

Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktek dalam Bidang Pendidikan dan Ilmu Geografi

ALUR BUKTI KORESPONDENSI

“Patorani local knowledge system in fisheries resources conservation education in Galesong District South Sulawesi”

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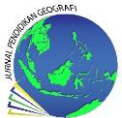
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Local Knowledge System Patorani In fisheries Resources Conservation Education In Galesong District South Sulawesi

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Abstract

This study aims to describe patorani culture regarding to local knowledge of fishermen in conserving fishery resources. This study uses a qualitative descriptive method by considering the data which includes a preliminary study. Collecting data obtained through literature review, observation, and preliminary survey. The data were analyzed based on the understanding and opinion of the community through a qualitative approach. The results of this study show that the Galesong people still practice patorani culture in the use of coastal and marine resources, including: 1) Knowledge related to fishing preparation ceremonies, 2) the use of fishing gear technology, 3) knowledge of the existence (ground fishing) of *torani* fish/fish flying, 4) knowledge in fishing activities, and 5) knowledge of the fishing voyage patorani. The knowledge of fishermen is based on patorani culture which is derived from the experience that is hereditary. The local knowledge system of patorani can support systematically education on the conservation of aquatic biological resources, especially fishery resources.

Keywords: Local Knowledge; Conservation Education; Patorani; Fishery Resources

Abstrak

Penelitian ini bertujuan untuk menggambarkan budaya *patorani* mengenai pengetahuan lokal nelayan dalam melestarikan sumber daya perikanan. Penelitian ini menggunakan metode deskriptif kualitatif dengan mempertimbangkan data yang meliputi kajian studi pendahuluan. Pengumpulan data yang diperoleh melalui tinjauan literatur, observasi dan survey awal. Data dianalisis berdasarkan pemahaman dan pendapat masyarakat melalui pendekatan kualitatif. Hasil penelitian ini menunjukkan bahwa masyarakat Galesong masih melakukan budaya *patorani* dalam pemanfaatan terhadap sumber daya pesisir dan kelautan, termasuk: 1) Pengetahuan berkaitan upacara persiapan aktivitas penangkapan, 2) penggunaan teknologi alat tangkap, 3) pengetahuan keberadaan (*ground fishing*) ikan *torani*/ikan terbang, 4) pengetahuan dalam aktivitas penangkapan, dan 5) pengetahuan tentang pelayaran nelayan *patorani*. Pengetahuan nelayan berdasarkan budaya *patorani* berasal dari pengalaman yang turun temurun. Sistem pengetahuan lokal *patorani* secara sistematis dapat menunjang pendidikan konservasi sumber daya hayati perairan, khususnya sumber daya perikanan.

Kata Kunci: Pengetahuan Lokal; Pendidikan Konservasi; *Patorani*; Sumber Daya Perikanan

1. Introduction

The Indonesian government increases conservation areas in coastal areas, waters, and small islands, every five year period. The efforts and results that have been targeted, show quite developed results and will be pursued more optimally in 2020 with a conservation area of 881,581.36 ha where the realization of the achievement is 189, 72% of the target that has been set. The achievement of the target that exceeds the plan, proves that the greater the cooperation between the government and local communities in maintaining, managing, and conserving the potential of coastal and marine resources. This is also carried out in Takalar Regency, especially in Galesong District, namely the conservation of fishery resources with a potential achievement of 6.5 million tons of captured fisheries.

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The actions (behavior) of local communities reflect a culture that they carry out continuously based on certain ways or techniques in accordance with what has become an ancient tradition, so that it brings up principles, systematics and patterns in maintaining balance and sustainable management of the environment and resources. (Reyes-García & Benyei, 2019). All forms of action that related to taboos, prohibitions, and manifestations of tradition become a form of expressing messages from local community behavior which have great meaning for the preservation of coastal resources, especially fisheries (Yenrizal, 2017). The local culture of the community reflects various values and meanings in each of their behavior in life.

The emphasis on indicators of the word local, does not refer only to astronomical boundaries and geographical spatial characteristics, but rather to how a culture (habits) is created and implemented as a whole and continues beyond the administrative boundaries and is not limited by the strictest border lines to other culture (Syarif et al., 2016). The word of local culture can also be defined against the culture (tradition) owned by the indigenous people (inlander) as a heritage (Vogt et al., 2016). The doer of local culture in Indonesia become a cultural heritage that belongs together in a single unit of the nation's cultural wealth.

Long ago, the people of South Sulawesi, Bugis, Makassar and Mandar tribes, were tenacious sailors. They have high maritime aspirations, so fishing or hunting activities in the wide ocean are the main livelihoods, especially for people who live in coastal areas (Norken et al., 2016). Each region has a local knowledge system in preserving, managing, and maintaining the potential of its fishery resources both in quality and quantity with the creation of traditional technology. These traditional technologies are adapted with shipping and marine environmental conditions in their coastal areas. This will lead to the actions of coastal communities in conserving resources, where they are also as social category that once became fishermen, it will be difficult to leave the marine environment to shift to other economic sectors on land (Setyowati et al., 2017). Understanding of local patorani carried out by coastal communities in Galesong District, Takalar Regency, as a form of conservation education that will teach us to know the process of managing marine resources, namely fishery resources based on local wisdom and local culture. The characteristic of patorani knowledge are aspects of background and learning experience by identifying directly the things that affect their lives.

(Nguyen & Ross, 2017) revealed that patorani comes from two sources, they are from the words tobarani and torani. Tobarani is interpreted as a person who is brave, so that until now the only ones who have become patorani are those who are brave in navigating the vast ocean which full of challenges. While the word torani is a term or nickname for the type of fish that is the target of hunting for patorani.

Indonesia has various types of flying fish, 10 of them are in the waters of South Sulawesi and eastern Indonesia. Flying fish or torani are marine resources that are highly sought by patorani because apart from being able to consume, torani fish eggs are also very excellent with high selling prices because they have export value. The biggest export destinations are to Japan, Korea, and China for medicinal purposes and for healthy food (Thamrin, 2013). This is the background of the great attention of the government and local

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communities in conserving these fishery resources with a local knowledge system that is owned and continues existed until now.

In general, resource conservation education for coastal communities is to regulate the pattern of community actions and activities in a guided and structured manner, with stanzas of inherent knowledge called pangissengang in treating nature. One of these patterns is contained in the control of traditional and simple fishing gear, but produces catches of high quality and quantity and are environmentally wise (Sufia et al., 2016). So it can be said that the knowledge that patorani has is a manifestation of a form of conservation that is wise to the environment, especially in the area where they hunted for torani. Patorani conservation education is designed and then developed from time to time and is reflected in every behavior or activity pattern of individuals and groups.

Comment [MTBM2]: In this section , the author need to address the main of the research (objectives)?

2. Method

This research was conducted in Palalakkang village, Galesong, Takalar district, South Sulawesi, by using survey methods, observation, literature review, in-depth interviews and analyzing the suitability of the research focus through Focus Group Discussion (FGD). The approach taken was qualitative which produces descriptive data in the form of spoken and written words obtained from main informants and supporting informants. The data was collected through primary and secondary data verification through triangulation data.

Comment [MTBM3]: Need to detailed the method used. How many people are interviewed> In FGD how many involved? Observation, where it happens? How many observation conduction during the research period? What are the data analysis is used? Sample and sampling procedure?

3. Results And Discussion

3.1. Results

Takalar Regency has made the fishery sector as the main sector for community economic growth, including in Galesong District. The characteristics of the area with a coastal morphology of ± 74 KM make the people in Galesong District have activities in catch fisheries centers and fish processing production, and some works as farmers who work part time or full time (Tamba, 2011). Galesong district is the largest base of patorani fishermen and until 2020 the number of patorani can be seen in table 1 below.

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Table 1. Number of Patorani in Galesong District in 2017-2020

No.	Fisherman Status	Year		Development Percentage (%)
		2017	2020	
1.	<i>Papalele</i>	14	18	3.5
2.	<i>Punggawa</i>	58	69	5.27
3.	<i>Sawi</i>	532	634	5.21
Total		604	721	100

Resources: Galesong District in Figures 2019

The manifestation of wise actions towards the environment can be seen clearly in one of the patorani knowledge, it is through the use of local and simple fishing gear, namely pakkaja and balla-balla. It is same with balla-balla which are made in such a way that the

torani fish feel comfortable spawning on dry coconut leaves with a rough texture and is liked by *torani* fish. After spawning, *torani* fish will be free to escape and breed to spawn again in the coming season (Danielsen et al., 2014). It can be said that the *patorani* establish special communication with the *torani* to cooperate with each other and become a big advantage for the *patorani* to get large quantities of fish and eggs (Arief & Agusanty, 2013). Meanwhile, *pakkaja* is made as a tool to limit the exploitation of *torani* fish, because the size of the holes made is adjusted to the size of *torani* fish and young fish can be released freely. A wise attitude towards the environment is an important education for all circles because it is related to beneficial interactions mutually between humans and nature (Thompson et al., 2020). Fishing gear of *Pakkaja* and *balla-balla* can be seen in Figure 1 and 2 below.



Figure 1. *Pakkaja*



Figure 2. *Balla-balla*

Like other local communities, the *patorani* also have a knowledge system based on beliefs, hunches, smells, hearings, and sights that are applied in their actions on land and at sea. That simplicity which makes a custom, culture, and tradition in a community are being strong and active until now, where modernization forces that influence from outside will not be able to change their understanding that has been patterned in the form of knowledge and action (Chakravartty & Sharma, 2013). The tools of traditional knowledge can be seen in their ability to read the right natural conditions for sailing and catching *torani* fish.

The results of our observations, obtained from one of the *patorani* named Mr. Agung who lives in South Galesong District, it is known that there are forms of local culture introduced by the *patorani*. He explained that in the process of catching flying fish in the ocean, they (*patorani*) maintain the condition of the waters and maintain their fish resources, they also have rules in terms of preserving coastal conditions such as maintaining the existence of mangroves, not damaging corals (using traditional fishing gear), and maintain the quantity of coastal and marine resources that still already exist. These resources are flying fish, sea cucumbers, milkfish, shrimp, seaweed, and shellfish. Several forms of local culture as outlined in *Patorani*'s fishing regulations as he said are: (1) control of fishing gear, (2) fishing pauses, (3) rotation of fishing grounds, (4) distribution of FADs, (5) distribution of fish larvae, (6) increasing the number of mangrove sprouts, (7) limiting fishing areas with mangrove breeding areas to avoid sedimentation that can disturb the mangroves, and (8) opening milkfish and shrimp ponds ~~on a regular basis~~ regularly. All forms of *patorani* are stipulated in customary rules and the rules of the Galesong community. The implementation application contains prohibitions and obligations that must be obeyed by *patorani*, if they want to be safe in their activities at sea. The goal is none other than the conservation of coastal and marine resources which is proven to be ongoing and the benefits are greatly felt

Comment [MTBM4]: Observation or interview?

by the local community, so that the existence of *patorani* still survives to this day along with the customary rules that are patented in each of their rituals.

In addition, Mr. Agung stated that besides *Patorani* having regulatory references in their livelihood activities, they are also required for knowledge in entering water areas, which this knowledge contains meanings and values that they must obey. If they violate, then they will get sanctions from tribal chiefs and sanctions from nature.

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 Observation result
 Interview result
 Survey result
 FGD result

3.2. Discussion

Patorani culture is unique because the fishing process is carried out in the dry season with very traditional tools. The use of this traditional tool is closely related to the condition of the coral reefs that are maintained, because their goal is to preserve the habitat of the fish (Martin et al., 2016). Indirectly they preserve the existence of coral reefs by protecting them from the influence of modern tools that can be destructive. Economically, *patorani* is very profitable because it is made by using local materials and is easy to find, so the fishing gear is environmentally friendly. The survival of this local culture is due to the ability of the *patorani* to recognize physical phenomena that bring fortune to their survival, it is related to human interaction with the physical nature, which still maintains the preservation of aquatic biological resources in the Galesong District.

3.2.1. Knowledge in the Ceremony Preparation (Appakruru and Accaruk-caruk)

Preparation activities forms were done by *patorani* are the core activities in the form of a salvation ceremony and asking permission from nature. This implementation is carried out in two stages. In the first stage, the ceremony is carried out on boats that will be used in sailing to catch *torani* fish and to collect its eggs, and the second stage is carried out together with the traditional structures of the *patorani*. The stages of the ceremony can be seen in Table 2 below.

Table 2. Stages of Ceremony/Ritual *Patorani*

Ceremony/Ritual Fisherman <i>Patorani</i>		Ritual Purposes/Ceremony
Ceremony's Stage	Ritual Contents/Ceremony	
<i>Appakruru</i> Stage (Preparation)	The first stage in the ceremony, contains reading <i>barazanji</i> (reading holy verses) by people who have been appointed and ends with a prayer by <i>anrongguru</i> (traditional teacher). All members of the ceremony are men, including the elders. They give a <i>baca</i> (mantra) to the traditional food in the ceremony, namely <i>kaddo minya</i> (yellow glutinous rice) and <i>songkolo</i> (glutinous rice), bananas and incense. After that, the participants of the ceremony eat together the foods that contain elements of brown sugar and coconut, with a sweet meaning as a sweetener for sustenance for those who will go to sea. After the participants of the ceremony	The purpose of this ceremony is to maximize the readiness, both spiritual and physical for the equipment that will be brought to the sea.

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<i>Accaruk-caruk</i> stage (Small Party before going to the Sea)	The second stage of the ceremony is held on the beach in the vicinity of the <i>patorani</i> . This activity was only carried out by <i>anrongguru</i> and was attended by several people to help stick woven bamboo on the beach which contained food of <i>songkolo</i> and chicken wrapped by banana leaves which were previously read a prayer. Then wash away the food and sweet cakes that have been given a mantra by using a raft from a banana tree trunk.	The purpose of this ceremony is to ask permission from the inhabitants of the ocean that they will make a voyage in their territory, begging to be kept away from natural disturbances, given safety during sailing until they return to land safely without any drawbacks.
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Resources: Field Data Processing, 2020

3.2.2. Knowledge of Making and Operating Fishing Pole

Patorani fishing gear technology was born and developed by science by using scientific information sourced from ancestors and from generation to generation (Alwiah, 2014). The development of fishing gear technology in the patorani community is not interferenced by technology that has external contacts, however, the technology is always born through local knowledge. General description of the fishing bubu/pakkaja, as patorani fishing gear, are generally operated by using boats measuring 6-11 GT, with a sail area of 35-70 m, two engines with a power of 31-60 PK. As many as 30-55 bubu/pakkaja fishing which were brought, with 20-45 kg nylon rope. Another fishing gear is balla-balla, it is a form of half-dried banana leaf midribs which are arranged in such a way as to accommodate the survival and attachment of torani fish eggs on the leaves. In general, the operations of pakkaja and balla-balla are ordered as follows:

1. After the fishing gear is recited dua by punggawa, sawi then puts pakkaja and balla-balla floating (ammanyu-manyu) on the surface of the sea.
2. The number of pakkaja that are dropped is 10-20 pieces and balla-balla as much as 20-30 pieces, depending on the estimated number of flying fish in that position.
3. Each pakkaja and balla-balla is associated with "gosse" which is a type of seaweed with a distinctive smell and it is liked by torani, thus inviting them to come to spawn (lay eggs).
4. The bottom of the pakkaja is tied with one to three balla-balla which serve as a place for torani fish to lay eggs.
5. Attach a coconut leaf as a marker on the outside of the pakkaja to make it easier to find when controlling. The purpose of using coconut leaves is because it has a rough and sticky texture so that Torani can lay eggs.
6. Lower the pakkaja first, because it is heavier, while the balla-balla are lowered and left to float near the surface of the sea and sometimes partially submerged in the water. Both are lowered while tied to bamboo which is arranged as a float and marker.

7. The fishing gear was left ammanyu-manyu (to float) for 24 hours and during that duration it would be controlled three times. The fishing gear must be removed after 24 hours and replace balla-balla if they still want to continue to net torani. Pakkaja tools doest not need to be replaced because the material is strong and durable because it is made of bamboo and rattan, while balla-balla are made from dry coconut leaves which are not durable. Furthermore, on the outside of the pakkaja tied with coconut leaves as a marker of the floating point.

3.2.3. Knowledge of the Torani Position

Local knowledge possessed by torani fishers leads them to an understanding of the existence of torani fish in the ocean by following the symbols and signs of nature, namely: (1) the appearance of a sparkling light that looks very clear from the eyes of the observer (patorani), (2) recognize the torani through it smells, (3) through checking the temperature of the waters, by dipping the hands up to the elbows to feel whether the sea water is warm or not, if the water is warm torani are usually gathering, (4) gathering the type of bird with a duck beak which have red and black colors, and (5) through monitoring the altitude level of the fish, if the flying fish jump higher (behavior of the fish), the torani are not laying eggs and they will surely stay away from the balla-balla, and vice versa. However, (Baruah et al., 2013).

3.2.4. Knowledge in the Fishing Activities

The operation of pakkaja and balla-balla fishing gear is to use a boat that is boarded in a state where the engine is not ringing, so that the atmosphere of the waters becomes calm. Previously, bamboo that was crossed straight or U-shaped was prepared as a float, while the balla-balla were tied to the bamboo which was completely submerged in the water and covered with some coconut leaf midribs. The control is carried out 2-3 times in a span of 24 hours and then looks into the pakkaja and balla-balla. During the control period, the patorani fishermen sing "porn" songs whose philosophy comes from a beautiful girl a daughter of king whose previously unsuccessful in marriage, which eventually turns into a torani, so that if a male sing "porn" song, the torani will came from all directions to meet her future husband.

3.2.5. Knowledge in Sailing

Knowledge in voyages done by *patorani* can be seen in the shipping knowledge matrix, in table 3 below.

Table 3. Knowledge Matrix of *Patorani*

No	Informant Name	Information Given	Domain Information
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1	Agung Dg. Taba <i>Papalele</i> (Army retainer)	All <i>patorani</i> believe in the existence of guardian spirits in fishing areas. They also believe that the spirit will be angry if <i>the patorani</i> commits an offense while sailing. Hence, it must be avoided by throwing out the betel leaf and tobacco that the <i>Anrongguru</i> had previously prayed for on the mainland.	Knowledge of sailing
2	H. Samsul Dg. Nyikko <i>Papalele</i> (Army retainer)	<i>Patorani</i> is good at determining departure times based on local observations. They depart in the eastern season, in March or April based on the observation of the season through the <i>appakruru</i> that has been carried out. This experience has been proven that wherever possible the day of departure is on Tuesday, Wednesday, Saturday and Sunday.	Knowledge in observing the seasons and determining good days
3	Japar Dg. Manggewa (<i>Sawi</i>)	<i>Patorani</i> activities in the ocean is strongly influenced by weather conditions through cloud monitoring. If the clouds are seen gathering, it means that the weather is shady and <i>the patorani</i> must immediately lower their fishing gear.	Knowledge of clouds
4	Bakhtiar Dg. Jarre <i>Punggawa</i> <i>Tamparang</i> (Sea <i>Punggawa</i>)	<i>Patorani</i> knowledge produces local terms in star marking to monitor their activities. the <i>tanra tellu</i> which indicates heavy rain, the <i>wettuing</i> Star indicates sailing time, and the <i>mono</i> which indicates the condition of the sky.	Knowledge in seeing stars (<i>mamau</i>)
5.	Darmawan Dg. Tawang <i>Punggawa</i> <i>Tamparang</i> (Sea <i>Punggawa</i>)	<i>Patorani</i> believes that during their activities in the ocean, they are always supervised by the guardian spirit of the ocean, so in the event of lightning, they must stop their work to recite mantra and pray for salvation. Lightning is interpreted as the power given by God to expel (pursue) disturbing spirits in the ocean that interfere their activities.	Knowledge of thunder and lightning
6	Ismail Dg. Beta (elderly community)	<i>Patorani</i> must not be in or damage the <i>sapa</i> (coral cluster). The area is believed to be a sacred area inhabited by guardian spirits. The presence of greetings can be seen through signs: the reflection of the sun's rays is very bright, the water conditions are quite clear and warm, and the number of birds are looking for food.	Knowledge of coral clusters (<i>sapa</i>)
7	Rusdi Dg. Gassing <i>Punggawa</i> <i>Tamparang</i> (Sea <i>Punggawa</i>)	There are many things that are taboo for <i>patorani</i> when at sea. These taboos are: prohibited from calling people who are on land, prohibited from whistling because it can invite strong winds, prohibited from dipping kitchen utensils because it can invite storms, prohibited from blocking the way of a fisherman when they want to get on a boat,	Abstinence (<i>pamali</i>)

prohibited from takabbur and speaking disrespectfully because it invites sharks to come, and prohibited to prone while sleeping during sailing.

Resources: Field Data Processing, 2020

The matrix clearly explains that it is very necessary to preserve the *patorani* because it contains values and meanings of actions as outlined in several rituals such as dances, songs, and ~~pornographic~~ conversations, poetry, and prayer. This becomes the basis for local communities in managing management resources in the form of conservation education to maintain the potential of sustainable resources. From these actions, they believe they have the power to summon flying fish to meet their nets, while still considering things in the form of taboos. In general, the *patorani* has a lot of uniqueness that reflects a life with various traditional ceremonies that are related to livelihood systems, beliefs, and local knowledge that have not been widely disclosed. In addition, the question is the form and meaning of their actions in preserving and managing their activities independently, as well as in groups as *Patorani* which has caused them to survive to this day. This condition is also supported by the large number of students who come from coastal areas inside and outside South Sulawesi. They can certainly feel things related to the decline in marine resources caused by their management which have not been or have not even been taken into account by the local government in improving their standard of living as coastal communities.

Interaction process of *patorani* fisherman which poured in various actions and behaviors, contain local values as a form of learning in interacting with the natural environment. In a group social network, there are norms which occurred and are maintained together, as well as being used as a tool to access and regulate natural resources (Joa et al., 2018). The form of action of the local community, has its own norms and rules that distinguish it from other individuals and groups (Maridi, 2015). *Patorani* community shows a form of conservation that is wise, through local human knowledge in their treatment of the environment.

Hunting for fish and torani eggs is carried out by *patorani* based on the strength of their knowledge understanding which synergize with nature, especially in the ocean. The knowledge is called *erang passimombalang* (knowledge in shipping) and *erang pakboya-boyang* (knowledge of fishing technology). If it explore deeply, the existence of *patorani* fishing gear is not comparable to the natural conditions that are full of challenges and unexpected things. But the strength lies on the two knowledge which ~~be-is~~ able to balance all *patorani* activities in the fishing ground area. Some theories state that the strength of the fishing community is not like destroying the marine environment, but the power that synergizes the forces of nature with humans (Thondhlana & Shackleton, 2015). *Patorani* knowledge becomes a manifestation of the motive of the goal to be achieved, namely the role of knowledge in being wise to the *torani* they exploit, not excessively and can still survive for a long period of time.

The knowledge system owned by *Patorani*, as a form of conservation education in Galesong District, has a *cause*, where the origin of their activities was oriented only to hunting for fish, but after some time, their activities were oriented to *torani* fish eggs because had value in high selling. The influence of *cause* which forces them to maintain knowledge so they can focus more on how they ~~are able to can~~ interact properly ~~in order~~ to maintain the potential that they consider to be excellent. Element *cause* is very strong in influencing the pattern of human behavior (Patiselano et al., 2015). While the inner environment contains imminent or immanent experiences in the form of belief, and transcendental experiences in the form of magic (Bennett, 2014). This is reinforced by the theory stated by (Sumarmi, 2015) which

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states that in addition to the natural physical environment, humans have another environment as a complementary style in life which is called the cultural environment. So that the motive for the purpose of the *erang* (knowledge) is to complete the procedures and techniques for catching *torani* that are carried out by the *patorani*, as well as making guidelines in utilizing other coastal resources.

4. Conclusion And Suggestion (recommendation)

Based on the results of this study, it can be concluded:

1. Patorani local knowledge comes from traditional knowledge systems that are implemented based on patterns and practices through experience that is passed down to each generation.
2. The patorani local knowledge system is able to survive because of their belief that it is able to generate principles, concepts and ways to maintain a balance and sustainable management of the environment and resources.

The patorani local knowledge can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

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Perbaikan Revisi 1

Re: [JPG] Editor Decision

Dari: Hasriyanti Edy (yantidakijo@yahoo.com)

Kepada: betty.masruroh@um.ac.id

Tanggal: Rabu, 26 Oktober 2022 pukul 23.35 GMT+8

Thank you for the results of the revision decisions given by the journal manager. We are ready to accept the parts of the article that we need to revise. Thank you.

Pada Rabu, 12 Oktober 2022 14.06.46 WITA, Listyo Yudha Irawan <noreply@um.ac.id> menulis:

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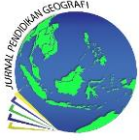
Hasriyanti Hasriyanti:

We have reached a decision regarding your submission to Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktek dalam Bidang Pendidikan dan Ilmu Geografi, "Local Knowledge System Patorani Infisherles Resources Conservation Education In Galesong District South Sulawesi".

Our decision is: Revisions Required

Betty Masruroh
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Local Knowledge System Patorani in fisheries Resources Conservation Education in Galesong District South Sulawesi

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Abstract

This study aimed to learn, and describe *patorani* culture the knowledge of fishermen in conserving fishery resources. This research used qualitative descriptive method, by considering the data which includes the study of preliminary studies. The collection of data obtained through literature review, observation, and preliminary survey. The data were analyzed based on understanding and public opinion through a qualitative approach. The results of this study showed that Galesong society still do *Patorani* culture in the utilization of coastal resources and maritime transport, including: 1) knowledge related to ceremonial preparation of fishing activities, 2) the use of technology fishing gear, 3) knowledge about the existence of fish *Torani*/fly fishing, 4) knowledge in fishing activities, and 5) knowledge of the fishing voyage *patorani*. Knowledge of fishermen is based on *patorani* culture which is derived from experience that is hereditary. The local knowledge system of *patorani* can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

Keywords: Local Knowledge; Conservation Education; Patorani; Fishery Resources

Abstrak

Penelitian ini bertujuan untuk mempelajari dan menggambarkan budaya *patorani* mengenai pengetahuan lokal nelayan dalam melestarikan sumber daya perikanan. Penelitian ini menggunakan metode deskriptif kualitatif dengan mempertimbangkan data yang meliputi kajian studi pendahuluan. Pengumpulan data yang diperoleh melalui tinjauan literatur, observasi dan survey awal. Data dianalisis berdasarkan pemahaman dan pendapat masyarakat melalui pendekatan kualitatif. Hasil penelitian ini menunjukkan bahwa masyarakat Galesong masih melakukan budaya *patorani* dalam pemanfaatan terhadap sumber daya pesisir dan kelautan, termasuk: 1) Pengetahuan berkaitan upacara persiapan aktivitas penangkapan, 2) penggunaan teknologi alat tangkap, 3) pengetahuan keberadaan (*ground fishing*) ikan *torani*/ikan terbang, 4) pengetahuan dalam aktivitas penangkapan, dan 5) pengetahuan tentang pelayaran nelayan *patorani*. Pengetahuan nelayan berdasarkan budaya *patorani* berasal dari pengalaman yang turun temurun. Sistem pengetahuan lokal *patorani* secara sistematis dapat menunjang pendidikan konservasi sumber daya hayati perairan, khususnya sumber daya perikanan.

Kata Kunci: Pengetahuan Lokal; Pendidikan Konservasi; *Patorani*; Sumber Daya Perikanan

1. Introduction

The Indonesian government increases conservation areas in coastal areas, waters, and small islands, every five year. The efforts and results that have been targeted, show quite

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developed result and will be pursued more optimally in 2020 with a conservation area of 881,581.36 ha where the realization of the achievement is 189, 72% of the target that has been set. The achievement of the target that exceeds the plan, proves that the greater the cooperation between the government and local communities in maintaining, managing, and conserving the potential of coastal and marine resources. This is also carried out in Takalar Regency, especially in Galesong District, namely the conservation of fishery resources with a potential achievement of 6.5 million tons of capture fisheries.

The actions (behavior) of local communities reflect a culture that they carry out continuously based on certain ways or techniques in accordance with what has become an ancient tradition, so that it brings up principles, systematics and patterns in maintaining balance and sustainable management of the environment and resources. (Reyes-García & Benyei, 2019). All forms of action that related to taboos, prohibitions, and manifestations of tradition become a form of expressing messages from local community behavior which have great meaning for the preservation of coastal resources, especially fisheries (Yenrizal, 2017). The local culture of the community reflects various values and meanings in each of their behavior in life.

The emphasis on indicators of the word local does not refer only to astronomical boundaries and geographical spatial characteristics, but rather to how a culture (habits) is created and implemented as a whole and continues beyond the administrative boundaries and is not limited by the strictest border lines to other culture (Syarif et al., 2016). The word of local culture can also be defined against the culture (tradition) owned by the indigenous people (inlander) as a heritage (Vogt et al., 2016). The doer of local culture in Indonesia become a cultural heritage that belongs together in a single unit of the nation's cultural wealth.

Long ago, the people of South Sulawesi, Bugis, Makassar and Mandar tribes, were tenacious sailors. They have high maritime aspirations, so fishing or hunting activities in the wide ocean are the main livelihoods, especially for people who live in coastal areas (Norken et al., 2016). Each region has a local knowledge system in preserving, managing, and maintaining the potential of its fishery resources both in quality and quantity with the creation of traditional technology. These traditional technologies are adapted with shipping and marine environmental conditions in their coastal areas. This will lead to the actions of coastal communities in conserving resources, where they are also as social category that once became fishermen, it will be difficult to leave the marine environment to shift to other economic sectors on land (Setyowati et al., 2017). Understanding of local patorani carried out by coastal communities in Galesong District, Takalar Regency, as a form of conservation education that will teach us to know the process of managing marine resources, namely fishery resources based on local wisdom and local culture. The characteristic of patorani knowledge are aspects of background and learning experience by identifying directly the things that affect their lives.

(Nguyen & Ross, 2017) revealed that patorani comes from two sources, they are from the words tobarani and torani. Tobarani is interpreted as a person who is brave, so that until now the only ones who have become patorani are those who are brave in navigating the vast ocean which full of challenges. While the word torani is a term or nickname for the type of fish that is the target of hunting for patorani.

Indonesia has various types of flying fish, 10 of them are in the waters of South Sulawesi and eastern Indonesia. Flying fish or torani are marine resources that are highly sought by patorani because apart from being able to consume, torani fish eggs are also very excellent with high selling prices because they have export value. The biggest export destinations are to Japan, Korea, and China for medicinal purposes and for healthy food (Thamrin, 2013). This is the background of the great attention of the government and local communities in conserving these fishery resources with a local knowledge system that is owned and continues existed until now.

In general, resource conservation education for coastal communities is to regulate the pattern of community actions and activities in a guided and structured manner, with stanzas of inherent knowledge called pangissengang in treating nature. One of these patterns is contained in the control of traditional and simple fishing gear, but produces catches of high quality and quantity and are environmentally wise (Sufia et al., 2016). So it can be said that the knowledge that patorani has is a manifestation of a form of conservation that is wise to the environment, especially in the area where they hunted for torani. Patorani conservation education is designed and then developed from time to time and is reflected in every behavior or activity pattern of individuals and groups. Hence, the aim of this research is to understand the context behind the patorani in conserving fishery resources through local knowledge as a form of conservation education in Galesong District, South Sulawesi.

2. Method

This research was conducted in Palalakkang village, Galesong, Takalar district, South Sulawesi, by using survey methods, observation, literature review, in-depth interviews and analyzing the suitability of the research focus through Focus Group Discussion (FGD). The approach taken was qualitative which produces descriptive data in the form of spoken and written words obtained from main informants and supporting informants. The data was collected through primary and secondary data verification through triangulation data.

The sampling technique used in this research was purposive sampling which based on the respondents' characteristics who met with the objectives of the research conducted. The researcher determined the criteria regarding which respondents can be selected as samples, in the form of main informants and supporting informants. The main informants are *papalele*, *punggawa*, and *sawi*, while supporting informants are cultural figures and community leaders. In the FGD process, all informants were involved in clarifying and verifying the data found in the field. Data analysis revealed through the natural relationship between researchers and informants. It was done during the collection process and after the overall data was collected. Along with data collection, analysis (interpretation) was carried to sharpen the focus of observation and extend what was relevant with the main problems studied.

3. Results And Discussion

3.1. Results

Takalar Regency has made the fishery sector as the main sector for community economic growth, including in Galesong District. The characteristics of the area with a coastal morphology of ± 74 KM make the people in Galesong District have activities in catch fisheries centers and fish processing production, and some works as farmers who work part time or full

time (Tamba, 2011). Galesong district is the largest base of *patorani* fishermen and until 2020 the number of *patorani* can be seen in table 1 below.

Table 1. Number of Patorani in Galesong District in 2017-2020

No.	Fisherman Status	Year		Development Percentage (%)
		2017	2020	
1.	<i>Papalele</i>	14	18	3.5
2.	<i>Punggawa</i>	58	69	5.27
3.	<i>Sawi</i>	532	634	5.21
Total		604	721	100

Resources: Galesong District in Figures 2019

The manifestation of wise actions towards the environment can be seen clearly in one of the *patorani* knowledge, it is through the use of local and simple fishing gear, namely *pakkaja* and *balla-balla*. It is same with *balla-balla* which are made in such a way that the *torani* fish feel comfortable spawning on dry coconut leaves with a rough texture and is liked by *torani* fish. After spawning, *torani* fish will be free to escape and breed to spawn again in the coming season (Danielsen et al., 2014). It can be said that the *patorani* establish special communication with the *torani* to cooperate with each other and become a big advantage for the *patorani* to get large quantities of fish and eggs (Arief & Agusanty, 2013). Meanwhile, *pakkaja* is made as a tool to limit the exploitation of *torani* fish, because the size of the holes made is adjusted to the size of *torani* fish and young fish can be released freely. A wise attitude towards the environment is an important education for all circles because it is related to beneficial interactions mutually between humans and nature (Thompson et al., 2020). Fishing gear of *Pakkaja* and *balla-balla* can be seen in Figure 1 and 2 below.



Figure 1. Pakkaja



Figure 2. Balla-balla

Like other local communities, the *patorani* also have a knowledge system based on beliefs, hunches, smells, hearings, and sights that are applied in their actions on land and at sea. That simplicity which makes a custom, culture, and tradition in a community are being strong and active until now, where modernization forces that influence from outside will not

be able to change their understanding that has been patterned in the form of knowledge and action (Chakravartty & Sharma, 2013). The tools of traditional knowledge can be seen in their ability to read the right natural conditions for sailing and catching torani fish.

Interview result obtained from one of the patorani named Mr. Agung who lives in South Galesong District, it is known that there are forms of local culture introduced by the patorani. He explained that in the process of catching flying fish in the ocean, they (patorani) maintain the condition of the waters and maintain their fish resources, they also have rules in terms of preserving coastal conditions such as maintaining the existence of mangroves, not damaging corals (using traditional fishing gear), and maintain the quantity of coastal and marine resources that still already exist. These resources are flying fish, sea cucumbers, milkfish, shrimp, seaweed, and shellfish. Several forms of local culture as outlined in Patorani's fishing regulations as he said are: (1) control of fishing gear, (2) fishing pauses, (3) rotation of fishing grounds, (4) distribution of FADs, (5) distribution of fish larvae, (6) increasing the number of mangrove sprouts, (7) limiting fishing areas with mangrove breeding areas to avoid sedimentation that can disturb the mangroves, and (8) opening milkfish and shrimp ponds on a regular basis. All forms of patorani are stipulated in customary rules and the rules of the Galesong community. The implementation application contains prohibitions and obligations that must be obeyed by patorani, if they want to be safe in their activities at sea. The goal is none other than the conservation of coastal and marine resources which is proven to be ongoing and the benefits are greatly felt by the local community so that the existence of patorani still survives to this day along with the customary rules that are patented in each of their rituals.

In addition, Mr. Agung stated that besides patorani having regulatory references in their livelihood activities, they are also required for knowledge in entering water areas, which this knowledge contains meanings and values that they must obey. If they violate, then they will get sanctions from tribal chiefs and sanctions from nature.

The result of the observation showed that patorani fisherman is based on a knowledge that contains rules and magical values related to sciences (*pangngissengang*). The behavior comes from these values showed the actions of the fishing community in ancient times, which became a habit. In addition, the result of the interview found that the community consisted of *papalele*, *punggawa*, and *sawi* who interacted with each other, working together in managing coastal and marine resources, especially fisheries. Traditionally, they manage these resources through a culturally based environmental ethic that synergizes with group dynamics. Cultural environment refers to the maintenance of traditional knowledge systems that lead their thoughts, behavior, and fishing gear through their local culture.

Moreover, the survey results concluded that the behavior and actions taken can be understood through two stages, namely understanding individual actions and understanding group actions. Groups understanding can be understood through the cultural meanings that are formed through the symbols they have used. While individuals understanding can be understood through rational actions in their behavior patterns. It was also shown in the results of the FGD that trust naturally grows in the fishing community through experience and habits to apply and maintain two types of knowledge (*erang*). The two knowledges are knowledge of the ins and outs shipping (*erang passimombalang*) and knowledge of fishing methods and technology (*erang pakboya-boyang*).

3.2. Discussion

Patorani culture is unique because the fishing process is carried out in the dry season with very traditional tools. The use of this traditional tool is closely related to the condition of the coral reefs that are maintained, because their goal is to preserve the habitat of the fish (Martin et al., 2016). Indirectly they preserve the existence of coral reefs by protecting them from the influence of modern tools that can be destructive. Economically, patorani is very profitable because it is made using local materials and easy to find, so the fishing gear is environmentally friendly. The survival of this local culture is due to the ability of the patorani to recognize physical phenomena that bring fortune to their survival, it is related to human interaction with the physical nature, which still maintains the preservation of aquatic biological resources in the Galesong District.

3.2.1. Knowledge in the Ceremony Preparation (Appakruru and Accaruk-caruk)

Preparation activities forms were done by *patorani* are the core activities in the form of a salvation ceremony and asking permission from nature. This implementation is carried out in two stages. In first stage, the ceremony is carried out on boats that will be used in sailing to catch *torani* fish and collect its eggs, and the second stage is carried out together with the traditional structures of the *patorani*. The stages of the ceremony can be seen in Table 2 below.

Table 2. Stages of Ceremony/Ritual *Patorani*

Ceremony/Ritual Fisherman <i>Patorani</i>		Ritual Purposes/Ceremony
Ceremony's Stage	Ritual Contents/Ceremony	
<i>Appakruru</i> Stage (Preparation)	The first stage in the ceremony, contains reading <i>barazanji</i> (reading holy verses) by people who have been appointed and ends with a prayer by <i>anrongguru</i> (traditional teacher). All members of the ceremony are men, including the elders. They give a <i>baca</i> (mantra) to the traditional food in the ceremony, namely <i>kaddo minya</i> (yellow glutinous rice) and <i>songkolo</i> (glutinous rice), bananas and incense. After that, the participants of the ceremony eat together the foods that contain elements of brown sugar and coconut, with a sweet meaning as a sweetener for sustenance for those who will go to sea. After the participants of the ceremony leave the place.	The purpose of this ceremony is to maximize the readiness, both spiritual and physical for the equipment that will be brought to the sea.

<i>Accaruk-caruk</i> stage (Small Party before going to the Sea)	The second stage of the ceremony is held on the beach in the vicinity of the <i>patorani</i> . This activity was only carried out by <i>anrongguru</i> and was attended by several people to help stick woven bamboo on the beach which contained food of <i>songkolo</i> and chicken wrapped by banana leaves which were previously read a prayer. Then wash away the food and sweet cakes that have been given a mantra by using a raft from a banana tree trunk.	The purpose of this ceremony is to ask permission from the inhabitants of the ocean that they will make a voyage in their territory, begging to be kept away from natural disturbances, given safety during sailing until they return to land safely without any drawbacks.
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Resources: Field Data Processing, 2020

3.2.2. Knowledge of Making and Operating Fishing Pole

Patorani fishing gear technology was born and developed by science by using scientific information sourced from ancestors and from generation to generation (Alwiah, 2014). The development of fishing gear technology in the patorani community is not interference by technology that has external contacts, however the technology is always born through local knowledge. General description of the fishing *bubu/pakkaja*, as patorani fishing gear, are generally operated by using boats measuring 6-11 GT, with a sail area of 35-70 m, two engines with a power of 31-60 PK. As many as 30-55 *bubu/pakkaja* fishing which were brought, with 20-45 kg nylon rope. Another fishing gear is *balla-balla*, it is a form of half-dried banana leaf midribs which are arranged in such a way as to accommodate the survival and attachment of torani fish eggs on the leaves. In general, the operations of *pakkaja* and *balla-balla* are ordered as follows:

1. After the fishing gear is recited dua by *punggawa*, *sawi* then puts *pakkaja* and *balla-balla* floating (*ammanyu-manyu*) on the surface of the sea.
2. The number of *pakkaja* that are dropped is 10-20 pieces and *balla-balla* as much as 20-30 pieces, depending on the estimated number of flying fish in that position.
3. Each *pakkaja* and *balla-balla* is associated with "gosse" which is a type of seaweed with a distinctive smell and it is liked by torani, thus inviting them to come to spawn (lay eggs).
4. The bottom of the *pakkaja* is tied with one to three *balla-balla* which serve as a place for torani fish to lay eggs.
5. Attach a coconut leaf as a marker on the outside of the *pakkaja* to make it easier to find when controlling. The purpose of using coconut leaves is because it has a rough and sticky texture so that *torani* can lay eggs.
6. Lower the *pakkaja* first, because it is heavier, while the *balla-balla* are lowered and left to float near the surface of the sea and sometimes partially submerged in the water. Both are lowered while tied to bamboo which is arranged as a float and marker.
7. The fishing gear was left *ammanyu-manyu* (to float) for 24 hours and during that duration it would be controlled three times. The fishing gear must be removed after 24

hours and replace *balla-balla* if they still want to continue to net *torani*. *Pakkaja* tools does not need to be replaced because the material is strong and durable because it is made of bamboo and rattan, while *balla-balla* are made from dry coconut leaves which are not durable. Furthermore, on the outside of the *pakkaja* tied with coconut leaves as a marker of the floating point.

3.2.3. Knowledge of the Torani Position

Local knowledge possessed by *torani* fishers leads them to an understanding of the existence of *torani* fish in the ocean by following the symbols and signs of nature, namely: (1) the appearance of a sparkling light that looks very clear from the eyes of the observer (*patorani*), (2) recognize the *torani* through it smells, (3) through checking the temperature of the waters, by dipping the hands up to the elbows to feel whether the sea water is warm or not, if the water is warm *torani* are usually gathering, (4) gathering the type of bird with a duck beak which have red and black colors, and (5) through monitoring the altitude level of the fish, if the flying fish jump higher (behavior of the fish), the *torani* are not laying eggs and they will surely stay away from the *balla-balla*, and vice versa. However, (Baruah et al., 2013).

3.2.4. Knowledge in the Fishing Activities

The operation of *pakkaja* and *balla-balla* fishing gear is to use a boat that is boarded in a state where the engine is not ringing, so that the atmosphere of the waters becomes calm. Previously, bamboo that was crossed straight or U-shaped was prepared as a float, while the *balla-balla* were tied to the bamboo which was completely submerged in the water and covered with some coconut leaf midribs. The control is carried out 2-3 times in a span of 24 hours and then looks into the *pakkaja* and *balla-balla*. During the control period, the *patorani* fishermen sing "porn" songs whose philosophy comes from a beautiful girl a daughter of king whose previously unsuccessful in marriage, which eventually turns into a *torani*, so that if a male sing "porn" song, the *torani* will come from all directions to meet her future husband.

3.2.5. Knowledge in Sailing

Knowledge in voyages done by *patorani* can be seen in the shipping knowledge matrix, in table 3 below.

Table 3. Knowledge Matrix of *Patorani*

No	Informant Name	Information Given	Domain Information
1	Agung Dg. Taba <i>Papalele</i> (Army retainer)	All <i>patorani</i> believe in the existence of guardian spirits in fishing areas. They also believe that the spirit will be angry if the <i>patorani</i> commits an offense while sailing. Hence, it must be avoided by throwing out the betel leaf and tobacco that the <i>Anrongguru</i> had previously prayed for on the mainland.	Knowledge of sailing

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2	H. Samsul Dg. Nyikko <i>Papalele</i> (Army retainer)	<i>Patorani</i> is good at determining departure times based on local observations. They depart in the eastern season, in March or April based on the observation of the season through the <i>appakruru</i> that has been carried out. This experience has been proven that wherever possible the day of departure is on Tuesday, Wednesday, Saturday and Sunday.	Knowledge in observing the seasons and determining good days
3	Japar Dg. Manggewa (<i>Sawi</i>)	<i>Patorani</i> activities in the ocean is strongly influenced by weather conditions through cloud monitoring. If the clouds are seen gathering, it means that the weather is shady and <i>the patorani</i> must immediately lower their fishing gear.	Knowledge of clouds
4	Bakhtiar Dg. Jarre <i>Punggawa</i> <i>Tamparang</i> (<i>Sea Punggawa</i>)	<i>Patorani</i> knowledge produces local terms in star marking to monitor their activities. the <i>tanra tellu</i> which indicates heavy rain, the <i>wettuing</i> Star indicates sailing time, and the <i>mono</i> which indicates the condition of the sky.	Knowledge in seeing stars (<i>mamau</i>)
5.	Darmawan Dg. Tawang <i>Punggawa</i> <i>Tamparang</i> (<i>Sea Punggawa</i>)	<i>Patorani</i> believes that during their activities in the ocean, they are always supervised by the guardian spirit of the ocean, so in the event of lightning, they must stop their work to recite mantra and pray for salvation. Lightning is interpreted as the power given by God to expel (pursue) disturbing spirits in the ocean that interfere their activities.	Knowledge of thunder and lightning
6	Ismail Dg. Beta (elderly community)	<i>Patorani</i> must not be in or damage the <i>sapa</i> (coral cluster). The area is believed to be a sacred area inhabited by guardian spirits. The presence of greetings can be seen through signs: the reflection of the sun's rays is very bright, the water conditions are quite clear and warm, and the number of birds are looking for food.	Knowledge of coral clusters (<i>sapa</i>)
7	Rusdi Dg. Gassing <i>Punggawa</i> <i>Tamparang</i> (<i>Sea Punggawa</i>)	There are many things that are taboo for <i>patorani</i> when at sea. These taboos are: prohibited from calling people who are on land, prohibited from whistling because it can invite strong winds, prohibited from dipping kitchen utensils because it can invite storms, prohibited from blocking the way of a fisherman when they want to get on a boat, prohibited from takabbur and speaking disrespectfully because it invites sharks to come, and prohibited to prone while sleeping during sailing.	Abstinance (<i>pamali</i>)

Resources: Field Data Processing, 2020

The matrix clearly explains that it is very necessary to preserve the *patorani* because it contains values and meanings of actions as outlined in several rituals such as dances, songs,

and pornographic conversations, poetry, and prayer. This becomes the basis for local communities in managing management resource in the form of conservation education to maintain the potential of sustainable resources. From these actions, they believe they have the power to summon flying fish to meet their nets, while still considering things in the form of taboos. In general, the *patorani* has a lot of uniqueness that reflects a life with various traditional ceremonies that are related to livelihood systems, beliefs, and local knowledge that have not been widely disclosed. In addition, the question is the form and meaning of their actions in preserving and managing their activities independently, as well as in groups as *Patorani* which has caused them to survive to this day. This condition is also supported by the large number of students who come from coastal areas inside and outside South Sulawesi. They can certainly feel things related to the decline in marine resources caused by their management which have not been or have not even been taken into account by the local government in improving their standard of living as coastal communities.

Interaction process of *patorani* fisherman which poured in various actions and behaviors, contain local values as a form of learning in interacting with the natural environment. In a group social network, there are norms which occurred and are maintained together, as well as being used as a tool to access and regulate natural resources (Joa et al., 2018). The form of action of the local community, has its own norms and rules that distinguish it from other individuals and groups (Maridi, 2015). *Patorani* community shows a form of conservation that is wise, through local human knowledge in their treatment of the environment.

Hunting for fish and torani eggs is carried out by *patorani* based on the strength of their knowledge understanding which synergize with nature, especially in the ocean. The knowledge is called *erang passimombalang* (knowledge in shipping) and *erang pakboya-boyang* (knowledge of fishing technology). If it explore deeply, the existence of *patorani* fishing gear is not comparable to the natural conditions that are full of challenges and unexpected things. But the strength lies on the two knowledge which is able to balance all *patorani* activities in the fishing ground area. Some theories state that the strength of the fishing community is not like destroying the marine environment, but the power that synergizes the forces of nature with humans (Thondhlana & Shackleton, 2015). *Patorani* knowledge becomes a manifestation of the motive of the goal to be achieved, namely the role of knowledge in being wise to the *torani* they exploit, not excessively and can still survive for a long period of time.

The knowledge system owned by *Patorani*, as a form of conservation education in Galesong District, has a *cause*, where the origin of their activities was oriented only to hunting for fish, but after some time, their activities were oriented to *torani* fish eggs because had value in high selling. The influence of *cause* which forces them to maintain knowledge so they can focus more on how they can interact properly to maintain the potential that they consider to be excellent. Element *cause* is very strong in influencing the pattern of human behavior (Patiselano et al., 2015). While the inner environment contains imminent or immanent experiences in the form of belief, and transcendental experiences in the form of magic (Bennett, 2014). This is reinforced by the theory stated by (Sumarmi, 2015) which states that in addition to the natural physical environment, humans have another environment as a complementary style in life which is called the cultural environment. So that the motive for the purpose of the *erang* (knowledge) is to complete the procedures and techniques for catching *torani* that are carried out by the *patorani*, as well as making guidelines in utilizing other coastal resources.

4. Conclusion

Based on the results of this study, it can be concluded:

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1. Patorani local knowledge comes from traditional knowledge systems that are implemented based on patterns and practices through experience that is passed down to each generation.
2. The patorani local knowledge system is able to survive because of their belief that it is able to generate principles, concepts and ways to maintain a balance and sustainable management of the environment and resources.
3. The patorani local knowledge can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

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Patorani local knowledge system in fisheries resources conservation education in Galesong District South Sulawesi

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Abstract

This study aimed to investigate and describe *patorani* culture, which is the local fishermen's knowledge of conserving fishery resources. This research used the qualitative descriptive method by using several sets of data, including the preliminary studies. The data were collected through literature review, observation, and preliminary survey, and then they were analyzed based on understanding and public opinion through a qualitative approach. The results of this study showed that Galesong society still practices *patorani* culture in the utilization of coastal resources and maritime transport, including: 1) knowledge related to ceremonial preparation of fishing activities, 2) the use of technology fishing gear, 3) knowledge about the existence of Spear Fish, 4) knowledge in fishing activities, and 5) knowledge of the fishing voyage *patorani*. The fisherman's knowledge of *patorani* culture was derived from hereditary experience. Finally, the local knowledge system of *patorani* can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

Keywords: local knowledge; conservation education; *patorani*; fishery resources

1. Introduction

The Indonesian government has increased conservation in the coastal, waters, and small island areas every five years. This conservation attempt has achieved relatively satisfactory results. In 2020, this conservation received more optimum results, in which the conservation of 881,581.36 ha resulted in 189.72% realization from the determined goal. The achievement of the target exceeding the plan signifies greater cooperation between the government and local communities in maintaining, managing, and conserving the potential coastal and marine resources. This conservation is also carried out in Takalar Regency, Indonesia, especially in Galesong District, in the conservation of fishery resources with a potential of 6.5 million tons of capture fisheries.

The actions (behavior) of local communities reflect their culture that has been practiced continuously in certain ways following their ancient tradition, resulting in principles, systems, and patterns in maintaining balance and sustainable management of the environment and resources (Reyes-García & Benyei, 2019). All activities related to taboos, prohibitions, and manifestations of tradition express messages from local community behavior carrying tangible meaning for the preservation of coastal resources, especially fisheries (Yenrizal, 2017). Besides, local culture is also manifested in various values and meanings in every behavior of the community.

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The term 'local' emphasizes not only astronomical boundaries and geographical spatial characteristics but rather to the establishment and implementation of culture (habits) as a whole and continues beyond the administrative boundaries without being limited by the strictest border lines to other cultures (Syarif, Hasriyanti, Fatchan, Astina, & Sumarmi, 2016). Also, local culture can be defined as the culture (tradition) owned by the indigenous people (inlander) as a heritage (Vogt et al., 2016). The local culture in Indonesia has become the cultural heritage that belongs together as a single unit of the nation's cultural wealth.

Historically, the people of South Sulawesi, Bugis, Makassar, and Mandar Tribes, were known as tenacious sailors. With immense maritime aspirations, fishing or hunting activities in the wide ocean became their main livelihoods, especially for people living in coastal areas (Norken, Suputra, & Arsana, 2016). Additionally, each region has a local knowledge system for preserving, managing, and maintaining its fishery resource potential with the creation of traditional technology. These conventional technologies are adapted to shipping and marine environmental conditions in their coastal areas. The technologies facilitate coastal fishermen communities in conserving resources, resulting in difficulties in leaving the marine environment and working in other economic sectors on land (Setyowati, Juhadi, & Kiptida'iyah, 2017). Understanding the local *patorani* system carried out by coastal communities in Galesong District, Takalar Regency, as a form of conservation education, helps us identify the process of managing marine resources, especially fishery resources, based on local wisdom and local culture. *Patorani* knowledge expresses characteristics of someone's history and learning experience by explicitly recognizing the elements affecting their life.

Nguyen and Ross (2017) revealed that *patorani* comes from two terms, namely the words *tobarani* and *torani*. *Tobarani* is interpreted as a person who is brave. Therefore, up to now, *patorani* are those who are bold enough to navigate the wide ocean full of obstacles. In comparison, the word *torani* is a term or nickname for the type of fish targeted during the *patorani*.

Indonesia has various types of flying fish, ten of which are in the waters of South Sulawesi and eastern Indonesia. Flying fish or *torani* are marine resources that are highly sought by *patorani* because, apart from their edible trait, *torani* fish eggs offer high selling prices because they have export value. The most popular export destinations for *torani* fish eggs are Japan, Korea, and China, as they are used for medicinal purposes and healthy food (Thamrin, 2013). Consequently, the government and local communities present great interest in conserving these fishery resources using an existing local knowledge system.

In general, resource conservation education for coastal communities aims to regulate the pattern of community activities in a guided and structured manner, using inherent knowledge called *pangissengang* in treating nature. One of the regulated activities is the control of traditional, simple, and environmentally wise fishing gear that produces catches of high quality and quantity (Sufia, Sumarmi, & Amirudin, 2016). Therefore, the *patorani* is a manifestation of a form of environmentally-friendly conservation, especially in the area of *torani* fish hunting. *Patorani* conservation education has been designed and developed from time to time. Besides, it is reflected in every behavior or activity pattern of the local individuals and groups. Thus, this research aims to identify the context of *patorani* in fishery

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resources conservation through local knowledge for conservation education in Galesong District, South Sulawesi, Indonesia.

2. Method

This research was conducted in Palalakkang village, Galesong, Takalar District, South Sulawesi, Indonesia, by using survey methods, observation, literature review, in-depth interviews, and research focus suitability analysis through Focus Group Discussion (FGD). Besides, this study used a qualitative approach to produce descriptive data in the form of spoken and written data obtained from primary and supporting informants. Further, the data was also undergone primary and secondary data verification through data triangulation.

For the sampling technique, this study used purposive sampling based on the respondents' characteristics suitable to the research objectives. We determined sampling criteria for the selection of primary informants and supporting informants. The main informants were *papalele*, *punggawa*, and *sawi*, while supporting informants were cultural figures and community leaders. In the FGD process, all informants were involved in clarifying and verifying the data obtained in the field. Data analysis was revealed through the natural relationship between researchers and informants during the data collection process and after the data were collected entirely. Along with data collection, analysis (interpretation) was carried out to sharpen the observation focus and the data relevance to the main problems studied.

3. Results and Discussion

3.1. Results deskripsi lokasi penelitian

Takalar Regency has designated the fishing sector as the primary sector driving its economic growth, including in Galesong District. Its coastal morphology of ± 74 km has induced most of the local people in Galesong District to work in fisheries centers and fish processing production, while some others work as farmers (Tamba, 2011). Galesong District is the most extensive base of *patorani* fishermen. The number of *patorani*, until 2020, is shown in Table 1.

Table 1. Number of *Patorani* in Galesong District in 2017-2020

No	Fisherman Status	Year		Development Percentage (%)
		2017	2020	
1	Papalele	14	18	3.5
2	Punggawa	58	69	5.27
3	Sawi	532	634	5.21
	Total	607	721	100

Resources: **Galesong District in Figures (2019)**

The environmentally friendly attitude is clearly manifested in one of the *patorani* knowledge. It is through the use of local and simple fishing gear, namely *pakkaja* and *balla-balla*. The *balla-balla* is designed in such a way that ensures the convenience of *torani* fish spawning on their favorite dry coconut leaves with a rough texture. After spawning, *torani* fish will be free to escape and breed to spawn again in the coming season (Danielsen et al., 2014). This process indicates the special communication established between *patorani* and *torani* to ensure steady cooperation that allows the *patorani* to attain large quantities of fish

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and eggs (Arief & Agusanty, 2013). Meanwhile, *pakkaja* is a tool to limit the exploitation of *torani* fish, because its holes are adjusted to the size of *torani* fish, enabling the young fish to be released freely. Besides, education emphasizing a wise attitude toward the environment is essential for all stakeholders because it realizes mutually beneficial interactions between humans and nature (Thompson, Lantz, & Ban, 2020). The *pakkaja* and *balla-balla* fishing gears are illustrated in Figures 1 and 2.

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Figure 1. Pakkaja



Figure 2. Balla-balla

Similar to other local communities, the *patorani* also have a distinct knowledge system based on their beliefs, hunches, smells, hearings, and sights applied in their actions on land and at sea. This practice enables the robust survivability of a custom, culture, and tradition in a community until now, making modernization and external influence incapable of transforming people's understanding that has been patterned in the form of knowledge and habit (Chakravartty & Sharma, 2013). The local people's traditional knowledge can be observed in their ability to discern-local discernment the natural circumstances for sailing and catching *torani* fish.

Our interview result with one of the *patorani* living in South Galesong District suggested a number of forms of local culture introduced by the *patorani*. He explained that in the process of catching flying fish in the ocean, they (*patorani*) maintain the water condition

and their fish resources. Besides, they also have specific rules for preserving coastal conditions, such as maintaining the existence of mangroves and not damaging corals (using traditional fishing gear) while also keeping the quantity of coastal and marine resources. These resources include flying fish, sea cucumbers, milkfish, shrimp, seaweed, and shellfish. Additionally, the informant also described several forms of local culture as outlined in *patorani*'s fishing regulations, namely: (1) control of fishing gear, (2) fishing pauses, (3) rotation of fishing grounds, (4) distribution of FADs, (5) distribution of fish larvae, (6) increase number of mangrove sprouts, (7) limit fishing areas with mangrove areas to avoid sedimentation that can disturb the mangroves, and (8) open milkfish and shrimp ponds on a regular basis. All forms of *patorani* activities are stipulated in customary rules and the rules of the Galesong community. Further, those rules containing prohibitions and obligations must be obeyed by *patorani*, if they want to complete their activities at sea safely. The central goal of *patorani* is the conservation of coastal and marine resources, as can be observed from the ongoing practice of *patorani* and the benefits intensely felt by the local community. Therefore, *patorani* can maintain its existence to this day, along with the customary rules being patented in their rituals.

In addition, our informants also stated that besides being regulatory references in their livelihood activities, the local people are also required to implement *patorani* knowledge in the water areas. *Patorani* knowledge contains meanings and values that should be obeyed by the people. If they violate those values and regulations, then they will get sanctions from tribal chiefs and nature.

In addition, our observation results indicated that *patorani* fishing practice was established based on knowledge containing rules and magical values related to sciences (*pangngissengang*). These values represent the actions of the fishing community in ancient times, which later became a habit. Besides, the result of the interview also found that the community consisted of *papalele*, *punggawa*, and *sawi* who always interacted with each other while working together in managing coastal and marine resources, especially fisheries. Traditionally, they managed these resources through a culturally based environmental ethic that synergized with group dynamics. Cultural environment refers to the maintenance of traditional knowledge systems that lead people's thoughts, behavior, and fishing gear following their local culture.

In the end, our data analysis results suggested that the behavior and actions can be identified through two stages, namely, understanding individual actions and understanding group actions. The group's behavior can be identified through the cultural meanings of the symbols used by the group members. Meanwhile, individual behavior can be understood through rational actions in their behavior patterns. The results of our FGD also showed that the trust among the fishermen groups is enhanced through their experience and habits in applying two types of knowledge (*erang*). Those two areas of knowledges are knowledge of the ins and outs of shipping (*erang passimombalang*) and knowledge of fishing methods and technology (*erang pakboya-boyang*).

3.2. Discussion

Patorani culture is unique because its fishing process is carried out in the dry season using very traditional tools. The use of this traditional tool is closely related to the

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preservation of coral reefs, as their primary goal is to preserve the fish habitat (Martin, Suharjito, Darusman, Sunito, & Winarno, 2016). Coral reef preservation is accomplished by shielding them from the effect of modern, potentially damaging instruments. Economically, *patorani* is very profitable because it uses the available local materials, ensuring the use of environmentally friendly fishing gear. The survival of this local culture is induced by its ability to recognize beneficial physical phenomena, such as the phenomena related to human interaction with the physical nature, in maintaining the preservation of aquatic biological resources in the Galesong District.

3.2.1. Knowledge in the Ceremony Preparation (*Appakruru* and *Accaruk-caruk*)

The core activities in the preparation process of *patorani* consist of a salvation ceremony and asking permission from nature. These activities are carried out in two stages. In the first stage, the ceremony is carried out on boats that will be used in the *patorani* sailing to catch *torani* fish and collect the eggs. Meanwhile, the second stage is carried out along with the traditional structures of the *patorani*. The stages of the ceremony are summarized in Table 2.

Table 2. Stages of *Patorani* Ceremony or Ritual

Patorani Fisherman Ceremony or Ritual	Ceremony Purposes
Ceremony Stage	Ceremony Contents
<i>Appakruru</i> Stage (Preparation)	The first stage in the ceremony is reading barazanji (holy verses) by people who have been appointed and ends with a prayer led by anrongguru (traditional teacher). All members of the ceremony are men, including the elders. They give a baca (mantra) to the traditional food in the ceremony, such as kaddo minya (yellow glutinous rice) and songkolo (glutinous rice), bananas, and incense. Later, the participants of the ceremony eat the food together. Those foods mainly contain elements of brown sugar and coconut, symbolizing a sweetener for sustenance for those who will go to sea. After the ceremony, participants of the ceremony leave the place.
<i>Accaruk-caruk</i> stage (Small Party before going to the sea)	The purpose of this ceremony is to maximize the people's readiness, both spiritual and physical, as well as the preparedness for equipment being brought to the sea.
<i>Accaruk-caruk</i> stage (Small Party before going to the sea)	The second stage of the ceremony is held on the beach in the vicinity of the <i>patorani</i> . This activity is only carried out by anrongguru and attended by several people to help stick woven bamboo on the beach. The woven bamboo contains food of songkolo and chicken wrapped in banana leaves that have been given prayers. Then, the food and sweet cakes are drifted away using a raft from a banana tree trunk after being given a mantra.
<i>Accaruk-caruk</i> stage (Small Party before going to the sea)	The purpose of this ceremony is to ask permission from the inhabitants of the ocean as the people will make a voyage in their territory. Through the ceremony, people beg to be kept away from natural disturbances and given safety during sailing until they return to land.

3.2.2. Knowledge of Making and Operating Fishing Pole

Patorani fishing gear technology was constructed and developed using scientific information from their ancestors, from generation to generation. The fishing gear technology development in the *patorani* community is not influenced by external technologies since the technology is always developed following local knowledge. The *bubu* and *pakkaja patorani* fishing gears are generally operated using boats with a size of 6-11 GT, a sail area of 35-70 m, and two engines with a power of 31-60 PK. As many as 30-55 *bubu* and *pakkaja* are brought with 20-45 kg nylon rope. Another fishing gear is a *balla-balla*. It is made from half-dried banana leaf midribs, which are arranged in such a way as to accommodate the survival and attachment of *torani* fish eggs on. In general, the operations of *pakkaja* and *balla-balla* are ordered as follows: 1) after the prayer for the fishing gear has been recited by *punggawa*, *sawi* then puts *pakkaja* and *balla-balla* floating (*ammanyu-manyu*) on the surface of the sea. 2) The 10-20 pieces of *pakkaja* and 20-30 pieces of *balla-balla* are dropped, depending on the estimated number of flying fish in that area. 3) Each *pakkaja* and *balla-balla* is hooked to "gosse" which is a type of seaweed with a distinctive smell that is favored by *torani*, thus inviting them to come to spawn (lay eggs). 4) The bottom of the *pakkaja* is tied to one to three *balla-balla*, which serve as a place for *torani* fish to lay eggs. 5) The attached coconut leaf on the outside of the *pakkaja* served as a marker that helped people find them during the control. The coconut leaves are used because they have a rough and sticky texture that enables *torani* to lay eggs. 6) The *pakkaja* is placed in the water first as it is heavier, while the *balla-balla* is placed and left to float near the surface of the sea, and sometimes it is partially submerged in the water. Both are placed in the water while tied to floating bamboo that acts as a marker. 7) The fishing gear was left *ammanyu-manyu* (to float) for 24 hours and controlled three times during that duration. The fishing gear must be removed after 24 hours. Meanwhile, the *balla-balla* should be replaced if they still want to continue to attain *torani*. In contrast, the *pakkaja* tools do not need to be replaced because their bamboo and rattan material is strong and durable, while *balla-balla* are made from dry coconut leaves, which are not durable. Furthermore, the outside of the *pakkaja* is also tied with coconut leaves as a marker of the floating point.

3.2.3. Knowledge of the Torani Position

Torani fishermen's local knowledge allows them to understand the existence of *torani* fish in the water by following natural signals and indicators, namely by observing: (1) the appearance of a sparkling light that looks very clear from the eyes of the observer (*patorani*), (2) the particular smell of *torani*, (3) the temperature of the waters checking by dipping the hands up to the elbows to determine the warmth of the seawater, since the *torani* mostly gather in warm water, (4) the presence of the type of bird with a duck beak which have red and black colors, and (5) the altitude level of the fish, if the flying fish jump higher (behavior of the fish), the *torani* are not laying eggs and they will surely stay away from the *balla-balla*, and vice versa (Baruah, Dutta, & Pravin, 2013).

3.2.4. Knowledge of the Fishing Activities

In using the *pakkaja* and *balla-balla* fishing gear, the boat is boarded in a state where the engine is not ringing, ensuring the tranquil ambiance of the waters. Previously, crossed straight or U-shaped bamboo was prepared as a float. Further, the *balla-balla* are tied to the

bamboo which was completely submerged in the water and covered with some coconut leaf midribs. The supervision of *pokkaja* and *balla-balla* is carried out 2-3 times in a span of 24 hours. During the control period, the *patorani* fishermen sing "porn" songs with philosophy from a beautiful girl who is a daughter of the king and has been unsuccessful in marriage, then later turns into a *torani*. By singing that song, the *torani* is expected to come from all directions to meet her future husband.

Comment [A17]: ini apakah benar porn song?

3.2.5. Knowledge in Sailing

Patorani's knowledge of sailing is presented in the shipping knowledge matrix, as listed in Table 3. The matrix clearly accentuates the importance of preserving *patorani* because it contains values and meanings as outlined in several rituals, such as dances, songs, pornographic conversations, poetry, and prayer. The *patorani* becomes the basis for local communities in managing their resource since it can guide conservation education to maintain the potential of sustainable resources. Further, the *patorani* believe they have the power to summon flying fish to their nets while still paying attention to the taboos. In general, the *patorani* has a lot of uniqueness, reflecting a life filled with various traditional ceremonies related to livelihood systems, beliefs, and local knowledge that have not been widely disclosed. Additionally, their behaviors in managing and preserving their habit have facilitated *Patorani* survival. Their survival is also supported by a large number of students from coastal areas inside and outside South Sulawesi. These students observe the decline in marine resources caused by the local government's low management and attempts to improve coastal communities' living.

The interaction process of *patorani* fisherman contains local values that can be adopted as learning in interacting with the natural environment. In every social group, there are norms that are constantly maintained and utilized as a tool to access and regulate natural resources (Joa, Winkel, & Primmer, 2018). Every local community has its own norms and rules that distinguish them from other individuals and groups (Maridi, 2015). Accordingly, the *patorani* community shows wise conservation through local human knowledge in organizing the environment.

The *patorani* hunt for fish and *torani* eggs is carried out based on their knowledge and understanding, which synergize with nature, especially in the ocean. The knowledge is called *erang passimombalang* (knowledge of shipping) and *erang pakboya-boyang* (knowledge of fishing technology). From a deeper exploration, the *patorani* fishing gear is not comparable to the unexpected challenges in the natural conditions. Further, the strength of *patorani* lies in its two primary knowledge capable of aiding the sailing processes. Some theories state that the strength of the fishing community is not established by their behavior destroying the marine environment but by their power to synergize with the forces of nature (Thondhlana & Shackleton, 2015). *Patorani* knowledge becomes a manifestation of the goals of local people, namely the wise usage of *torani*, in which they should not catch *torani* excessively to ensure their long survivability.

Patorani knowledge system is a form of conservation education in the Galesong District. Initially, their *patorani* activities were oriented only to hunting for fish, but after some time, their activities were oriented to *torani* fish eggs because the eggs offered high selling prices. Consequently, this situation forces them to maintain the knowledge that

ensures proper interaction to support this excellent potential. The element of *cause* carries a powerful influence on the pattern of human behavior (Patiselano, Manusawai, Arobaya, & Manusawai, 2015). At the same time, the inner environment encompasses both immediate or immanent experiences, such as belief, and transcendental experiences, such as magic (Bennett, 2014).

This is reinforced by a previous study (Sumarmi, 2015) reporting that in addition to the natural physical environment, humans have another complementary environment in life which is called the cultural environment. Therefore, the purpose of the erang (knowledge) is the completion of procedures and techniques for catching torani being carried out by the patorani, as well as the construction of guidelines for utilizing other coastal resources.

Table 3. Knowledge Matrix of Patorani

No	Informant Name	Information Given	Domain Information
1	Agung Dg. Taba Papalele (Army retainer)	All <i>patorani</i> believe in the existence of guardian spirits in fishing areas. They also believe that the spirit will be angry if <i>the patorani</i> commits an offense while sailing. Hence, they must avoid offenses by throwing out the betel leaf and tobacco that had previously been recited prayer by <i>Anrongguru</i> on the mainland.	Knowledge of Sailing
2	H. Samsul Dg. Nyikko Papalele (Army retainer)	<i>Patorani</i> has excellent skills in determining departure times based on local observations. They depart in the eastern season, in March or April, based on the observation of the season through the <i>appakruru</i> . According to the experience, the day of departure is on Tuesday, Wednesday, Saturday, and Sunday.	Knowledge in observing the seasons and determining good days
3	Japar Dg. Manggewa (<i>Sawi</i>)	<i>Patorani</i> activities in the ocean are strongly influenced by weather conditions observed through cloud monitoring. The gathering clouds signify shady whether that obligates <i>the patorani</i> to lower their fishing gear immediately.	Knowledge of Clouds
4	Bakhtiar Dg. Jarre Punggawa Tamparang (Sea Punggawa)	<i>Patorani</i> knowledge generates local star-marking terms to monitor their activities. The <i>tanra tellu</i> indicates heavy rain, the <i>wettuing</i> star indicates sailing time, and the <i>mono</i> indicates the condition of the sky.	Knowledge of seeing stars (<i>mamau</i>)
5	Darmawan Dg. Tawang	<i>Patorani</i> believes that during their activities in the ocean, they are always supervised by the guardian spirit of the ocean. In the event of lightning, they must stop their work to recite the mantra and pray for salvation. Lightning is interpreted as the power given by God to expel (pursue) disturbing spirits in the ocean that interfere with their activities.	Knowledge of thunder and Lightning
6	Ismail Dg. Beta (elderly community)	<i>Patorani</i> must not interfere with or damage the <i>sapa</i> (coral cluster), as the area is believed to be a sacred area inhabited by guardian spirits. The presence of coral clusters can be observed through signs such as very bright reflections of the sun's rays, quite clear and warm water conditions, and the presence of birds looking for food.	Knowledge of coral clusters (<i>sapa</i>)
7	Rusdi Dg. Gassing	In the sea, there are many taboos for <i>patorani</i> . These taboos include the prohibition to call people on land,	Abstinence (<i>pamali</i>)

Comment [A18]: Ada temuan setelah matriks, dapat dilengkapi setelah matriks

<i>Punggawa</i>	prohibition from whistling because it can invite strong
<i>Tamparang</i>	winds, prohibition from dipping kitchen utensils because
(Sea	it can invite storms, prohibition from blocking the way of
<i>Punggawa</i>)	a fisherman when they want to get on a boat, prohibition
	from <i>takabbur</i> (arrogant) and disrespectful speaking
	because it invites sharks, and prohibition to prone while
	sleeping during sailing.

4. Conclusion

Based on the results of this study, we concluded: 1) *patorani* local knowledge comes from traditional knowledge systems that are implemented based on patterns and practices through experience passed down to each generation, 2) the *patorani* local knowledge system's survivability is caused by its belief that generates principles, concepts, and ways to maintain a balance and sustainable management of the environment and resources, and 3) the *patorani* local knowledge can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

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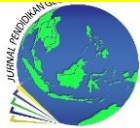
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Local Knowledge System Patorani in fisheries Resources Conservation Education in Galesong District South Sulawesi

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Abstract

This study aimed to learn, and describe *patorani* culture the knowledge of fishermen in conserving fishery resources. This research used qualitative descriptive method, by considering the data which includes the study of preliminary studies. The collection of data obtained through literature review, observation, and preliminary survey. The data were analyzed based on understanding and public opinion through a qualitative approach. The results of this study showed that Galesong society still do *Patorani* culture in the utilization of coastal resources and maritime transport, including: 1) knowledge related to ceremonial preparation of fishing activities, 2) the use of technology fishing gear, 3) knowledge about the existence of fish *Torani*/fly fishing, 4) knowledge in fishing activities, and 5) knowledge of the fishing voyage *patorani*. Knowledge of fishermen is based on *patorani* culture which is derived from experience that is hereditary. The local knowledge system of *patorani* can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

Keywords: Local Knowledge; Conservation Education; Patorani; Fishery Resources

Abstrak

Penelitian ini bertujuan untuk mempelajari dan menggambarkan budaya *patorani* mengenai pengetahuan lokal nelayan dalam melestarikan sumber daya perikanan. Penelitian ini menggunakan metode deskriptif kualitatif dengan mempertimbangkan data yang meliputi kajian studi pendahuluan. Pengumpulan data yang diperoleh melalui tinjauan literatur, observasi dan survey awal. Data dianalisis berdasarkan pemahaman dan pendapat masyarakat melalui pendekatan kualitatif. Hasil penelitian ini menunjukkan bahwa masyarakat Galesong masih melakukan budaya *patorani* dalam pemanfaatan terhadap sumber daya pesisir dan kelautan, termasuk: 1) Pengetahuan berkaitan upacara persiapan aktivitas penangkapan, 2) penggunaan teknologi alat tangkap, 3) pengetahuan keberadaan (*ground fishing*) ikan *torani*/ikan terbang, 4) pengetahuan dalam aktivitas penangkapan, dan 5) pengetahuan tentang pelayaran nelayan *patorani*. Pengetahuan nelayan berdasarkan budaya *patorani* berasal dari pengalaman yang turun temurun. Sistem pengetahuan lokal *patorani* secara sistematis dapat menunjang pendidikan konservasi sumber daya hayati perairan, khususnya sumber daya perikanan.

Kata Kunci: Pengetahuan Lokal; Pendidikan Konservasi; *Patorani*; Sumber Daya Perikanan

1. Introduction

The Indonesian government increases conservation areas in coastal areas, waters, and small islands, every five year. The efforts and results that have been targeted, show quite

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developed result and will be pursued more optimally in 2020 with a conservation area of 881,581.36 ha where the realization of the achievement is 189, 72% of the target that has been set. The achievement of the target that exceeds the plan, proves that the greater the cooperation between the government and local communities in maintaining, managing, and conserving the potential of coastal and marine resources. This is also carried out in Takalar Regency, especially in Galesong District, namely the conservation of fishery resources with a potential achievement of 6.5 million tons of capture fisheries.

The actions (behavior) of local communities reflect a culture that they carry out continuously based on certain ways or techniques in accordance with what has become an ancient tradition, so that it brings up principles, systematics and patterns in maintaining balance and sustainable management of the environment and resources. (Reyes-García & Benyei, 2019). All forms of action that related to taboos, prohibitions, and manifestations of tradition become a form of expressing messages from local community behavior which have great meaning for the preservation of coastal resources, especially fisheries (Yenrizal, 2017). The local culture of the community reflects various values and meanings in each of their behavior in life.

The emphasis on indicators of the word local does not refer only to astronomical boundaries and geographical spatial characteristics, but rather to how a culture (habits) is created and implemented as a whole and continues beyond the administrative boundaries and is not limited by the strictest border lines to other culture (Syarif et al., 2016). The word of local culture can also be defined against the culture (tradition) owned by the indigenous people (inlander) as a heritage (Vogt et al., 2016). The doer of local culture in Indonesia become a cultural heritage that belongs together in a single unit of the nation's cultural wealth.

Long ago, the people of South Sulawesi, Bugis, Makassar and Mandar tribes, were tenacious sailors. They have high maritime aspirations, so fishing or hunting activities in the wide ocean are the main livelihoods, especially for people who live in coastal areas (Norken et al., 2016). Each region has a local knowledge system in preserving, managing, and maintaining the potential of its fishery resources both in quality and quantity with the creation of traditional technology. These traditional technologies are adapted with shipping and marine environmental conditions in their coastal areas. This will lead to the actions of coastal communities in conserving resources, where they are also as social category that once became fishermen, it will be difficult to leave the marine environment to shift to other economic sectors on land (Setyowati et al., 2017). Understanding of local patorani carried out by coastal communities in Galesong District, Takalar Regency, as a form of conservation education that will teach us to know the process of managing marine resources, namely fishery resources based on local wisdom and local culture. The characteristic of patorani knowledge are aspects of background and learning experience by identifying directly the things that affect their lives.

(Nguyen & Ross, 2017) revealed that patorani comes from two sources, they are from the words tobarani and torani. Tobarani is interpreted as a person who is brave, so that until now the only ones who have become patorani are those who are brave in navigating the vast ocean which full of challenges. While the word torani is a term or nickname for the type of fish that is the target of hunting for patorani.

Indonesia has various types of flying fish, 10 of them are in the waters of South Sulawesi and eastern Indonesia. Flying fish or torani are marine resources that are highly sought by patorani because apart from being able to consume, torani fish eggs are also very excellent with high selling prices because they have export value. The biggest export destinations are to Japan, Korea, and China for medicinal purposes and for healthy food (Thamrin, 2013). This is the background of the great attention of the government and local communities in conserving these fishery resources with a local knowledge system that is owned and continues existed until now.

In general, resource conservation education for coastal communities is to regulate the pattern of community actions and activities in a guided and structured manner, with stanzas of inherent knowledge called pangissengang in treating nature. One of these patterns is contained in the control of traditional and simple fishing gear, but produces catches of high quality and quantity and are environmentally wise (Sufia et al., 2016). So it can be said that the knowledge that patorani has is a manifestation of a form of conservation that is wise to the environment, especially in the area where they hunted for torani. Patorani conservation education is designed and then developed from time to time and is reflected in every behavior or activity pattern of individuals and groups. Hence, the aim of this research is to understand the context behind the patorani in conserving fishery resources through local knowledge as a form of conservation education in Galesong District, South Sulawesi.

2. Method

This research was conducted in Palalakkang village, Galesong, Takalar district, South Sulawesi, by using survey methods, observation, literature review, in-depth interviews and analyzing the suitability of the research focus through Focus Group Discussion (FGD). The approach taken was qualitative which produces descriptive data in the form of spoken and written words obtained from main informants and supporting informants. The data was collected through primary and secondary data verification through triangulation data.

The sampling technique used in this research was purposive sampling which based on the respondents' characteristics who met with the objectives of the research conducted. The researcher determined the criteria regarding which respondents can be selected as samples, in the form of main informants and supporting informants. The main informants are *papalele*, *punggawa*, and *sawi*, while supporting informants are cultural figures and community leaders. In the FGD process, all informants were involved in clarifying and verifying the data found in the field. Data analysis revealed through the natural relationship between researchers and informants. It was done during the collection process and after the overall data was collected. Along with data collection, analysis (interpretation) was carried to sharpen the focus of observation and extend what was relevant with the main problems studied.

3. Results And Discussion

3.1. Results

Takalar Regency has made the fishery sector as the main sector for community economic growth, including in Galesong District. The characteristics of the area with a coastal morphology of ± 74 KM make the people in Galesong District have activities in catch fisheries centers and fish processing production, and some works as farmers who work part time or full

time (Tamba, 2011). Galesong district is the largest base of *patorani* fishermen and until 2020 the number of *patorani* can be seen in table 1 below.

Table 1. Number of Patorani in Galesong District in 2017-2020

No.	Fisherman Status	Year		Development Percentage (%)
		2017	2020	
1.	<i>Papalele</i>	14	18	3.5
2.	<i>Punggawa</i>	58	69	5.27
3.	<i>Sawi</i>	532	634	5.21
Total		604	721	100

Resources: Galesong District in Figures 2019

The manifestation of wise actions towards the environment can be seen clearly in one of the *patorani* knowledge, it is through the use of local and simple fishing gear, namely *pakkaja* and *balla-balla*. It is same with *balla-balla* which are made in such a way that the *torani* fish feel comfortable spawning on dry coconut leaves with a rough texture and is liked by *torani* fish. After spawning, *torani* fish will be free to escape and breed to spawn again in the coming season (Danielsen et al., 2014). It can be said that the *patorani* establish special communication with the *torani* to cooperate with each other and become a big advantage for the *patorani* to get large quantities of fish and eggs (Arief & Agusanty, 2013). Meanwhile, *pakkaja* is made as a tool to limit the exploitation of *torani* fish, because the size of the holes made is adjusted to the size of *torani* fish and young fish can be released freely. A wise attitude towards the environment is an important education for all circles because it is related to beneficial interactions mutually between humans and nature (Thompson et al., 2020). Fishing gear of *Pakkaja* and *balla-balla* can be seen in Figure 1 and 2 below.



Figure 1. Pakkaja



Figure 2. Balla-balla

Like other local communities, the *patorani* also have a knowledge system based on beliefs, hunches, smells, hearings, and sights that are applied in their actions on land and at sea. That simplicity which makes a custom, culture, and tradition in a community are being strong and active until now, where modernization forces that influence from outside will not

be able to change their understanding that has been patterned in the form of knowledge and action (Chakravartty & Sharma, 2013). The tools of traditional knowledge can be seen in their ability to read the right natural conditions for sailing and catching torani fish.

Interview result obtained from one of the patorani named Mr. Agung who lives in South Galesong District, it is known that there are forms of local culture introduced by the patorani. He explained that in the process of catching flying fish in the ocean, they (patorani) maintain the condition of the waters and maintain their fish resources, they also have rules in terms of preserving coastal conditions such as maintaining the existence of mangroves, not damaging corals (using traditional fishing gear), and maintain the quantity of coastal and marine resources that still already exist. These resources are flying fish, sea cucumbers, milkfish, shrimp, seaweed, and shellfish. Several forms of local culture as outlined in Patorani's fishing regulations as he said are: (1) control of fishing gear, (2) fishing pauses, (3) rotation of fishing grounds, (4) distribution of FADs, (5) distribution of fish larvae, (6) increasing the number of mangrove sprouts, (7) limiting fishing areas with mangrove breeding areas to avoid sedimentation that can disturb the mangroves, and (8) opening milkfish and shrimp ponds on a regular basis. All forms of patorani are stipulated in customary rules and the rules of the Galesong community. The implementation application contains prohibitions and obligations that must be obeyed by patorani, if they want to be safe in their activities at sea. The goal is none other than the conservation of coastal and marine resources which is proven to be ongoing and the benefits are greatly felt by the local community so that the existence of patorani still survives to this day along with the customary rules that are patented in each of their rituals.

In addition, Mr. Agung stated that besides patorani having regulatory references in their livelihood activities, they are also required for knowledge in entering water areas, which this knowledge contains meanings and values that they must obey. If they violate, then they will get sanctions from tribal chiefs and sanctions from nature.

The result of the observation showed that patorani fisherman is based on a knowledge that contains rules and magical values related to sciences (*pangngissengang*). The behavior comes from these values showed the actions of the fishing community in ancient times, which became a habit. In addition, the result of the interview found that the community consisted of *papalele*, *punggawa*, and *sawi* who interacted with each other, working together in managing coastal and marine resources, especially fisheries. Traditionally, they manage these resources through a culturally based environmental ethic that synergizes with group dynamics. Cultural environment refers to the maintenance of traditional knowledge systems that lead their thoughts, behavior, and fishing gear through their local culture.

Moreover, the survey results concluded that the behavior and actions taken can be understood through two stages, namely understanding individual actions and understanding group actions. Groups understanding can be understood through the cultural meanings that are formed through the symbols they have used. While individuals understanding can be understood through rational actions in their behavior patterns. It was also shown in the results of the FGD that trust naturally grows in the fishing community through experience and habits to apply and maintain two types of knowledge (*erang*). The two knowledges are knowledge of the ins and outs shipping (*erang passimombalang*) and knowledge of fishing methods and technology (*erang pakboya-boyang*).

3.2. Discussion

Patorani culture is unique because the fishing process is carried out in the dry season with very traditional tools. The use of this traditional tool is closely related to the condition of the coral reefs that are maintained, because their goal is to preserve the habitat of the fish (Martin et al., 2016). Indirectly they preserve the existence of coral reefs by protecting them from the influence of modern tools that can be destructive. Economically, patorani is very profitable because it is made using local materials and easy to find, so the fishing gear is environmentally friendly. The survival of this local culture is due to the ability of the patorani to recognize physical phenomena that bring fortune to their survival, it is related to human interaction with the physical nature, which still maintains the preservation of aquatic biological resources in the Galesong District.

3.2.1. Knowledge in the Ceremony Preparation (Appakruru and Accaruk-caruk)

Preparation activities forms were done by *patorani* are the core activities in the form of a salvation ceremony and asking permission from nature. This implementation is carried out in two stages. In first stage, the ceremony is carried out on boats that will be used in sailing to catch *torani* fish and collect its eggs, and the second stage is carried out together with the traditional structures of the *patorani*. The stages of the ceremony can be seen in Table 2 below.

Table 2. Stages of Ceremony/Ritual *Patorani*

Ceremony/Ritual Fisherman <i>Patorani</i>		Ritual Purposes/Ceremony
Ceremony's Stage	Ritual Contents/Ceremony	
<i>Appakruru</i> Stage (Preparation)	The first stage in the ceremony, contains reading <i>barazanji</i> (reading holy verses) by people who have been appointed and ends with a prayer by <i>anrongguru</i> (traditional teacher). All members of the ceremony are men, including the elders. They give a <i>baca</i> (mantra) to the traditional food in the ceremony, namely <i>kaddo minya</i> (yellow glutinous rice) and <i>songkolo</i> (glutinous rice), bananas and incense. After that, the participants of the ceremony eat together the foods that contain elements of brown sugar and coconut, with a sweet meaning as a sweetener for sustenance for those who will go to sea. After the participants of the ceremony leave the place.	The purpose of this ceremony is to maximize the readiness, both spiritual and physical for the equipment that will be brought to the sea.

<i>Accaruk-caruk</i> stage (Small Party before going to the Sea)	The second stage of the ceremony is held on the beach in the vicinity of the <i>patorani</i> . This activity was only carried out by <i>anrongguru</i> and was attended by several people to help stick woven bamboo on the beach which contained food of <i>songkolo</i> and chicken wrapped by banana leaves which were previously read a prayer. Then wash away the food and sweet cakes that have been given a mantra by using a raft from a banana tree trunk.	The purpose of this ceremony is to ask permission from the inhabitants of the ocean that they will make a voyage in their territory, begging to be kept away from natural disturbances, given safety during sailing until they return to land safely without any drawbacks.
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Resources: Field Data Processing, 2020

3.2.2. Knowledge of Making and Operating Fishing Pole

Patorani fishing gear technology was born and developed by science by using scientific information sourced from ancestors and from generation to generation (Alwiah, 2014). The development of fishing gear technology in the patorani community is not interference by technology that has external contacts, however the technology is always born through local knowledge. General description of the fishing *bubu/pakkaja*, as patorani fishing gear, are generally operated by using boats measuring 6-11 GT, with a sail area of 35-70 m, two engines with a power of 31-60 PK. As many as 30-55 *bubu/pakkaja* fishing which were brought, with 20-45 kg nylon rope. Another fishing gear is *balla-balla*, it is a form of half-dried banana leaf midribs which are arranged in such a way as to accommodate the survival and attachment of torani fish eggs on the leaves. In general, the operations of *pakkaja* and *balla-balla* are ordered as follows:

1. After the fishing gear is recited dua by *punggawa*, *sawi* then puts *pakkaja* and *balla-balla* floating (*ammanyu-manyu*) on the surface of the sea.
2. The number of *pakkaja* that are dropped is 10-20 pieces and *balla-balla* as much as 20-30 pieces, depending on the estimated number of flying fish in that position.
3. Each *pakkaja* and *balla-balla* is associated with "gosse" which is a type of seaweed with a distinctive smell and it is liked by torani, thus inviting them to come to spawn (lay eggs).
4. The bottom of the *pakkaja* is tied with one to three *balla-balla* which serve as a place for torani fish to lay eggs.
5. Attach a coconut leaf as a marker on the outside of the *pakkaja* to make it easier to find when controlling. The purpose of using coconut leaves is because it has a rough and sticky texture so that *torani* can lay eggs.
6. Lower the *pakkaja* first, because it is heavier, while the *balla-balla* are lowered and left to float near the surface of the sea and sometimes partially submerged in the water. Both are lowered while tied to bamboo which is arranged as a float and marker.
7. The fishing gear was left *ammanyu-manyu* (to float) for 24 hours and during that duration it would be controlled three times. The fishing gear must be removed after 24

hours and replace *balla-balla* if they still want to continue to net *torani*. *Pakkaja* tools does not need to be replaced because the material is strong and durable because it is made of bamboo and rattan, while *balla-balla* are made from dry coconut leaves which are not durable. Furthermore, on the outside of the *pakkaja* tied with coconut leaves as a marker of the floating point.

3.2.3. Knowledge of the Torani Position

Local knowledge possessed by *torani* fishers leads them to an understanding of the existence of *torani* fish in the ocean by following the symbols and signs of nature, namely: (1) the appearance of a sparkling light that looks very clear from the eyes of the observer (*patorani*), (2) recognize the *torani* through it smells, (3) through checking the temperature of the waters, by dipping the hands up to the elbows to feel whether the sea water is warm or not, if the water is warm *torani* are usually gathering, (4) gathering the type of bird with a duck beak which have red and black colors, and (5) through monitoring the altitude level of the fish, if the flying fish jump higher (behavior of the fish), the *torani* are not laying eggs and they will surely stay away from the *balla-balla*, and vice versa. However, (Baruah et al., 2013).

3.2.4. Knowledge in the Fishing Activities

The operation of *pakkaja* and *balla-balla* fishing gear is to use a boat that is boarded in a state where the engine is not ringing, so that the atmosphere of the waters becomes calm. Previously, bamboo that was crossed straight or U-shaped was prepared as a float, while the *balla-balla* were tied to the bamboo which was completely submerged in the water and covered with some coconut leaf midribs. The control is carried out 2-3 times in a span of 24 hours and then looks into the *pakkaja* and *balla-balla*. During the control period, the *patorani* fishermen sing "porn" songs whose philosophy comes from a beautiful girl a daughter of king whose previously unsuccessful in marriage, which eventually turns into a *torani*, so that if a male sing "porn" song, the *torani* will come from all directions to meet her future husband.

3.2.5. Knowledge in Sailing

Knowledge in voyages done by *patorani* can be seen in the shipping knowledge matrix, in table 3 below.

Table 3. Knowledge Matrix of *Patorani*

No	Informant Name	Information Given	Domain Information
1	Agung Dg. Taba <i>Papalele</i> (Army retainer)	All <i>patorani</i> believe in the existence of guardian spirits in fishing areas. They also believe that the spirit will be angry if the <i>patorani</i> commits an offense while sailing. Hence, it must be avoided by throwing out the betel leaf and tobacco that the <i>Anrongguru</i> had previously prayed for on the mainland.	Knowledge of sailing

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2	H. Samsul Dg. Nyikko <i>Papalele</i> (Army retainer)	<i>Patorani</i> is good at determining departure times based on local observations. They depart in the eastern season, in March or April based on the observation of the season through the <i>appakruru</i> that has been carried out. This experience has been proven that wherever possible the day of departure is on Tuesday, Wednesday, Saturday and Sunday.	Knowledge in observing the seasons and determining good days
3	Japar Dg. Manggewa (<i>Sawi</i>)	<i>Patorani</i> activities in the ocean is strongly influenced by weather conditions through cloud monitoring. If the clouds are seen gathering, it means that the weather is shady and <i>the patorani</i> must immediately lower their fishing gear.	Knowledge of clouds
4	Bakhtiar Dg. Jarre <i>Punggawa</i> <i>Tamparang</i> (<i>Sea Punggawa</i>)	<i>Patorani</i> knowledge produces local terms in star marking to monitor their activities. the <i>tanra tellu</i> which indicates heavy rain, the <i>wettuing</i> Star indicates sailing time, and the <i>mono</i> which indicates the condition of the sky.	Knowledge in seeing stars (<i>mamau</i>)
5.	Darmawan Dg. Tawang <i>Punggawa</i> <i>Tamparang</i> (<i>Sea Punggawa</i>)	<i>Patorani</i> believes that during their activities in the ocean, they are always supervised by the guardian spirit of the ocean, so in the event of lightning, they must stop their work to recite mantra and pray for salvation. Lightning is interpreted as the power given by God to expel (pursue) disturbing spirits in the ocean that interfere their activities.	Knowledge of thunder and lightning
6	Ismail Dg. Beta (elderly community)	<i>Patorani</i> must not be in or damage the <i>sapa</i> (coral cluster). The area is believed to be a sacred area inhabited by guardian spirits. The presence of greetings can be seen through signs: the reflection of the sun's rays is very bright, the water conditions are quite clear and warm, and the number of birds are looking for food.	Knowledge of coral clusters (<i>sapa</i>)
7	Rusdi Dg. Gassing <i>Punggawa</i> <i>Tamparang</i> (<i>Sea Punggawa</i>)	There are many things that are taboo for <i>patorani</i> when at sea. These taboos are: prohibited from calling people who are on land, prohibited from whistling because it can invite strong winds, prohibited from dipping kitchen utensils because it can invite storms, prohibited from blocking the way of a fisherman when they want to get on a boat, prohibited from takabbur and speaking disrespectfully because it invites sharks to come, and prohibited to prone while sleeping during sailing.	Abstinance (<i>pamali</i>)

Resources: Field Data Processing, 2020

The matrix clearly explains that it is very necessary to preserve the *patorani* because it contains values and meanings of actions as outlined in several rituals such as dances, songs,

and pornographic conversations, poetry, and prayer. This becomes the basis for local communities in managing management resource in the form of conservation education to maintain the potential of sustainable resources. From these actions, they believe they have the power to summon flying fish to meet their nets, while still considering things in the form of taboos. In general, the *patorani* has a lot of uniqueness that reflects a life with various traditional ceremonies that are related to livelihood systems, beliefs, and local knowledge that have not been widely disclosed. In addition, the question is the form and meaning of their actions in preserving and managing their activities independently, as well as in groups as *Patorani* which has caused them to survive to this day. This condition is also supported by the large number of students who come from coastal areas inside and outside South Sulawesi. They can certainly feel things related to the decline in marine resources caused by their management which have not been or have not even been taken into account by the local government in improving their standard of living as coastal communities.

Interaction process of *patorani* fisherman which poured in various actions and behaviors, contain local values as a form of learning in interacting with the natural environment. In a group social network, there are norms which occurred and are maintained together, as well as being used as a tool to access and regulate natural resources (Joa et al., 2018). The form of action of the local community, has its own norms and rules that distinguish it from other individuals and groups (Maridi, 2015). *Patorani* community shows a form of conservation that is wise, through local human knowledge in their treatment of the environment.

Hunting for fish and torani eggs is carried out by *patorani* based on the strength of their knowledge understanding which synergize with nature, especially in the ocean. The knowledge is called *erang passimombalang* (knowledge in shipping) and *erang pakboya-boyang* (knowledge of fishing technology). If it explore deeply, the existence of *patorani* fishing gear is not comparable to the natural conditions that are full of challenges and unexpected things. But the strength lies on the two knowledge which is able to balance all *patorani* activities in the fishing ground area. Some theories state that the strength of the fishing community is not like destroying the marine environment, but the power that synergizes the forces of nature with humans (Thondhlana & Shackleton, 2015). *Patorani* knowledge becomes a manifestation of the motive of the goal to be achieved, namely the role of knowledge in being wise to the *torani* they exploit, not excessively and can still survive for a long period of time.

The knowledge system owned by *Patorani*, as a form of conservation education in Galesong District, has a *cause*, where the origin of their activities was oriented only to hunting for fish, but after some time, their activities were oriented to *torani* fish eggs because had value in high selling. The influence of *cause* which forces them to maintain knowledge so they can focus more on how they can interact properly to maintain the potential that they consider to be excellent. Element *cause* is very strong in influencing the pattern of human behavior (Patiselano et al., 2015). While the inner environment contains imminent or immanent experiences in the form of belief, and transcendental experiences in the form of magic (Bennett, 2014). This is reinforced by the theory stated by (Sumarmi, 2015) which states that in addition to the natural physical environment, humans have another environment as a complementary style in life which is called the cultural environment. So that the motive for the purpose of the *erang* (knowledge) is to complete the procedures and techniques for catching *torani* that are carried out by the *patorani*, as well as making guidelines in utilizing other coastal resources.

4. Conclusion

Based on the results of this study, it can be concluded:

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1. Patorani local knowledge comes from traditional knowledge systems that are implemented based on patterns and practices through experience that is passed down to each generation.
2. The patorani local knowledge system is able to survive because of their belief that it is able to generate principles, concepts and ways to maintain a balance and sustainable management of the environment and resources.
3. The patorani local knowledge can systematically support education on the conservation of aquatic biological resources, especially fishery resources.

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[JPG] Editor Decision

Dari: Listyo Yudha Irawan (noreply@um.ac.id)

Kepada: yantisakijo@yahoo.com

Tanggal: Selasa, 22 November 2022 pukul 16.12 GMT+8

The following message is being delivered on behalf of Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktek dalam Bidang Pendidikan dan Ilmu Geografi.

Hasriyanti Hasriyanti:

We have reached a decision regarding your submission to Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktek dalam Bidang Pendidikan dan Ilmu Geografi has been nationally accredited (Sinta 2), "Local Knowledge System Patorani Infisheries Resources Conservation Education In Galesong District South Sulawesi".

Our decision is to: Accept Submission

Please make Rp. Rp. 1.500.000 payment to BRI bank account 122901001533536 (Listyo Yudha Irawan). After you have paid the publication fee, please send the payment receipt to betty.masruroh@um.ac.id, to expedite the publication of your manuscript.

Betty Masruroh
Universitas Negeri Malang
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[JPG] Editor Decision

Dari: Listyo Yudha Irawan (noreply@um.ac.id)

Kepada: yantisakijo@yahoo.com

Tanggal: Selasa, 17 Januari 2023 pukul 09.19 GMT+8

The following message is being delivered on behalf of Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktek dalam Bidang Pendidikan dan Ilmu Geografi.

Hasriyanti Hasriyanti:

Yth. Author

Berikut kami kirimkan hasil copyediting oleh tim editor. Mohon hasil perbaikannya dapat dikirimkan kembali kepada kami paling lambat tanggal 25 Januari 2023 Pukul 23.00 WIB melalui OJS atau email betty.masruroh@um.ac.id untuk dapat diterbitkan pada Volume 28 No. 1 2023 yang akan terbit pada Bulan Januari 2023. Terimakasih.

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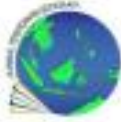
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LETTER OF ACCEPTANCE

No. : 17.13/JPG/2023

Date : 17-1-2023

Dear Authors,

On the behalf of Jurnal Pendidikan Geografi: Kajian, Teori, dan Praktik dalam Bidang Pendidikan dan Ilmu Geografi, we are pleased to inform that your paper with the title:

“Patorani local knowledge system in fisheries resources conservation education in Galesong District South Sulawesi”

Written by Hasriyanti, Rusdi, Alonge Titus Adeyemi, Michel E.D. Chaves, Erman Syarif

Has been ACCEPTED and will be published at Vol 28, No. 1 (2023) in January 2023.

We congratulate for your achievement. Thank you very much for participating in our journal.

Kindest regard,

Editor in Chief

Listyo Yudha Irawan, S.Pd., M.Pd., M.Sc