



Paradoxical livelihoods in an open resource area: trawler and blue swimming crab fisher dynamic conflict constellation in Tiworo Strait

¹Muslim Tadjuddah, ²Nur I. Wianti, ²Suriana, ²Yani Taufik,
²Sukmawati Abdullah, ²Ima A. Wunawarsih

¹ Department of Fisheries Capture, Faculty of Fisheries and Marine Science, the University of Halu Oleo, South-East Sulawesi Province, 93132, Indonesia; ² Department of Agricultural Extension, Agricultural Faculty, the University of Halu Oleo, South-East Sulawesi Province, 93132, Indonesia. Corresponding author: N. I. Wianti, wianti.ni@uho.ac.id

Abstract. Many studies have shown that trawling has been a major cause of marine resource depletion and can also be antagonistic to small-scale fishers. This paper describes our serendipitous finding of a dynamic constellation of user group conflict between trawlers and small-scale blue swimming crab (BSC) fishers in Tiworo Strait, Southeast Sulawesi, Indonesia. The research was conducted from 29 August to 14 September 2020. We collected the data through a Focus Group Discussion (FGD), a survey with 260 respondents, and in-depth interviews with several key informants in three coastal communities in Tiworo Strait: (1) Tondasi Village; (2) Balu Island Santiri Village; and (3) Tiga Island Bero Village. By using qualitative and quantitative data analysis, this study reveals a unique conflict constellation which involves *Sama-Bagai* identity, livelihood interests, and territory. Interestingly, we found that *Sama Bajo* BSC fishers used their social capital and identity as boat-dwellers for combating the trawlers and resolving the open conflict. From these research findings, we recommend diverting trawl fishers to more environmentally friendly fishing gear, such as gill nets and handlines, to support the sustainability of small-scale BSC fisher livelihoods. We also suggest taking into account the local social norms and identity as the base of conflict resolution among fishers.

Key Words: trawling, blue swimming crab, conflict, *Sama Bajo*, Tiworo Strait.

Introduction. Many studies have shown that trawling has been one of major causes of marine resource depletion through overfishing. A large and growing body of literature has researched about social-ecological impacts of trawling. Pham et al (2019) argue that bottom trawling can have dramatic impacts on deep-sea habitats, where many benthic species are ill-adapted to physical disturbance, being highly susceptible to damage and removal as by-catch from bottom contact fishing gears. Moreover, Pham et al (2019) give an example about the ecological damage due to trawling that a trawl passing over a pristine area of cold-water corals can catch up to 1.4 tons of coral per hour, while more than 5 tons of sponge from a single research vessel trawl have been recorded to be lost from the sponge grounds on Flemish Cape in the northwest Atlantic. In Thailand, Flaherty & Karnjanakesorn (1993) point out that trawling quickly established itself as the most lucrative fishing method, attracting the attention of a large number of investors who were lured by the prospect of quick profits. Furthermore, Thailand's trawl fleet grew rapidly from about 5000 fishing vessels in the 1960s to over 20000 in the 1980s (Nagalaksana (1988) cited by Flaherty & Karnjanakesorn (1993)). Sadly, the increase in the number of trawlers and corresponding increment in fishing capacity, however, soon led to overexploitation of Thailand's marine fishery resources, and due to depletion of Thailand Gulf resources, motivated the Thailand trawler to do fishing trip to the fishing zones of Bangladesh, Indonesia, India, Burma, Malaysia, Cambodia, Singapore and Vietnam. The reaction of many trawlers has been to poach, straining diplomatic relations with neighbouring states, as it was shown by Flaherty & Karnjanakesorn (1993).

Not only an ecological issue, trawling has also been a primary root cause of competition and conflict among a large number of resource-users particularly in open access resource areas. Bailey (1997) concluded that, under the open-access conditions that have prevailed in most Southeast Asian fisheries, one essential problem is user group conflict (see Charles 1992) as different groups generally exploit the same resource and often compete for access to the same coastal fishing grounds, in addition to the issues of overfishing and resource depletion. The resulting competition between mini trawler operators and small-scale fisheries has led to widespread conflict in Indonesia and elsewhere in Southeast Asia (Bailey (1985); Goh Cheng Teik (1976); and Smith (1979) cited by Bailey (1997)).

Discussions on trawling in the Indonesian context are inseparable from the trawl operation ban policy since 1980. Bailey (1997) describes that the regulation has been applied to reduce competition and conflict that have been caused by trawlers particularly the Malacca Straits and off the north coast of Java. In 2015, the Indonesian Fisheries Minister Susi Pudjiastuty declared that the mini bottom trawl type called *cantrang* was also grouped under the category of fishing gears banned under Ministerial Regulation No. 2/2015 (News Desk the Jakarta Post 2017). This regulation bans the use of all types of trawls and some seine nets, which the Ministry argued are destructive to coral reefs and to seabed ecosystems in general. However, there was a massive protest from the trawler fleets regarding the regulation, even though *cantrang* used by fishing boats of less than 10 gross tons (10 GT) would be replaced by other fishing gear provided by the government, while the owners of larger vessels would be given loans from state-owned lenders to convert their gear (News Desk The Jakarta Post 2017). Hapsari et al (2019) described the narratives around contestation against the *cantrang* ban; when the Minister responded to the *cantrang* fishermen's protests as being paid protests, the fishermen retaliated by putting all the blame on the Minister, rather than explaining their stand on the *cantrang* ban. The fishermen showed their frustration when they felt that their voices were ignored. The sequence of events did not give any spaces for both sides to discuss the issues, and the situation escalated and became worse due to perceived provocation from both sides. With no satisfactory resolution, the mini bottom trawl or *cantrang* remains a major issue for fisheries management in Indonesia.

In view of this background, we are not surprised that most academic discussions have tended to affirm the perception that the demersal fisher has always been an eternal antagonistic actor for the trawler fleet. Pollnac (2007) has attempted to draw a distinction between "bad guys" and "good guys". The trawlers, indiscriminately scouring the floor of the ocean, and taking tonnes of marine organisms, are the "bad guys" while other small-scale fishers who use static fishing gear such as fishing traps are the victims and "good guys" having little impact on their prey (Kurian (2002) cited by Pollnac (2007)). Nevertheless, focusing on paradigms such as that presented by Pollnac (2007) that argue for an explanatory narrative with a dichotomy between "bad guys" and "good guys", neglect the fact that there is a continuum between the two poles, and that in some cases the little guys admire the big guys and aspire to become big guys themselves. It also neglects the fact that there are some cases in which there is a symbiotic relationship between the two, where one helps the other and vice versa. Another interesting research was published by Siriwardane-de Zoysa (2018). She highlighted everyday cooperation and symbiotic relationship in livelihoods that have given a new horizon for us to learn about the horizontal dynamic conflict relationship between trawlers and blue swimming crab (BSC) fishers in the Tiworo straits.

We became interested in a unique conflict between mini bottom trawling and BSC fishers when collecting data by Focus Group Discussion (FGD), and our research serendipitously came across an unusual social relations constellation among varied resource-users. In addition, there is a very limited volume of publications describing two sides of reality: conflict and collaboration in the context of mini bottom trawlers and other small-scale fishers. Therefore, this research investigated *Sama Bajo* social fabric and its implications for fisheries management efforts in Tiworo Strait. In short, this paper provides some answers as to why stopping the use of the mini bottom trawl is complicated, based on our data revealing paradoxical livelihoods in the Tiworo Straits.

Material and Method

Description of the study sites. This research is part of a three-year fundamental research program which started in 2018. We collected the data in the middle of the COVID-19 outbreak, from 29 August to 14 September 2020. Our fieldwork sites were several villages in the Tiworo Straits, with conflict relation data from three villages: (1) Tiga Island, Bero Village; (2) Balu Island, Santiri Village; and (3) Tondasi Village (Figure 1). These sites are in North Tiworo District, West Muna Regency, South-East Sulawesi Province, Indonesia.

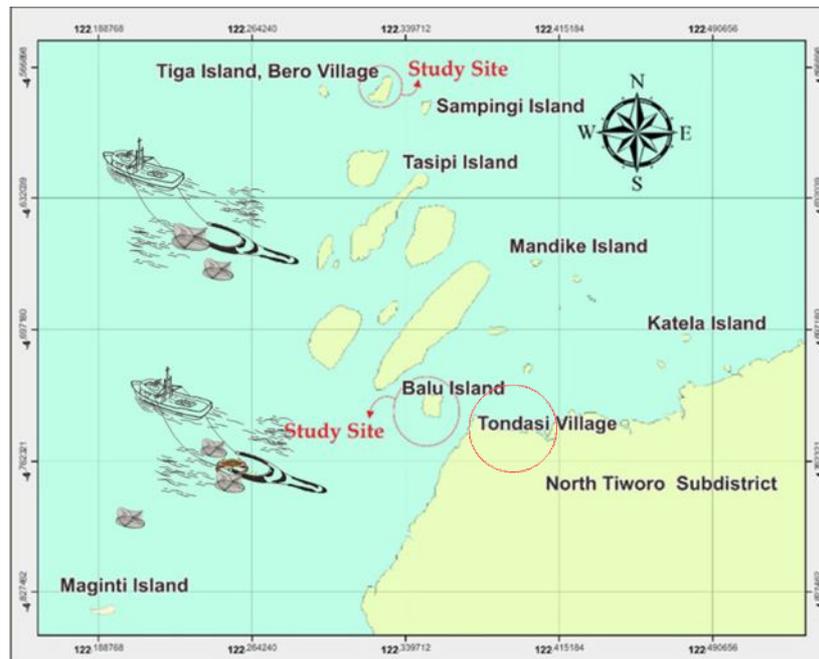


Figure 1. Map showing the three research sites in North Tiworo District, West Muna Regency, Southeast Sulawesi Province, Indonesia.

Data collection. This research involved 260 respondents, and 60 key informants in Focus Group Discussions (FGDs). The FGD key informants were selected in a purposive way. We considered representation for every single livelihood and village government with 15 informants from every village. We also took into account the representation of women, with 2-3 women attending each FGD.

In the FGD, we focussed on several topics based on our general research aims, such as to elucidate the reality of social interactions between *Sama Bajo* and land-dwellers and the influence of these interactions on the social resilience of the *Sama Bajo* in Tiworo Strait. The key topics were: (1) identifying sources of household and community vulnerability; (2) identifying household and community strategies as responses to the vulnerabilities; (3) and collecting fisher's opinions regarding government regulations with respect to their livelihoods.

Kidd & Parshall (2000) cited by Schaafsma et al (2017) argue that interaction between participants in FGDs allows for more flexibility in the assessments of values, beliefs and perceptions of situations than household surveys and quantitative choice experiment (CE) scenario. People may have more freedom to express doubts and conditions of accepting certain proposals. However, commonly mentioned limitations of group interaction include conformance, coercion, and conflict avoidance, resulting in non-participation of less articulate, confident or powerful people. However, Betts et al (1996) argue that multiple focus groups may decrease these threats to external validity. Accordingly, we held multiple FGDs in several fisher villages and we combined the FGDs with a survey, and in-depth interviews with several key informants who have deep knowledge about the research topics.

Qualitative and quantitative data analysis. When analysing the data, we used qualitative methods for data reduction, supported by quantitative methods. Firstly, excerpts from FGD sound recordings made at the three study sites have been transcribed and used as narratives to show various personal interpretations from our FGD key informants regarding the issues. Secondly, we used partitioning to uncover essential social facts. As an illustration, for two different modes of production, the survey data supported the qualitative data. These data were analysed using cross-tabulation.

Results. Pomeroy et al (2007) argued that conflicts and wars related to the rights over the use of land and water have been important human issues throughout recorded history. Although many of us are probably more aware of wars fought over religious freedom, political ideologies and social issues, conflict over fishing rights and resources are just as common, if less reported. A study from Silvestre et al (2003) cited by Salayo et al (2008) found that coastal fisheries in eight Asian countries (Bangladesh, India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam) showed an alarming decline in coastal fishery resources throughout the region. Also, such declines have increased poverty among coastal fishers who are already often among the poorest of the poor in Asian developing countries. Overfishing has also reduced the contribution of coastal fisheries to employment, export revenue, food security, and rural social stability in these nations and increased conflict for the remaining resources. Thereby, the sea has been defined as a contested space.

On the contrary, the sea also reflects the ways in which the resource users are mutually interdependent. Interestingly, Siriwardane-de Zoysa (2018) argues in her monograph that small-scale fishing, embodying a distinct sociocultural setting in itself and constituting a diversity of life-worlds, has often been studied against its peculiar propensity to engender competitive as well as co-operative action that “customarily sit side by side”, in what Adrian Peace (1996) terms a “vigorous rivalry”. Regarding both sides of this relationship we describe the mapping of social conflict among fishers, the answer for paradoxical livelihoods, and finally our finding of *Sama-Bagai* social values that are embedded in the small-scale BSC fisher’s associative and dissociative social relations.

Mapping of social conflict amongst fishers in Tiworo Strait. We begin by describing the conflict constellation and mode of production of both mini bottom trawlers and BSC fishers. By using a survey of 260 respondents combined with the FGDs data, we found several actors who have contested and competed with BSC small-scale fishers in the Tiworo Straits. Mini bottom trawl fishers are the highest tension actors for the BSC small-scale fishers, their competition is entangled with violence. Other actors are small scale pole and line fishers and larger-scale purse seine fishers. Regarding the mode of production, both mini bottom trawl and pole and line small-scale fishers from Tampo are involved in horizontal conflicts with the BSC fishers. The fishers also have a vertical conflict with *Bagai* Kendari large scale purse-seine fishers operating in Tiworo Strait (see Figure 2). Nevertheless, our key informants highlighted that conflict tension was less with both the purse seine and pole and line fishers than with the mini bottom trawl fishers. Therefore, in this paper, we focus on the horizontal conflict relation between small-scale mini bottom trawlers and BSC fishers.

In the *Sama Bajo* local terminology, trawls are called *katonda* while the *Bagai* Kasipute trawls are called *lampara dasar* (Burhanuddin 2006); for the BSC fishers, both have been antagonistic fishing gears. Based on the survey, FGDs and desk study, in Tiworo strait there are three types of trawl fishermen based on their social or ethnic identity: *Bagai* Bombana Kasipute trawl fishers; *Bagai* Tiworo mini bottom trawl fishers; and *Sama Bajo* mini bottom trawler fishers. Based on a study from Burhanuddin (2006) the *Bagai* Bombana Kasipute mini bottom trawlers are mostly wooden-hulled vessels approximately 11-12 m in length, 1.50 to 1.75 m wide, with a draught of around 0.75 to 1 m. The fishing boats were mostly fitted with 20 to 24 HP inboard engines. Compared to the Kasipute mini bottom trawlers, both the *Bagai* Tiworo and *Sama Bajo* mini bottom trawlers tended to be smaller, around 8 m in length but with similar engine power. From

our survey, we found that the fishers mostly use household members as additional workers to haul the nets. Interestingly, in Balu Island, most of the *katonda* fishers brought their wives as fishing labourers. Apart from the Bombana Kasipute mini bottom trawler fishers, few other fishers used mechanical hauling machines.

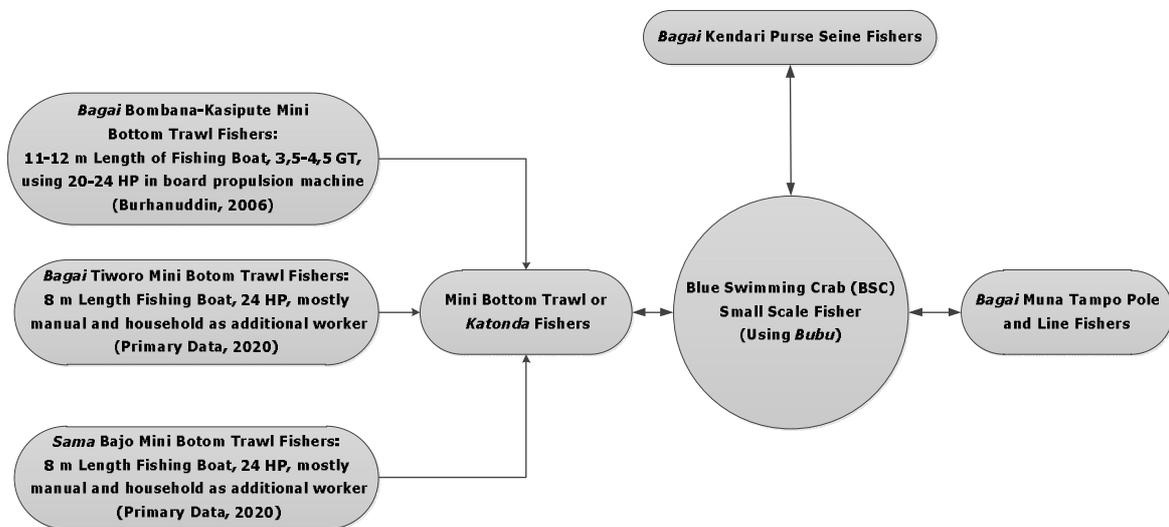


Figure 2. Mapping of social conflict among fishers in Tiworo Strait.

Burhanuddin (2006) found that Kasipute trawlers operated for almost 10 hours per trip. They would start around 6.30 p.m. and stop around 6.00 a.m. setting and hauling 2-4 times during each trip. However, based on the FGD key informant in Bero Village, nowadays the trawlers are operated all day long, in the morning, day time, and at night. Thus, overexploitation by the trawlers has not only impacted the fish catch and stocks but also the BSC fishers. When *katonda* or *lampara* operate at night, mostly without sufficient lighting, they often demolished the crab traps (*bubu* in Bahasa Indonesia), even when the *bubu* have been equipped with a flag, as well as a lamp as a sign at night (see Figure 3). This sweeping of the area by *katonda* is fatal to the BSC fishers because the traps are set by the fishers in a parallel pattern. Figure 3 illustrates the crab pots and the setting of these traps while Figure 4 shows crab traps (*bubu*) about to be set in Bero Village.

The BSC has a wide geographical distribution and is an important commercial species throughout the subtropical waters. Although local consumption of this species is low, the BSC supports a fast-growing industry (Zainal 2013). Table 1 illustrates the level of production of BSC fishers among three sites. Generally, the fishing boats of the BSC fishers are smaller than those of the trawler fishers. The average boat length in Bero and Santiri village is 8 m, and the maximum length is 9 m. The BSC fishers mostly use an outboard motor with an average power of 27 to 36 HP. However, there are several fishers who have either inboard or outboard motors up to around 80 HP. The *bubu* crab traps are the main fishing gear used for BSC fishing. The fishers in each of the three sites have an average of 216 to 320 trap units. The highest number was 400 units owned by a fisher in Bero Village.

The BSC fishers in the three research sites are mostly small-scale fishers who are vulnerable to falling into chronic poverty. The BSC fishers mostly go to sea in the evening to set the traps. In Bero and Santiri Villages, after finishing trap setting, the fishers go back to their village; the next morning, they put to sea again to check the catch by lifting the *bubu*. For their fishing activities, and sometimes also for daily household needs, the BSC fishers are mostly dependent on their boss or *Punggawa* through chronic indebtedness. For the BSC fishers, entangled by debt ties, any generosity from the *Punggawa* is considered a grace of God. This situation has arisen because BSC fishing is a high cost activity, and the fishers do not have the financial capital to finance it. In

addition to operational costs, the iron *bubu* have to be replaced around every three months at a cost of IDR 45,000 (\$1≈ IDR 15.000). Therefore, when a trawler destroys their traps, it means that the BSC fishers will lose their main income, and it will make it even harder for them to try to get out of debt. This means that the BSC traps lost due to trawler fishing activity in the Tiworo fishing grounds has sparked violent conflict between the trawler fishers and the BSC fishers.

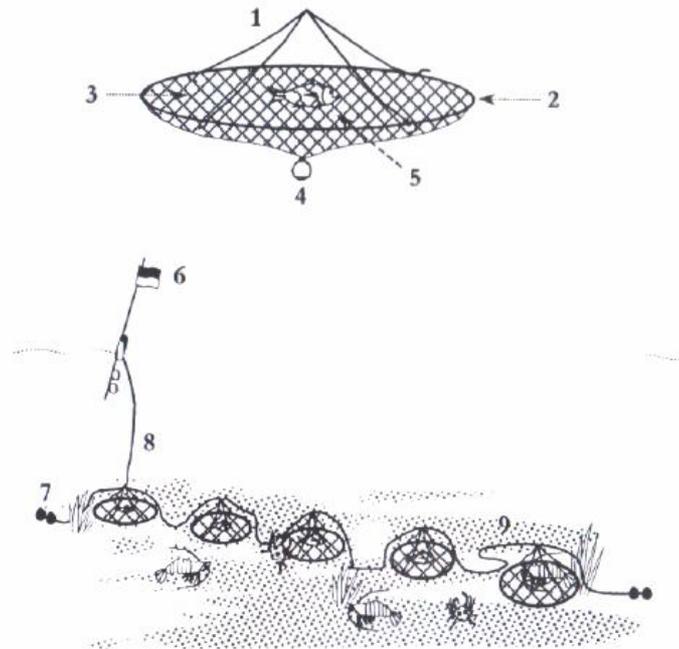


Figure 3. The setting pattern for blue swimming crab (BSC) *bubu* traps (Source: Martasuganda 2003).



Figure 4. Crab traps (*bubu*) reading to be set in Bero Village (Source: Primary data, 2020).

Table 1

BSC fisher mode of production based on research site: boat length, engine power, and number of *bubu* crab traps used by fishermen in the three study sites

| BSC fisher community | Boat length (m) | | | Engine power (HP) | | | Number of traps/fisher | | |
|------------------------------|-----------------|-----|-----|-------------------|-----|-----|------------------------|-----|-----|
| | Mean | Min | Max | Mean | Min | Max | Mean | Min | Max |
| Tiga Island, Bero Village | 8 | 5 | 9 | 27 | 5 | 33 | 320 | 300 | 400 |
| Balu Island, Santiri Village | 8 | 7 | 9 | 25 | 13 | 80 | 22 | 100 | 300 |
| Tondasi Village | 9 | 8 | 9 | 36 | 22 | 80 | 216 | 150 | 350 |

Source: Primary Data, 2020.

Why the conflict is a paradoxical livelihood? We now turn to the description and analysis of the paradoxical side of conflicts related to the BSC fishers' livelihood. When we were conducting the FGD in Tondasi Village, the last question for the FGD key informant brought us to the unique finding of a dynamic conflict involving both trawler and BSC fishers. In our last question, we asked the FGD participants whether there are government policies that have had negative implications for their livelihoods. One participant who is a BSC fisher literally said that the trawler ban will impact the BSC fisher productivity. Later, another participant, a woman who graduated in fisheries science from a state university, provided more details about the BSC fisher's dilemma. She argued that, even though the mini bottom trawler or *katonda* was harming the BSC fishers on the one hand by destroying their traps, on the other hand the trawlers have been supplying the bait used by the BSC fishers.

Bait is an essential source of cooperation between BSC and trawler fishers. The economy of bait brings these two groups of fishers into a mutual relationship. There are advantages from this symbiotic relationship for the BSC fishers, particularly in Tondasi and Santiri. In those two areas which have experience resource degradation due to overfishing, blast and dynamic fishing and sand mining, bait is the main determinant to get an abundant BSC catch. The bait is produced by the trawlers as fish trash. Mostly the trash fish that are utilized by the BSC fishers is *Leiognathus equulus*, locally known as *ikan bete-bete* or *peperék*. Figure 5 illustrates how important the trawlers can be for the BSC fishery by describing fishers' expenses for bait based on village location and monsoon season.



Figure 5. Average monthly crab trap bait needed by BSC fishers (weight and expense) by research site and monsoon season (Source: Primary Data, 2020).

Figure 5 shows our survey data which reveals that bait is needed by the BSC fishers not only in the West Monsoon but also the East Monsoon. However, we found that on average bait expenses are higher during the East Monsoon than the West Monsoon, particularly in Santiri Village which is a centre for the BSC fishery, and also the BSC fishers live side by side with the mini bottom trawlers in this village. During the West Monsoon, on average, the fishers needed 90 kg fresh bait from the trawlers at a mean cost of IDR 179.000 per month. However, there was a slight difference in bait price between the west monsoon in 2019 and the east monsoon in 2020 when COVID-19 started, when bait needs experienced a slight decrease, especially in Tondasi Village.

Interestingly, in Bero village, the fishers surveyed reported that they do not use bait for their BSC fishing operations. When we visited the village, we could not find any trawler fishers living inside the village, unlike the case of Santiri. Later, we validated these data when we conducted the FGD in Bero Village, which confirmed that these BSC fishers do not use bait. We later found during the FGD process that the participants showed an assertive attitude towards combatting the trawlers as the main problem causing their income depletion. Later the participant's suggestions for the government were to implement strict surveillance in Tiworo Strait, and as fast as possible to manage the resource users by implementing a policy to protect the BSC fishers from trawler fishers especially from overfishing by the Bombana Kasipute trawlers.

In contrast, we did not get a similar enthusiastic reaction from the FGD audience in Santiri Village. We saw that they protected the information about it when we did FGD. When we asked them the same questions which addressed the trawling issues, they had no spontaneous reaction. Also, our surveyors who were living in Santiri Village for two weeks while collecting the survey data reported that the trawler fishers have been protected by the villagers, because they consciously realized that trawl operation is illegal and forbidden by the government. Additionally, it was difficult for our surveyor to take a photograph of a trawler. Our surveyors had to struggle in order to be accepted and trusted by the villagers. Trying to photograph the trawl could break the intimacy and trust in their relations with the villagers, especially the BSC fishers inside the village.

After the FGD, the head of Santiri village gave us some brief information about trawling, in which he highlighted that trawling is important to supply the bait for the BSC fishery. Regarding the many cases of BSC fisher anger because trawlers, especially outsiders, have destroyed the *bubu* when they operated at night, several villagers have made an agreement about trawl operating times. They decided to allow trawling during daylight hours only, and if the trawlers do destroy the *bubu* of BSC fishers, it is mandatory for the trawlers to give compensation for all damages to the BSC fisher who is harmed. Later the head of the village told us that, since the agreement had been made, territorial conflicts between trawler fishers and the BSC artisanal fishers had been significantly reducing day by day.

Discussion. As we describe previously, there is a great hatred towards trawler fishers from the BSC fishers in Bero Village, Tiga Island. From the FGDs in Bero Village, we reached the conclusion that the rule-breaking trawler fishers were mostly Bugis trawlers from Bombana, described as land-dwellers. One of our key informants from the Bero village FGD described his experience as a party to the conflict:

"Waktu kejadiannya dua tahun yang lalu di Pulau Rangku, sampai sekarang masih sering kejadian, padahal kami sudah memberikan bendera dan diberi lampu suar, mereka yang pakai trawl dari Bombana tidak peduli dan tidak mau diatur, tabrak saja jaring dan bubu kami, karena mereka anggap tidak ada orang yang lihat. Lalu kami jagai, dengar ada bunyi mesin kami borongi, kami hadang. kami adu fisik dan kami pukul. Biasanya juga kami kasih lompat di air kasih berenang malam-malam, kami semakin emosi karena mereka suka menyangkal kami sebut tabrak lari sudah menabrak lalu kabur" (In Bahasa).

"It happened two years ago on Rangku Island, until now it still happens. We have already placed flags and light beacons [on our traps], those who trawled from

Bombana did/do not care and did/do not want to be regulated, just hit our nets and bubu, because they think no one sees what they do. Later, we were on standby, we heard that there was a sound of an engine, we ganged up, we confronted them physically, we hit them (beat them up). Usually, we throw the rule-breaker in the sea so they swim in the ocean at night; we get more emotional because they like to deny what they have done. We call it hit-and-run, after hitting [our gear] they run away.” (FGD script recording, September 14th 2020 in Bero Village)

Another interesting finding is social identity as a doorway for negotiation and way to avoiding clashes among fishers. Basically, the majority of our research subjects are of the *Sama Bajo* ethnic, and they strongly acknowledge the *Sama-Bagai* social norms. The norms reflect the origin of *Sama Bajo* tribe as a community which originated from the seas. Also, these norms separate the *Sama Bajo* tribe and other tribes from the land. *Sama* means people who have biological connections as boat-dwellers; in their local terminology it is *Sama misi Sama*. The *Bagai* are another local ethnic group. This terminology defines land-dwellers who are in a community living together side by side with the boat-dwellers or *Sama Bajo*. Another meaning of *Bagai* is stranger people from the mainland. Suyuti (2007) in his thesis defined *Bagai* in a broader context. *Bagai* for the *Sama Bajo* is not only a label for another tribe from the land, but also draws on the territoriality of *Sama Bajo* as boat-dwellers from the sea, and *Bagai* as land-dwellers. Sayuti also argued that in later *Sama Bajo* transformation, the *Sama* is always living in a dualism of their social identity especially when they relate to the *Bagai* or land-dwellers. On one side, the *Sama Bajo* remain as purely *Sama Bajo* who are living on the sea, but from another side they are dependent on a sedentary lifestyle of *Bagai* land-dwellers. This dependency constrains the *Sama Bajo* to interact with the mainland sphere of life.

From the FGD in Bero Village, several key informants argued and agreed that identity as *Sama Bajo* or inward-looking perspective has made it easier for the BSC fishers to get compensation:

“Untuk negosiasi dengan nelayan trawl sesama Sama Bajo lebih mudah dibandingkan nelayan trawl dari suku lain. Kalau orang Sama Bajo terbukti merusak, dia akan ganti rugi misalnya berapa pis rusak akan diganti. Alat tangkap orang Sama Bajo juga punya tanda, dan kami biasanya akan identifikasi melalui bahasa yang dipakai. Jadi kalo yang menabrak orang Sama Bajo, akan mudah bernegosiasi dan yang orang Sama Bajo yang merusak akan berusaha untuk melakukan ganti rugi” (In Bahasa)

“For negotiations, it is easiest with the trawler fisherman who is also a Sama Bajo than a trawler fisherman from another ethnic group. If a Sama Bajo is proven to have done a destructive act, he will give compensation, for example, he will replace the number of net pieces that are damaged. The fishing gear of the Sama Bajo also has a sign, and we will usually identify our identity through the language used. Therefore, if the perpetrator is a Sama Bajo, it will be easiest to negotiate, and the Sama Bajo perpetrator will try to give compensation.” (FGD script recording, September 14th 2020 in Bero Village)

From those qualitative data, we found that a social identity, particularly for the *Sama Bajo* BSC fishers, is a root or basis for conflict resolution. Siriwardane-de Zoysa (2018) found that collective identities are seen to exist as prior to co-operation. However, this dynamic is at the very least iterative, for co-operation also forges identities and frames of belonging. From our work, we found that social identity has been produced by reciprocity among *Sama Bajo* fishers. Such reciprocity has been shown when *Sama Bajo* trawlers give an indemnity to reduce clashes between them. La Ola et al (2020) argued that social identity enhances bonding social capital as a *Sama Bajo*. Furthermore, Yamazaki et al (2018) have found that social capital, including trust and cooperative relationships, also

plays a crucial role in the socio-economic performance of fisheries management, as suggested by Pomeroy & Berkes (1997).

These findings further support the idea of morality exchange by the *Sama Bajo* fishers not only in associative ways like interdependence and mutuality between *Sama Bajo* BSC trawlers and mini bottom trawlers in Bero and Tondasi Villages but also to reduce the potential source of conflict in dissociative relations in the dynamic conflict among the fishers in Tiworo Strait. This finding is in agreement with the findings of Pollnac (2007) which have shown that local economic relations that embody notions of fairness and generosity that characterize the "moral economy" (as discussed by Scott, 1976 and Bailey, 1991 cited by Pollnac 2007) reduce the chances for such conflict.

Conclusions. Overall, the most obvious finding to emerge from this study is a "unique conflict constellation" which involves *Sama-Bagai* identity, livelihood interests, and territory. Interestingly, we found that *Sama Bajo* BSC fishers used their social capital and identity as boat-dwellers for combating the trawlers and resolving the open conflict. From these research findings, we recommend diverting trawl fishers to more environmentally friendly fishing gear, such as gill nets and handlines, to support the sustainability of small-scale BSC fisher livelihoods. There is, furthermore, a definite need for the local government to implement surveillance in the Tiworo Strait to reduce multi-scalar conflict among open access resource users. We also suggest taking into account the local social norms and identities as the base of conflict resolution among fishers.

Acknowledgements. We would like to express our thanks to The Ministry of Research and Technology (RISTEK-BRIN) Republic of Indonesia for the financial support in our three-year fundamental research from 2018 until 2020 with contract number: 827e/UN29.20/PG/2020 on July 21st 2020.

References

- Bailey C., 1997 Lessons from Indonesia's 1980 trawler ban. *Marine Policy* 21(3):225-235.
- Betts N. M., Baranowski T., Hoerr S. L., 1996 Recommendations for planning and reporting focus group research. *Journal of Nutrition Education* 28(5):279-281.
- Burhanuddin, 2006 [Status of mini bottom trawl fishery in Kasipute waters, Rumbia District, Bombana Regency]. Undergraduate Thesis, Halu Oleo University, 59 pp. [in Indonesian]
- Charles A. T., 1992 Fishery conflicts. A unified framework. *Marine Policy* 16(5):379-393.
- Flaherty M., Karnjanakesorn C., 1993 Commercial and subsistence fisheries conflicts in the Gulf of Thailand: the case of squid trap fishers. *Applied Geography* 13(3):243-258.
- Hapsari D. R., Kinseng R. A., Seminar A. U., Sarwoprasodjo S., 2019 The struggle of cantrang fishermen in Indonesia: a pseudo victory? In: Rural socio-economic transformation: agrarian, ecology, communication and community development perspectives. Kinseng R. A., Dharmawan A. H., Lubis D., Seminar A. U. (eds), CRC Press, pp. 85-95.
- La Ola T., Wianti N. I., Tadjuddah M., 2020 [Bridging and bounding social capital: social interaction analysis of islets islanders in Wakatobi Marine National Park]. *Sodality: Jurnal Sosiologi Pedesaan* 8(1): 30-46. [in Indonesian]
- Martasuganda S., 2003 [Bubu (traps)]. First edition, Department of Fisheries Resource Utilization, Faculty of Fisheries and Marine Science Press, IPB University, 68 pp. [in Indonesian]
- News Desk the Jakarta Post, 2017 'Cantrang' ban final: Susi. 'Cantrang' Ban Final: Susi. Available at: <https://www.thejakartapost.com/news/2017/07/12/cantrang-ban-final-susi.html.%0A>. Accessed: October, 2020.
- Pham C. K., Murillo F. J., Lirette C., Maldonado M., Colaço A., Ottaviani D., Kenchington E., 2019 Removal of deep-sea sponges by bottom trawling in the Flemish Cap area: conservation, ecology and economic assessment. *Scientific Reports* 9(1):15843.

- Pollnac R. B., 2007 Cooperation and conflict between large- and small-scale fisheries: a Southeast Asian example. In: Globalization: effects on fisheries resources. Taylor W. W., Schechter M. G., Wolfson L. G. (eds), Cambridge University Press, pp. 229-243.
- Pomeroy R. S., Berkes F., 1997 Two to tango: the role of government in fisheries co-management. *Marine Policy* 21(5):465-480.
- Pomeroy R., Parks J., Pollnac R., Campson T., Genio E., Marlessy C., Holle E., Pido M., Nissapa A., Boromthanarat S., Thu Hue N., 2007 Fish wars: conflict and collaboration in fisheries management in Southeast Asia. *Marine Policy* 31(6):645-656.
- Salayo N. D., Garces L., Pido M., Viswanathan K., Pomeroy R., Ahmed M., Siason I., Seng K., Masae A., 2008 Managing excess capacity in small-scale fisheries: perspectives from stakeholders in three Southeast Asian countries. *Marine Policy* 32(4):692-700.
- Schaafsma M., van Beukering P. J. H., Oskolokaite I., 2017 Combining focus group discussions and choice experiments for economic valuation of peatland restoration: a case study in Central Kalimantan, Indonesia. *Ecosystem Services* 27: 150-160.
- Siriwardane-de Zoysa R., 2018 Fishing, mobility and settlerhood: coastal socialities in postwar Sri Lanka. MARE Publication Series, Springer International Publishing, 227 pp.
- Suyuti N., 2007 [Bajo and not Bajo: a study on changes in the meaning of the same and like in the Bajo community in Sulaho Village, Lasusua District, Kolaka Regency, Southeast Sulawesi]. Post Graduated Dissertation, Airlangga University, 309 pp. [in Indonesian]
- Yamazaki S., Resosudarmo B. P., Girsang W., Hoshino E., 2018 Intra-village and inter-village resource use conflict in Indonesia: the case of the Kei Islands. *Ocean and Coastal Management* 155:50-59.
- Zainal K. A. Y., 2013 Natural food and feeding of the commercial blue swimmer crab, *Portunus pelagicus* (Linnaeus, 1758) along the coastal waters of the Kingdom of Bahrain. *Journal of the Association of Arab Universities for Basic and Applied Sciences* 13(1):1-7.

Received: 18 October 2020. Accepted: 21 January 2021. Published online: 07 April 2021.

Authors:

Muslim Tadjuddah, Department of Fisheries Capture, Faculty of Fisheries and Marine Science, the University of Halu Oleo, Fisheries and Marine Science Faculty Building, H.E.A. Mokodompit No.1, Earth Tridharma Green Campus Andounohu Kendari, South-east Sulawesi Province, 93132, Indonesia, e-mail: muslim22jan@uho.ac.id

Nur I. Wianti, Department of Agricultural Extension, Agricultural Faculty, the University of Halu Oleo, Agricultural Faculty Building, H.E.A. Mokodompit No.1, Earth Tridharma Green Campus Andounohu Kendari, South-east Sulawesi Province, 93132, Indonesia, e-mail: wianti.ni@uho.ac.id

Suriana, Department of Agricultural Extension, Agricultural Faculty, the University of Halu Oleo, Agricultural Faculty Building, H.E.A. Mokodompit No.1, Earth Tridharma Green Campus Andounohu Kendari, South-east Sulawesi Province, 93132, Indonesia, e-mail: sury003@yahoo.com

Yani Taufik, Department of Agricultural Extension, Agricultural Faculty, the University of Halu Oleo, Agricultural Faculty Building, H.E.A. Mokodompit No.1, Earth Tridharma Green Campus Andounohu Kendari, South-east Sulawesi Province, 93132, Indonesia, e-mail: yanitaufik@gmail.com

Sukmawati Abdullah, Department of Agricultural Extension, Agricultural Faculty, the University of Halu Oleo, Agricultural Faculty Building, H.E.A. Mokodompit No.1, Earth Tridharma Green Campus Andounohu Kendari, South-east Sulawesi Province, 93132, Indonesia, e-mail: sukawati.abdullah_faperta@uho.ac.id

Ima A. Wunawarsih, Department of Agricultural Extension, Agricultural Faculty, the University of Halu Oleo, Agricultural Faculty Building, H.E.A. Mokodompit No.1, Earth Tridharma Green Campus Andounohu Kendari, South-east Sulawesi Province, 93132, Indonesia, e-mail: imaastuty.w@gmail.com

This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

How to cite this article:

Tadjuddah M., Wianti N. I., Suriana, Taufik Y., Abdullah S., Wunawarsih I. A., 2021 Paradoxical livelihoods in an open resource area: trawler and blue swimming crab fisher dynamic conflict constellation in Tiworo Strait. *AAFL Bioflux* 14(2): 942-952.