem) waters shows that the risk / threats against the sustainability of fisheries in the analysis / unit the less	mg/m^3 terjadi eutrofikasi; (1):konsentrasi klorofil a 1-10 mg/m^3 potensi terjadi eutrofikasi; dan (2):konsentrasi klorofil a <1 mg/m^3 tidak terjadi eutrofikasi			
	Change of fish size	Measurement change rata-rata of fish captured during 5 years indicates that enough time for ikan-ikan for precocious arrested.This shows that the risk / threats against the sustainability of fisheries in the analysis / unit the less.To see trend to scatter rata-rata size of fish captured as an indication of pressure arrest (fishing pressure)	0; 1; 2 Has average fish size landed changed in past 5 years; no (0); yes, a gradual change (1); yes, a rapid large change (2). percentage caught before	0	2	*Pitcher, (1999)*
	Migratory range	The less ruaya from fish who captured the more effective business management so along with that risk / threats against the sustainability of fishing enterprises in areas / unit analysis the less	0; 1; 2 # of jurisdictions encountered during migration (includes international waters): 1-2 (0); 3-4 (1); >4 (2)	0	2	*Pitcher, (1999)*
ECONOMY	Fishermen exchange rate	0; 1; 2 The less NTN the threatening sustainability fish resources	0; 1; 2 Nilai Tukar Nelayan (Fishermen exchange rate); 0 = kurang dari 100, 1 = 100, 2 = lebih dari 100	2	0	*Pitcher, (1999)*
	Market	Market or local user tend to be more care / friendly (concern / stewardship) on fisheries resources in the / unit analysis.Because it will support the sustainability of arrests in the business capture and fisheries resources contained in it.	0; 1; 2 market is principally: local/national (0); national/regional (1); international (2)	2	0	*PRPPSE, 2002*
	Profitability	If profits the catch a trip in volume and the catch higher levels of exploitation and a trip are likely to decline .This led to the less risk / threats against the sustainability of fisheries in the / unit analysis .	0; 1; 2 R/C Ratio yang terbagi menjadi R/C<1 (0); R/C=1 (1); dan R/C>1 (2)	2	0	*Asrial et al, 2015*
	Fisheries in GDP	If in the sector analysis / unit other businesses relatively contributed to the economy greater (had contributed to), then attention of the stakeholders against the sustainability of the fishing industry will be bigger.	0; 1; 2 Importance of fisheries sector in national economy: low(0); medium (1); high(2)	2	0	*Pitcher, (1999)*
SOCIAL	Fishing sector	The less percentage number of households fishermen show the less dependence the community resources on fisheries and risk / threats against the sustainability of fisheries in the analysis / unit the less.	0; 1; 2 households in fishing in the community: <1/3 (0); 1/3-2/3 (1); >2/3 (2)	0	2	*Pitcher, (1999)*
	Environmental knowledge	Knowledge / understanding of the environment indirectly indicates the extent of care fishermen (traditional knowledge) against the sustainability of fisheries in the / unit analysis.	0; 1; 2 Level of knowledge about environmental issues and the fishery: none (0); some (1) ; lots (2)	2	0	*Pitcher, (1999)*
	Conflict status	Generally sustainable fisheries in the / unit analysis is be more secured if never conflict, both conflict between stakeholders fisheries with the community outside fisheries catch.	0; 1; 2 level of conflict with other sectors: none (0); some (1); lots (2)	0	2	*Pitcher, (1999)*
	Influences-Ethical formation	The ethical formation; the existing social within the community fishermen could reduce (support) positive or negative (harm / threatening) against the sustainability of fisheries management in the / unit (analysis in relation to the activity of fishing).	0; 1; 2 level of Influences-Ethical formation: none (0); some (1); lots (2)	2	0	*Hartono, 2005*
TECHNOLOGY	Number of vessel	The more ship , the higher ability extent fishing activities , the higher the level of exploitation fisheries resources.	0; 1; 2 increase of number fishing vessel: none (0); some (1); lots (2)	0	2	*Murillas, 2012*
	Vessel size	The greater the size of the vessel , the higher the ability to exploit fisheries resources.	0; 1; 2 Average length of vessels: <8 m (0); 8-17 m (1); >17 m (2)	0	2	*Pitcher, (1999)*
	Fishing Gear	The risk / on the ecosystem waters threat	0; 1; 2	0	2	*Pitcher,*

		posed by a catch passive relatively small compared with a catch active.	gear is: passive (0); semi-active (1): fully-active (2)			*(1999)*
	On-board handling	Getting good handling of fish on board , the more zoom a decline in the quality of fish at the time will ashore / sold (improve fishermen) advantage.	0; 1; 2 On-board handling technique; none (0); handling with ice (1); handling with refrigerator (2)	2	0	*Hartono, 2005*
Ethics And Government	Number of coastal regulation	The more legislation that have been made , fisheries and resource management would be easier arranged / managed.	0; 1; 2 Number of coastal regulation; none (0); some (1); lots (2)	0	2	*Hartono, 2005*
	Illegal fishing	The use of fisheries resources will be follow the rules fisheries resource management at public awareness over all the activity of fishing high (the public pressure).	0; 1; 2 illegal catching/poaching/transshipments: none (0); some (1); lots (2)	0	2	*Pitcher, (1999)*
	Limited entry	Limiting access / a combined with proper management can reduce pressure on fish stock a particular kind as to reduce the number of fishermen catch kind of the fish	0; 1; 2	2	0	*Hartono, 2005*
	Alternatives	The more work outside fisheries indirectly reduce the exploitation of fisheries resources.	0; 1; 2 alternatives to the fishery within community:none (0); some (1); lots (2)	2	0	*Pitcher, (1999)*

Source : ***Pitcher (1999); EAFM (2012); PRPPSE (2002); Hartono (2005); Murillas (2012); dan Asrial et.al (2015)***

3. Result and Discussion

3.1 Result of Attribute Analysis

The assessment results of the each attribute with use scale measured and criteria consistent(***Pitcher (1999); EAFM (2012); PRPPSE (2002); Hartono (2005); Murillas (2012); and Asrial et al (2015***). Based on the data were collected from identification field, interviews and policy studies and literature review, indicated by the table below.

Table 2: Performance each attribute at the field of multi-dimensi capture fisheries systems get pelagic in Bone Bay

Attributes	*Score & Performance*	
Exploitation status	2	Exploited = heavily-well beyond MSY.
Primary production	1	konsentrasi klorofil a = 1 - 10 mg/m^{-3} potensi terjadi eutrofikasi.
Change of fish size	1	Has average fish size landed changed in past 5 years = yes, a gradual change.
Migratory range	2	# of jurisdictions encountered during migration (includes international waters) = >4 nM.
Fishermen exchange rate	1	Nilai Tukar Nelayan (Fishermen exchange rate) = 100
Market	1	market is principally = local, national, regional.
Profitability	2	R/C Ratio >1.
Fisheries in GDP	0	Importance of fisheries sector in national economy = low.
Fishing sector	0	households in fishing in the community < 1/3.
Environmental knowledge	1	Level of knowledge about environmental issues and the fishery = some.
Conflict status	1	level of conflict with other sectors = some.
Influences-Ethical formation	1	level of Influences-Ethical formation = some.
Number of vessel	1	increase of number fishing vessel = some.
Vessel size	1	average length of vessels (LOA) = 8 - 17 m.
Fishing Gear	1	gear is = semi-active
On-board handling	1	On-board handling technique = handling with ice.
Num. of coastal regulation	1	Number of coastal regulation = some.
Illegal fishing	1	illegal catching/ poaching/ transshipments = some.
Limited entry	1	Limited entry = some.
Alternatives	1	alternatives to the fishery within community = some.

Source of the analysis 2017.

3.2 Result of Sustainable Status Evaluation

Performance each dimensions capture fisheries systems get pelagic in Bone Bay indicated by figure 4 , where a plot ordinasi dua-dimensi to a horizontal line (the x axis) indicates value performance and a vertical line (the y axis) presented features distinguishing other (***Pitcher et al.1999***) .While performance in multi-dimensi illustrated in a plot ordinasi diagram kite [1]

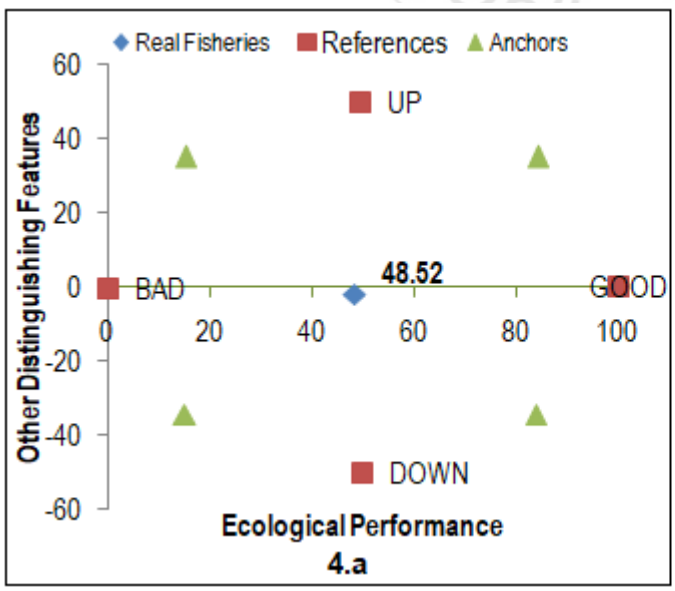
In a plot ordinasi dua-dimensi of the dimensions of ecology (Figure 4.a), status the sustainability of dimensions ecology capture fisheries systems get skipjack in Bone Bay is 48,52%, this condition shows that status ecology fisheries get skipjack in Bone Bay lack continuity; while in (figure 4.b), status the sustainability of economic dimension capture fisheries systems get skipjack in Bone Bay is 56,31% , this condition shows that economic status fisheries get skipjack

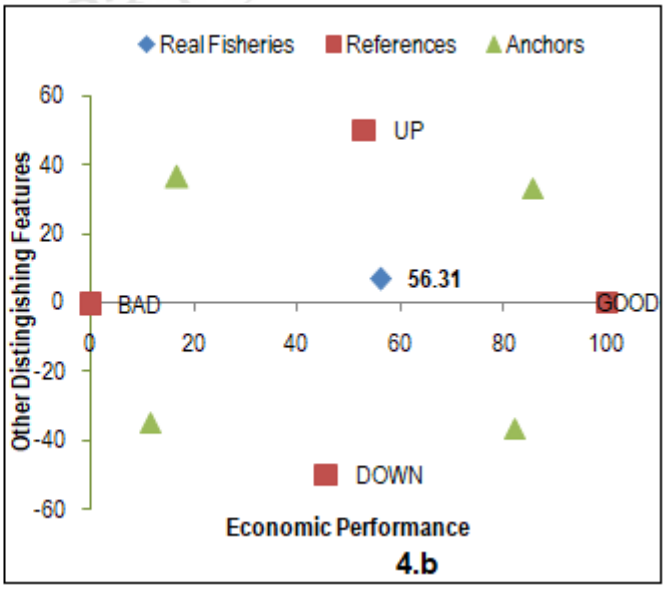
in Bone Bay enough sustained; next on (Figure 4.c) , status the sustainability of the social dimension capture fisheries systems get skipjack in Bone Bay is 56,29% , this condition shows that social status fisheries get skipjack in Bone Bay enough sustained; and in the picture 4.d), status the sustainability of dimensions technology capture fisheries systems get skipjack in Bone Bay is 58,01%, this condition shows that status technology fisheries get skipjack in Bone Bay enough ongoing basis; and ect

While in a plot diagram elevated (Figure 3.f) describing a combination of each dimensions in multi-dimensi, with the value and status each dimensions different namely dimensions ecology 48,52% (less continues), economic dimension 56,31% (enough continues), the social dimension 56,29% (enough continues), dimensions technology 58,01% (enough continues), dimensions ethics and government 48,69% (less continues), and the average in multi-dimensi is 53,76% (enough continues).Value status the sustainability of this is important to see because it could be the basis to fix capture fisheries systems in order to increase index the sustainability of fisheries management get pelagic on the gulf of bone. dimensions ecology (Figure 4.a), status the sustainability of dimensions ecology capture fisheries systems get skipjack in Bone Bay is 48,52 %, this condition shows that status ecology fisheries get skipjack in Bone Bay lack continuity; while in know atribut-atribut sensitive as lever the dimensions of hence analysis was conducted leverage [2], where the analysis leverage on each attributes described in a plot ordinasi rapfish (Picture 5), describing how big attributes affect the whole ordaining (Maza, 2011). Where a horizontal line (the x axis) in a plot ordinasi two dimensions indicates the sensitivity of attributes examining the sensitivity ranges from 0 to 100 (on the status of scale 0 to 100) and a vertical line (the y axis) presented features attributes analyzed from every dimensions (ekspoitasi status, the production of primary, measurement change fish, range migration, the exchange rate fishermen, market, profit, gdp fisheries, fishing growth, knowledge environment, the conflict, the ethical formation, the number of vessels, the size of the vessel, a catch, handling fish on board, the number of fisheries policy, illegal fishing, limiting access, alternatives work).

Value leverage and value rapfish on a chart diinterprestasi with the long bars described proportionally on each dimensions through the process logarithma[3].Figure 5, shows that attributes the most sensitive influence sustainability dimensions ecology on aquaculture systems get the waters in the Bone Bay was "***exploitation (status exploitation)***" .The economic dimension, attributes the most sensitive influence sustainability aquaculture systems get the is "***exchange rates fishermen (fisheries exchange rate) and markets (market)***".To the social dimension, attributes the most sensitive influence sustainability aquaculture systems get the is "***status (status conflict conflict)***" .The dimensions technology, attributes the most sensitive influence sustainability aquaculture systems get the is "***number and size of a ship (number and size of boat) and tools get (fishing gear)***" .

1. *A plot ordinasi two the dimensions and diagrama elevated describes how performance evaluation rapfish to modality different from the sustainability of can be considered together as value on an axis diagram elevated .Box represent attribute used to coordinate fisheries in any fields evaluation .Connection the marks on the arrows and diagrams of the elevated is values between 0 and 10 % of each sector .The outer edge of elevated equivalent in value 1 (' good') , while central elevated are an 0 (' bad')*
2. *Leverage calculated as a difference error the standard error between ordinasi obtained by and without including attribute, by which a fault standard for sustainability (the axis ' x'- a horizontal line) demonstrated in the right side (Pitcher, 1999).*
3. *To display long histogram being in proportion the us of a whole, then done a logs (10: the value of leverage) used to describe bars the value of leverage and logs (5: the value of rapfish) used to describe the value of rapfish.*





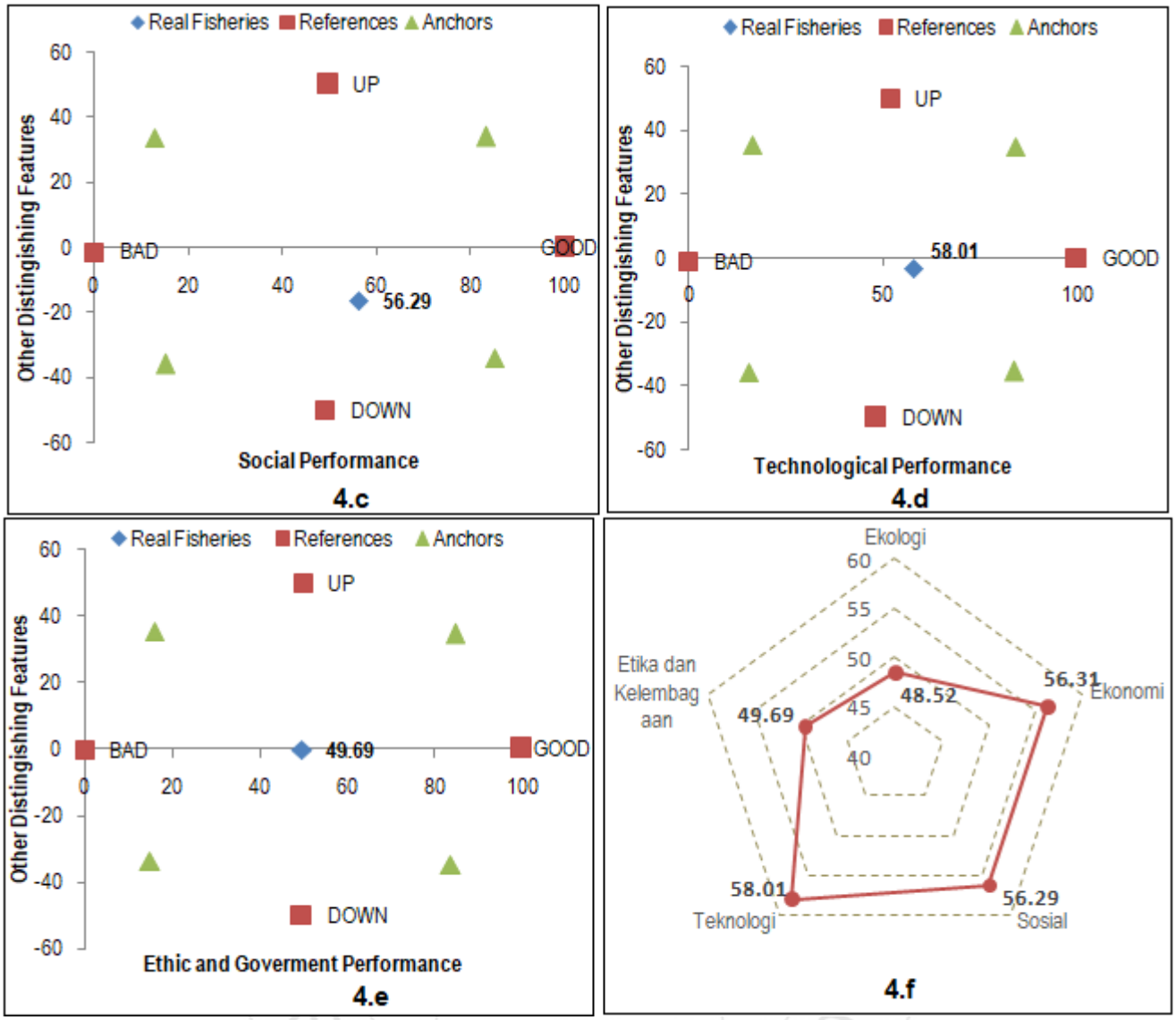


Figure 4: A plot ordinasi two dimensions status the sustainability of each dimensions fisheries get pelagic in Bone Bay

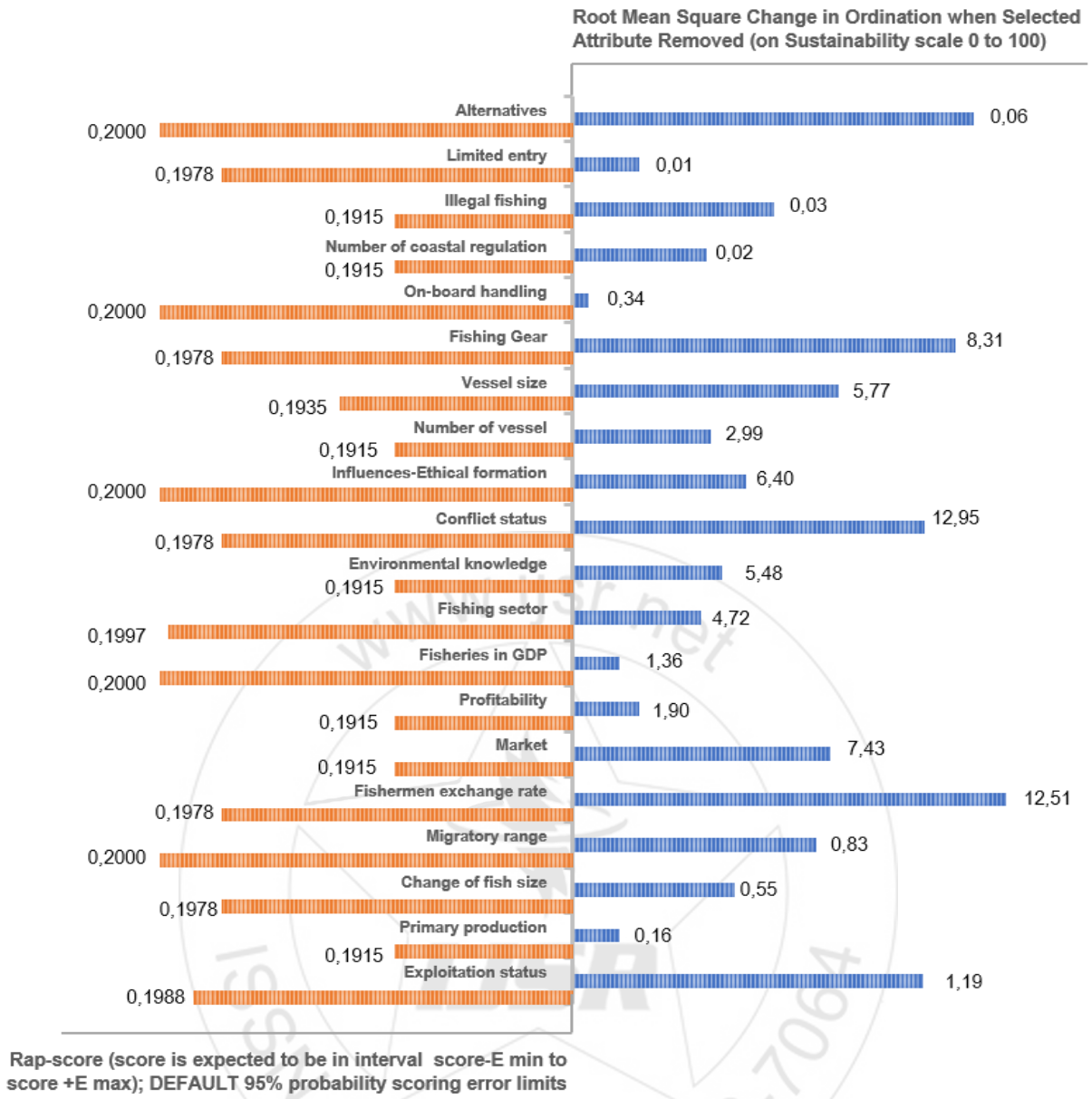


Figure 5: A whole influence over twenty leverage attribute at fisheries pelagic system get in Bone saw bay and value of sustainability (a horizontal line fine scales into bad).

Source of the analysis 2017.

3.3 Discussion

The analysis shows that index status the sustainability of system fisheries get pelagic in Bone Bay is 53,76 %, the value of the debt still up the average index status the sustainability of system indonesian fishery (& lt; 40%) analyzed by ***Pitcher (2009)***.However, performance the sustainability of system fisheries get pelagic in Bone Bay still fragile and are on the verge of symptoms level of the destruction of resources fisheries (***Worm B. et al. (2006***).This indicated by several things, including; size fish are caught in the gulf Bone Bay (to species; skipjack more experienced decrease in size gradually and periodic (periodic gradual change), this condition as a result from resource fish exploited by fisherman in sort of shallow will begin from the north to south on the gulf of bone for throughout the year, and all time ruaya the fish to find their food (feeding migration), ranging in size from small and large to the size without setting so that in fear would affect sustainability the population (***Mallawa, (2010) danMallawa, (2012***).Besides size fish declining, other indication of kecendrungan collapse resources of fish in Bone Bay is with the small cpue periodically where the value of CPUE in each zone the north, central and southern Bone Bay from year to year declining by the addition of efforts fishing and increase the number of a fleet of fish (***Jamal, (2009).*** This was supported by ***Mallawa (2009)***, that the fish in the gulf bone exploited by fishermen starting from the southern end of the gulf BoneBay (Kabupaten Bulukumba, Sinjai and Bone), waters of the central Bone Bay (Kabupaten Luwu and the City Palopo up to the northern end of the gulf BoneBay (Luwu east Region, Luwu North Region and Kolaka Region), fish exploited throughout the year, and all time looking for their food (feeding migration) in these waters so CPUE declining from year to year.

Another indication of, besides an indication bio-ekologi is can be seen from indicator of the macro-economic, where ntn over the past five years that is in 2012-2016 (to the basic 2011: 100), in the coastal Bone Bay cendrung fluctuant with ntn be at approximately 99,13 up to 106,35, with an index the prices received by fishermen on 2016 (in basic 2011: 100) as much as 124,47, this indicates that the price fisheries products get increased price with an average of only 1.25 times higher than with a product price same in the basic 2011 (Statistics Fisheries South Sulawesi Provincial, 2016).The condition of the low NTN in Bone Bay will be more threatening sustainability resources fish in the region since on average fishermen in a region on the bay bone not having livelihoods an alternative (alternative income).This condition is getting into severe as the number of fishermen who race in due to lack of job opportunities for family members fishermen to sector another job because low level of education family fishermen and lack of skill fishermenand family members on a other job besides profession catch fish.Even if there is one employment opportunities on the job alternative undertaken fishers are in the form of workers in the market or construction coolies, while fishermen who has capital only to business alternative of selling for daily needs in the market or building porter. This job is usually carried out by the wife and children fishermen.And for fishermen who have less capital enough usually the wife fishermen look for additional by providing household assistant services to neighbors they whether of washing laborers or housekeeper) but the number is very few found to fishermen in the gulf of Bone Bay.

The condition of the sustainability of resources fishing Bone Bay more vulnerable by a lack of regulations that specifically regulates about direction the use of fishery resources in spatial (zoning) or management direction, the impact of the absence of regulations and zoning area to open access still happens that is good, conflict between fishermen and across sector still happens in the Bone Bay.As case in point the conflict between fishermen in the border bulumba with selayan and conflicts state of the fishermen and apparatus (see: ***News Mongabay Indonesia: December 10 2016***: Page news the environment: regret the development of ngos fishermen by unscrupulous jagawana), and conflict between the fisheries sector with other sectors (see: ***News Mongabay Indonesia: May 2 2017:*** page news the environment: fishermen Takalar hostages a ship mining sand in coastal waters Galesong-Takalar.

Besides device regulations, in the bone saw bay has not been available management board capable of integration of all sector in the area authority different the authority of the province of south sulawesi and south east, because resources of fish in bone bay the same as the condition of resources flying fish that is beberada in some authority of the government provincial and used by some kind of business, and there were several stakeholders who need to work together in a body of management and fleksible effektif(***Ali S, (2010),***where management board who effektif determined by the legality the body is, the quality of organization, form and quality of interaction, its members effektif and representative city.A member of effektif is true stakeholders, has a sense of ownership, a sense of concern and responsibility to fish sustainability resourcesfish.

4. Conclusion

- The gulf of bone saw as an area fisheries in indonesia has long been used in supporting affected the people life living around , although no record sure , but the historic evidence the (as a relic equipment fishermen '***pakkaja'*** on museum '***lapawawoi***' in Bone Bay) show existence benefits by from resource fisheries in the gulf of Bone Baysaw been until now.Even links between between ***'patron'*** and ***'client'*** (**Entity**: links between ***'punggawa-sawi'*** who has rooted in the dynamics of sosio-ekonomis the fishermen Bugis-Makassar and a replica in the system for fisheries.
- Index sustainability fisheries management get caught skipjack in the gulf of Bone Bay in multi-dimensi is 53,76% (enough continue), with details of masing-masing dimension in multi-dimension, namely; dimensions ecology 48,52% (less continue), economic dimension 56,31% (enough continue), the social dimension 56,29% (enough continue), the technology 58,01% (enough continue), the ethics and government 48,69% (less continue).
- Attributes the most sensitive influence sustainability dimensions ecology on aquaculture systems get the waters in the Bone saw Bay "exploitation of status (status exploitation)".While for economic dimension, attributes the most sensitive influence the sustainability of capture fisheries systems get skipjack is "the exchange rate fishermen (fisheries exchange rate)".To the social dimension, attributes the most sensitive influence the sustainability of capture fisheries systems get skipjack is "status conflicts (conflict status)", while to dimensions technology, attributes the most sensitive influence the sustainability of capture fisheries systems get skipjack is" the number and the size of the vessel (number and size of boat)", meanwhile in dimensions ethics and government , attributes the most sensitive influence the sustainability of capture fisheries systems get skipjack is "alternative jobs (an alternative and fishing in illegal (illegal fishing)"
- To increase the performance of capture fisheries systems are a priority better or in other words raise the status of the sustainability of fisheries get skipjack in Bone Bay from the current state of to a condition better, so a technique that is done is with the process of selecting attributes sensitive and intervene attribute suspected most senstitif to be defined in the form of strategy management.

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