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IDENTIFICATION OF LOCAL WISDOM AS FORMS OF CORAL FISHERY MANAGEMENT IN CENTRAL BUTON REGENCY, SOUTHEAST SULAWESI, INDONESIA (CASE STUDY COASTAL WATERS OF THE SPELMAN STRAIT)

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ABSTRACT

Spelman Strait coastal waters are marine waters rich in coral reefs and fish stocks. Reef fish resources are required for natural, ecological, social, economic and institutional fisheries management. One type of management owned by local fishermen is local reef-fishing expertise based on two fishing seasons (west and east monsoon). The research goal is to establish local knowledge as a method of sustainable management of coral reefs in Spelman Strait, Central Buton Regency, in support of development. The results obtained, the management of coral fisheries based on local knowledge (west and east monsoon) with the use of different fishing hooks, where the westmonsoon uses fishing hooks number 5-8 with the target family Serranidae and Lutjanidae (export quality) and large size, while the monsoon east of the use of fishing line numbers 15-17 with the target of all reef fish and the size of thedifferences in fishing habits may be used as effective management of reef farming.

Keywords : Small scale fishermen, coral reefs, local knowledge, fishing monsoon.

Introduction

The initial concept of sustainable fisheries is the availability of fishing / harvesting tools at a sustainable level (Directorate of Maritime Affairs and Fisheries, Ministry of PPN /Bappenas, 2014). One of the fisheries resources of concern is coral fisheries resources. In the coastal waters of the Spelman Strait are coral reefs that need a form of sustainable management. Sustainable energy, ecologically sustainable, socially sustainable, and economically sustainable. The Spelman Strait coastal waters have coral reef ecosystem resources, which are the livelihoods of fishermen in meeting their households' economic needs. Muis *et al*. (2020); Muis *et al*. (2019), the coral reefs of the Spelman Strait coastal waters have high biodiversity of coral species, assisted by water parameters that are meeting the coral reef ecosystem development criteria (Muis *et al*., 2019).

Spelman Strait coastal fishermen are mainly small-scale fishermen, often employed as reef fishermen. The Spelman Strait's coastal waters are used throughout the year. Depending on current circumstances, the fishing season splits the fishing season into two fishing seasons. The western monsoon is similar to the wind and waves approaching the Strait; the eastern monsoon is similar to fairly dark waters. The west monsoon is in mid-December to the end of March, and the east monsoon is from May to November. Reef fishers use the seasonal difference as local knowledge, where the target catches are the big, export-value Serranidae and Lutjanidae family fishes in the west monsoon.

In comparison, target catches are all reef fish in the east monsoon and are typically relatively small. Such fishermen's local awareness allows their history and community influencing trends and actions in reef fish resources. Local information is therefore intellectual property that is still protected, and stakeholders must follow up as a component of coral fisheries management. According to Ridwan (2007), local knowledge is a cultural diversity that continues to be transmitted as intellectual property.

Coral fisheries research in Strait coastal waters aims to establish local knowledge as a basis for sustainable reef fisheries management to support the development of Central Buton Regency as a coastal and oceanic region. This work is also the first time the Central Buton Regency formulates a method of local knowledge-based reef fishery management.

Forms of resource management were carried out in Indonesia, including foreign countries, including the creation of local wisdom-based fisheries in the management of sustainable marine resources in Bengkulu (Ambarini *et al*., 2018), local wisdom in the use and protection of coastal and marine resources in Sabang City (Armi *et al*., 2018), the relationship between perception and community participation in the management of capture fisheries resources based on local wisdom (Bekti *et al*., 2019), strengthening local wisdom as the cornerstone of the management of mainland waters in Sumatra (Oktaviani *et al*., 2016), local wisdom in capture fisheries activity in Sabangau Area, Central Kalimantan (Elbaar and Limantara, 2019), Local wisdom

Mane'e and its impact on fish resources and environment in Nanusa Island, North Sulawesi (Reppie, 2015), Role of local wisdom in utilization of resource of fish in the Aceh District (Chaliluddin *et al*. 2015), Local wisdom in the environmental protection and management ement (Jundiani, 2018), Local wisdom, environmental protection and community development: the clam farmers in TambonBangkhunsal, Phetchaburi Province (Kamonthip and Kongprasertamorn, 2007), Local wisdom functionalization for regional law enforcement of fisheries management (Monteiro, 2017), capture fisheries policy interactions and local wisdom in the northern waters of Aceh (Rizqi *et al*., 2017), fisheries management policies based on local wisdom in Aceh (Sulaiman, 2010), the role of traditional knowledge in fisheries management: a case study of Commander Laot (sea commander) in the Aceh (Utomo, 2010).

Materials and Methods

Data collection uses direct interviews with seasoned fishermen, working as reef fishermen (key actors) all their lives. The research time was three months, from April to June 2020. A total of 53 respondents settled along Spelman Strait (purposive sampling). The coastal villages are in Mawasangka District, Central Buton Regency, consisting of Mawasangka Village, Watolo Village, Wakambungara Village, Kancebungi Village, and Gumanano Village (Figure 1). Interviews performed in-depth, extracting knowledge so that the pattern of arrest can be used to shape local wisdom. Method of this research uses solely qualitative methodology and phenomenology (Moleong, 2010; Tebaiy and Manuputty, 2017). Moleong (2010), a qualitative approach, also examines respondents' life prospects. In comparison, phenomenology is an phenomenon experienced without external interference (Moustakas, 1994; Creswell, 2007; Irianto and Subandi, 2015).

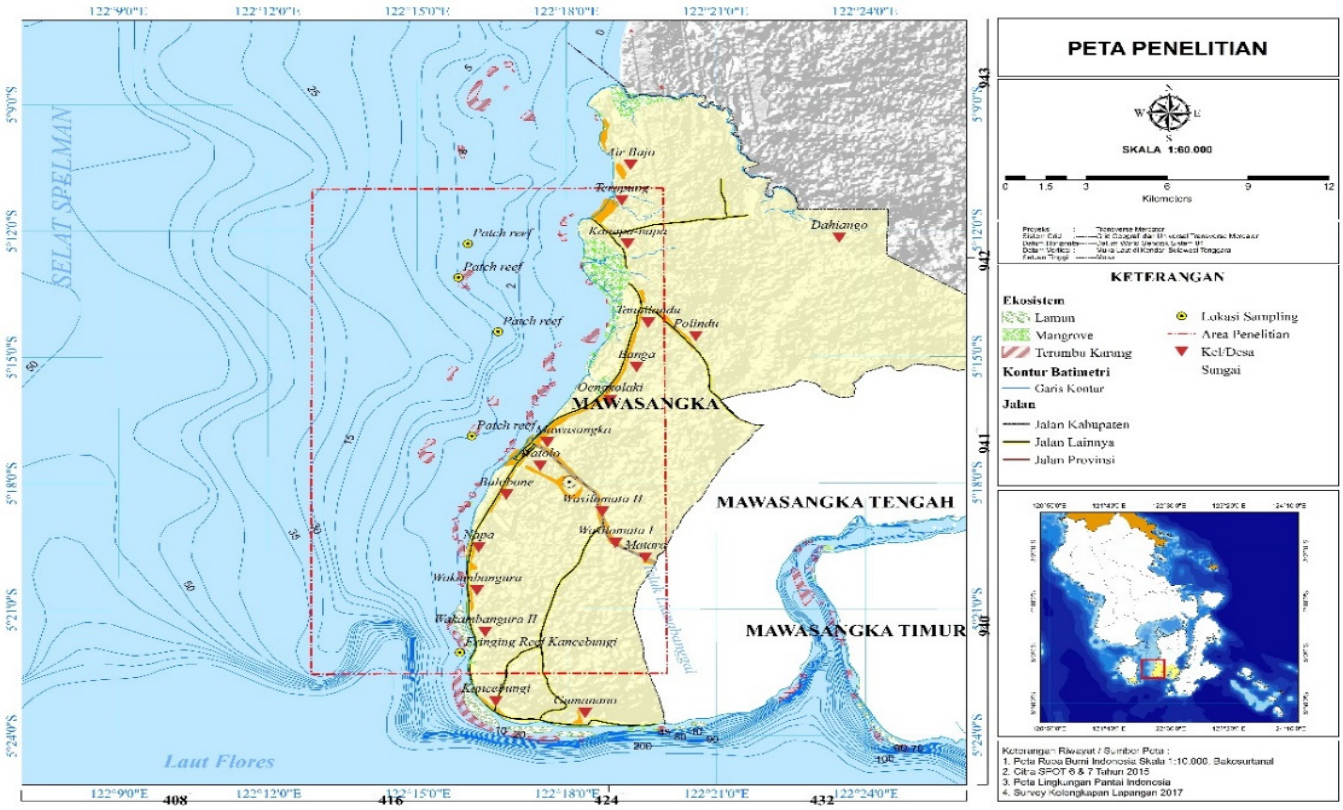

Fig. 1: Location of study site

Results and Discussion

Arrest Pattern

For centuries, reef fishing was practiced by fishermen in the coastal waters of Spelman Strait. Arrest pattern awareness is based on the experience passed so long. The research findings are based on interviews with key actors catching reef fish during those seasons. These occur during west and east monsoon. Heavy winds characterize the west monsoon, and a fairly calm east monsoon.

Knowledge of wind shifts in Spelman Strait coastal waters by fishermen will impact coral fishing patterns. Throughout the western monsoon, fishermen capture reef fish with significant export-quality economic value. Fish are from the Serranidae and Lutjanidae family groups, while goal fish are all reef fish species in the eastern monsoon. The fishermen's awareness is applied by using hooks. Fishing hooks use 5-8 in the west monsoon and use fishing lines 15-17 in the east monsoon. We already know that hand fishing lines are a form of traditional gear used by small-scale fishermen. The fishing line is also environmentally friendly, limited fishing equipment. As stated by Irnawati (2012), the conservation of grouper fish in Karimunjawa includes stretching rods.

Fishermen's view on using specific fishing rods during the west and east monsoon is an adaptation of reef fisherman's experience. Experience made a trend in shaping coral fishing patterns. Analyzing season-based coral fishing

patterns and using various fishing lines have a positive effect on the economies of fishermen households in fulfilling their daily needs. The fishermen's opinion that reef fish captured in the western monsoon are big fish, while reef fish captured in the eastern monsoon are comparatively small in scale. The following is the fishermen's opinion on the trend of catching both seasons: ("*During the western monsoon big coral fish come out looking for food, influenced by waves and waves from the Flores Sea so that the fish take refuge in the Strait. Unlike in the eastern monsoon, fish caught are relatively small, influenced by the fairly calm current*").

Based on the knowledge of the catching pattern of western and eastern monsoons in the coastal waters of Spelman Strait, it is possible to serve as local expertise in the management of coral reefs.

West and East Monsoon Wind Patterns

Wind patterns in the west and east monsoon of Spelman Strait coastal waters allow coral fishermen to shape and classify. This character emerges naturally, when using coral fishery tools, gained from life experience. The findings of an in-depth study of main players, related to awareness of local fishermen and real events, have a strong correlation (Figure 2).

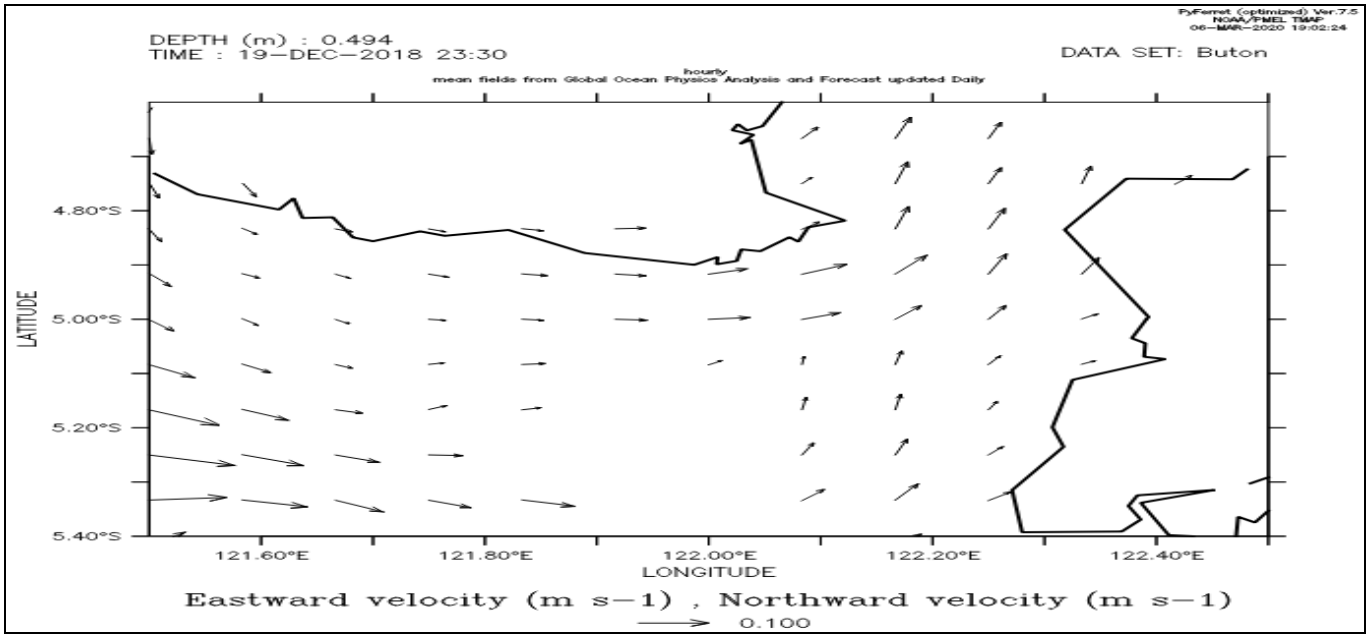

Fig. 2 : Spelman Strait current trends, December 2018 (Copernicus 2020)

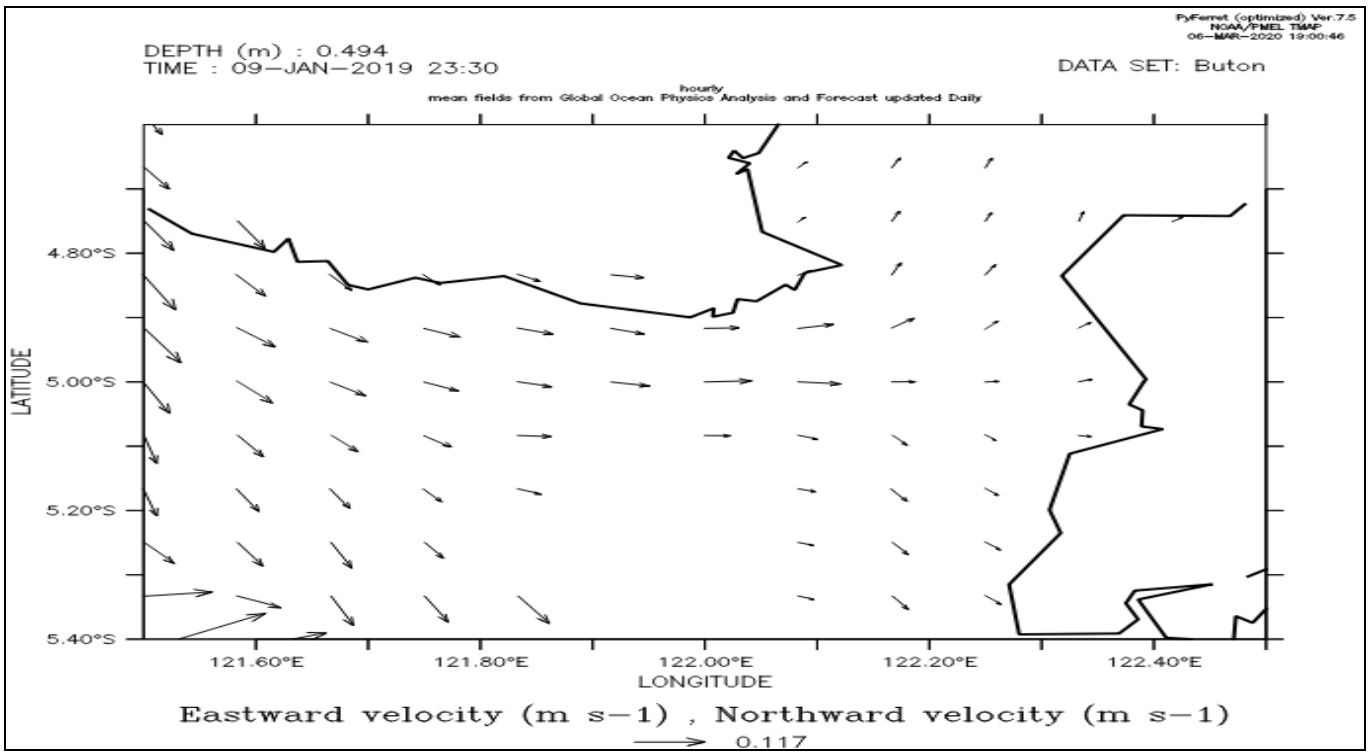

Fig. 3: Spelman Strait current trends, early January 2019 (Copernicus 2020)

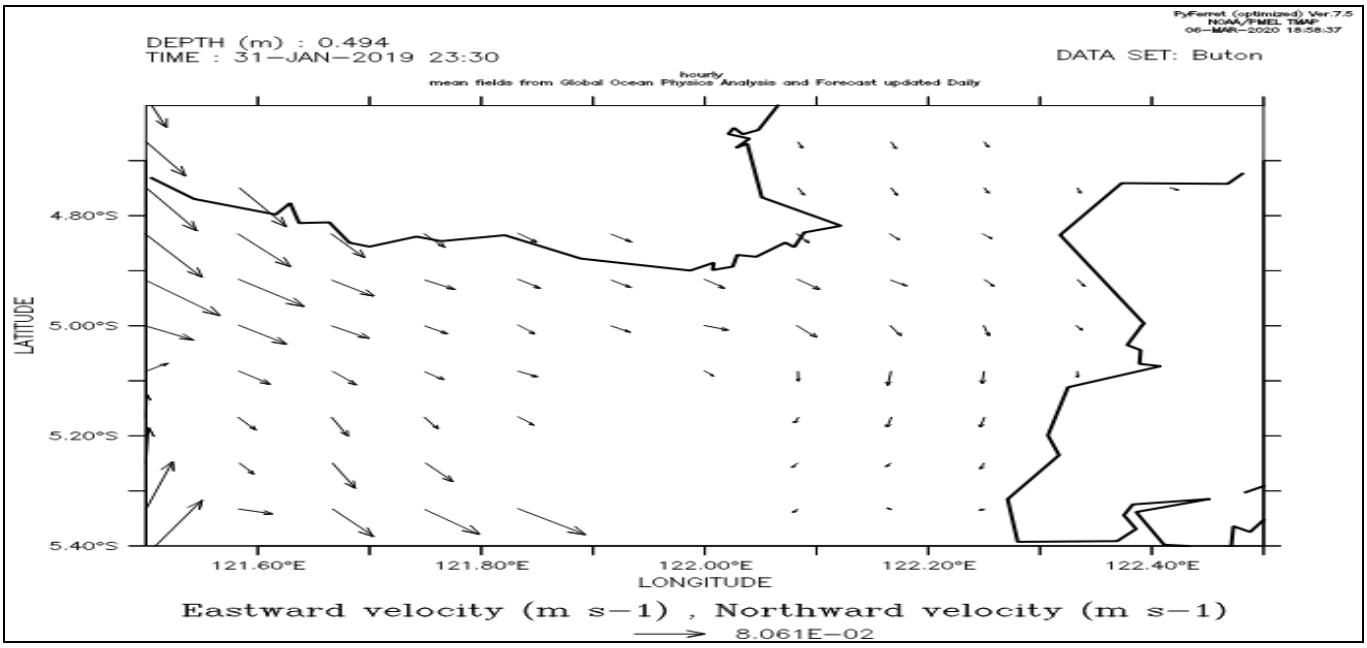

Fig. 4: Spelman Strait current trends, end of January 2019 (Copernicus 2020)

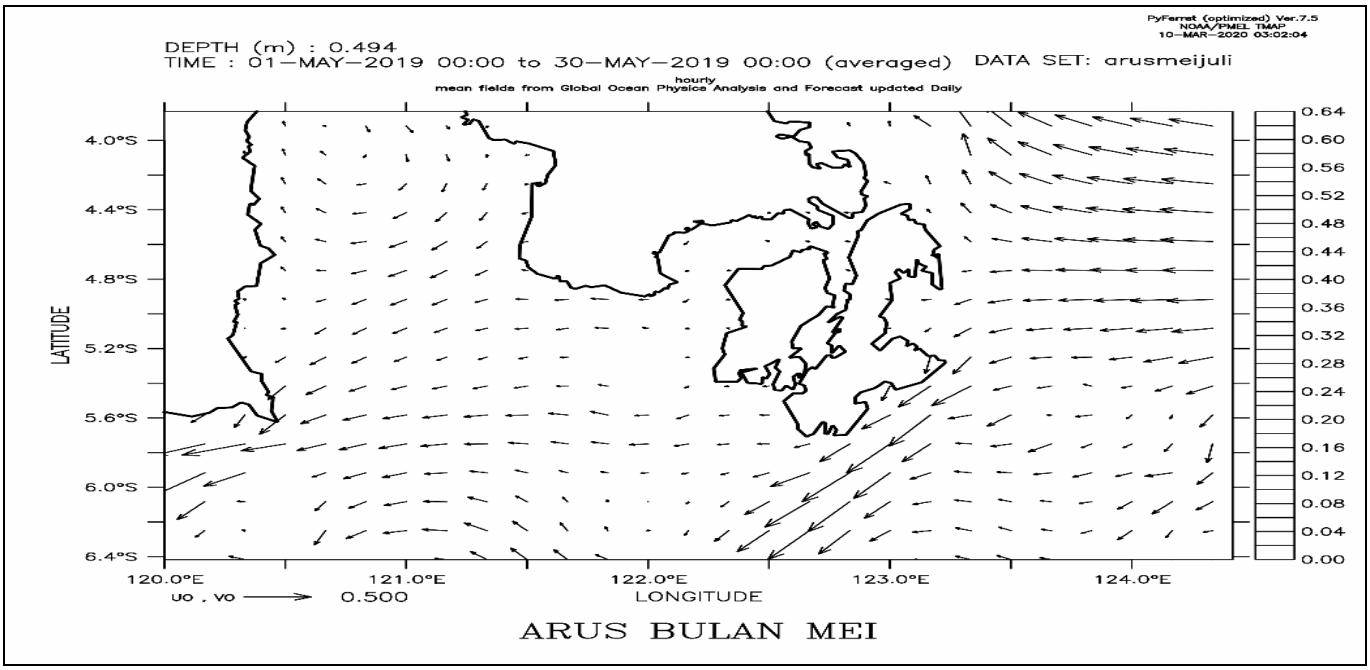

Fig. 5: Spelman Strait's present trends in May 2019 (Copernicus 2020)

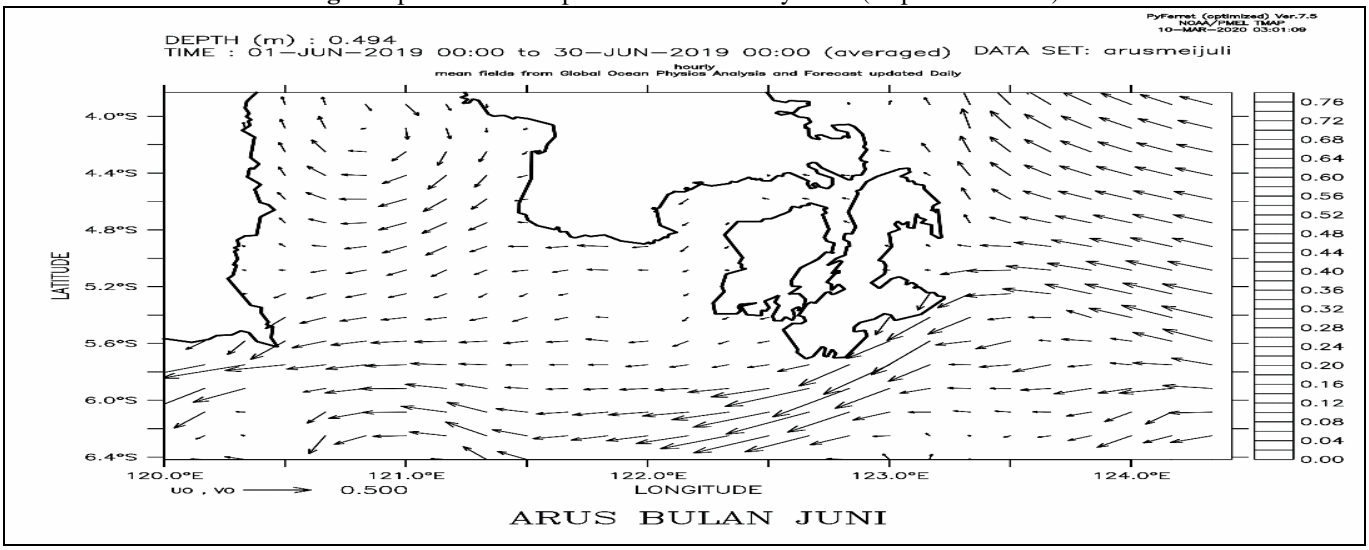

Fig. 6: Spelman Strait current trends, June 2019 (Copernicus 2020)

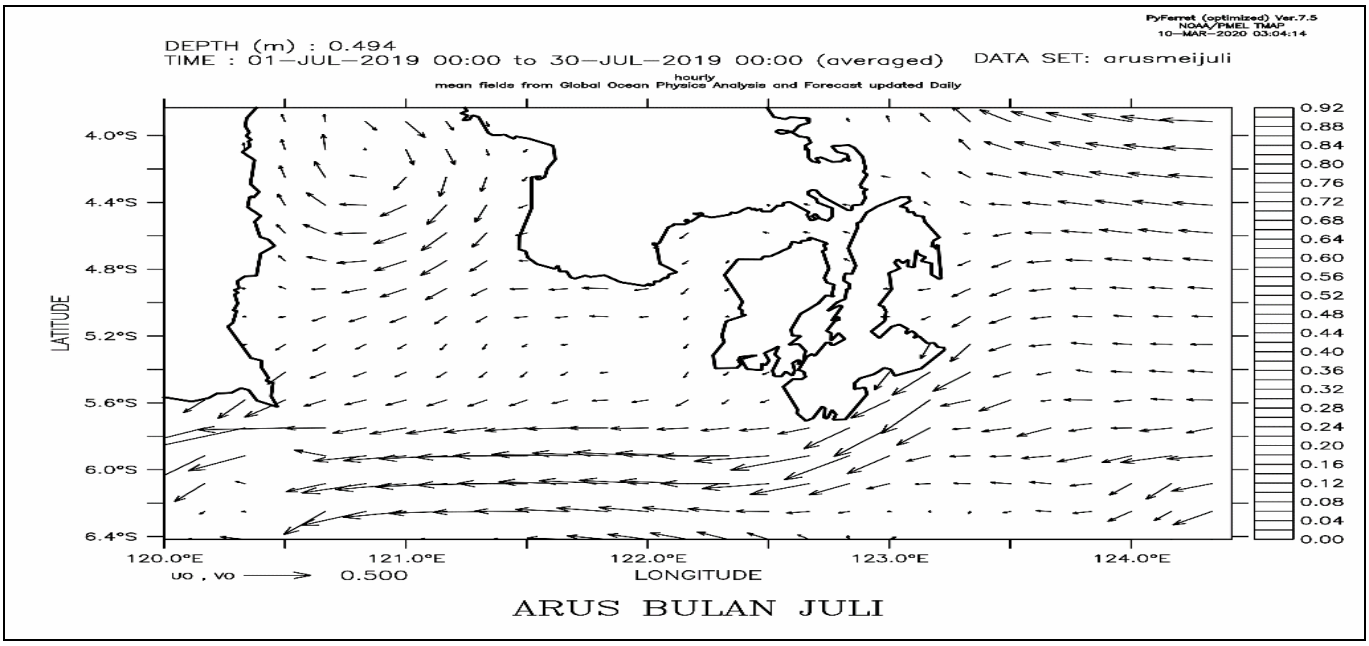

Fig. 7: Spelman Strait current trends, July 2019 (Copernicus 2020)

Western monsoon patterns shape currents and waves. Present and wave patterns are thought to cause nutrient accumulation in coastal waters of Spelman Strait, thereby increasing water fertility. According to Loupatty (2013), currents are caused by wind-induced water movement and flowing continuously for a long time, creating waves and towards the coastline. Figures 2, 3, and 4 wind patterns from Flores Sea and Bone Gulf, causing surface currents towards Spelman Strait. The dynamics of the two water drinks make the Spelman Strait have a complex water mass affecting oceanographic characteristics. The combination of the two water masses has a positive effect on the consistency of the Spelman Strait waters' water mass, such as an increase in nutrient (nutrient), chlorophyll, phytoplankton, and seston (Adnan 2003), which causes high energy flow and food chain in the waters (Mann and lazier 2006; Lalli and Parsons 1997; Thorp *et al*. 2008).

Mid-December 2018 (Figure 11), the pattern of powerful currents reaching Spelman Strait waters so that fishermen did not conduct coral fishing activities that month. Reef fishing starts in January until end of April. Based on Figures 3 and 4, the existing trend starts to shift outward and weaken. Unlike the east monsoon, the current trend is fairly calm, as seen in Figures 5, 6, and 7. Both of these seasonal patterns are local fishermen's knowledge of the Spelman Strait coastal waters.

Local knowledge of reef fishermen in the Spelman Strait's coastal waters has an excellent opportunity to be used as a management basis to control fishers' lives through rules decided upon and institutionalized by local government as a method of sustainable coral fisheries management. As mentioned by Utomo (2010); Chaliluddin *et al*. (2015), with its PanglimaLaot in Aceh, stipulates customary fishing law.

Local awareness will concern environmental sustainability, according to Ibad (2017). It does not, however, rule out the possibility of handling culture with a management principle that is not based on local wisdom. According to (Anon, 2014), sustainable fisheries management requires an ecosystem approach so that recovery of fish stocks will add value to boost food security. (Kathijotes, 2013) also clarified that farmers and fishermen still pay attention to ecosystem preservation to maintain business and livelihoods.

According to the Republic of Indonesia Statute, No. 32 of 2009 on Environmental Conservation and Management, translated as noble principles that exist in the community's lifestyle, among others, used to sustainably protect and manage the environment. Such noble principles should serve as benchmarks for the sustainability and conservation and coral reef ecosystem resources in the coastal waters of Spelman Strait since combining ecological, social, economic and institutional objectives is the basic concept of sustainable fisheries. Therefore, local knowledge is required by local government policy to be used as a form of sustainable management of coral reefs to support the vision and mission of Central Buton Regency as a coastal and oceanic region.

Conclusions

Local knowledge of reef fishing focused on two fishing seasons (west and east monsoon) and using separate fishing rods applied by Spelman Strait coastal fishermen can be a benchmark for sustainable management of coral reefs.

Acknowledgements

Further work is required on the suspected upwelling in the west monsoon in the Spelman Strait's coastal waters in support of sustainable fishing efforts.

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