



**Establishment and Operation of a Regional System of Fisheries Refugia in  
the South China Sea and Gulf of Thailand**

**SOCIOECONOMIC STATUS, LOCAL FISHERS' INSTITUTION, AND  
STAKEHOLDERS MAPPING FOR SQUID FISHERIES REFUGIA  
IN TUNG WATERS, BANGKA REGENCY**

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### The Community in Tuing Waters, Bangka Regency

Geographically, the Tuing Waters area is in the administrative area of Tuing Village, Mapur Village, Riau Silip District, Bangka Regency. Mapur village has an area of 79,690 km<sup>2</sup>. As one of the coastal villages in the Riau Silip sub-district, the livelihoods of the residents of Mapur Village are dominated by fishers, farmers, gardeners, and farm laborers/mining laborers. Fishing activities are carried out as part-time livelihoods—as many as 36 people with the main job as fishers (2.59%). Still, the number of active fishers is 559 people (40.24%), most of them are farm laborers/daily laborers, and some are job seekers/unemployed (Table 1)

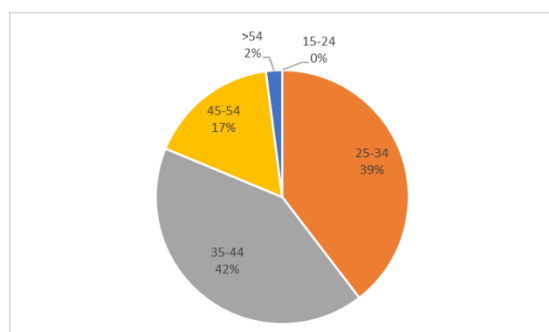
Table 1. Composition of the human population of Mapur Village by livelihood

No.	Job type	Total Population (%)
1	Mining/factory/construction workers	4.25
2	Farmer/gardener/farm laborer	6.55
3	Farmer	0.07
4	Fisherman	2.59
5	Domestic industry	0.79
6	Trader	0.50
7	Workers in Transportation	0.14
8	Civil Servants (Teachers, TNI/Polri, Apparatus)	0.72
9	Freelance	25.97
10	Other Entrepreneurs	40.96
11	Unemployed/job seekers	19.44
	Total	100.00

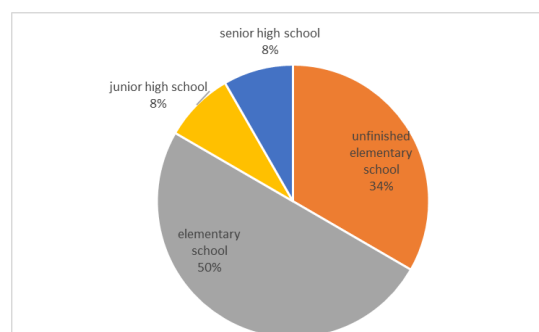
Source: Mapur Village Profile (2021)

Not only the fishers from Tuing Village, the fishers from the surrounding villages also use Tuing waters, such as Cit Village, Pugul Village, and Deniang Village (reached 513 fishing households), and from outside the Riau Silip sub-district, such as Belinyu and Sungai Liat (>1,000 fishing households).

The profile of fishers in the study area is characterized by a relatively young age, between 25-51 years, where the highest composition is in the range of 25-44 years (81.25%) (Figure 1 a). The education level of fishers is dominated by a low level of education (equivalent to elementary school) which reaches 54.17%, and the remaining 45.83% have an education at the junior and senior high school level (Figure 1 b). Fishing business status is a part-time job (83.33%) (Figure 1 c). The experience range is between 5-30 years (62.50%), and only about 33.33% are new fishermen (<5 years' experience) (Figure 1 d).



(a) Composition of fishers by age group



(b) Composition of fishers by education level

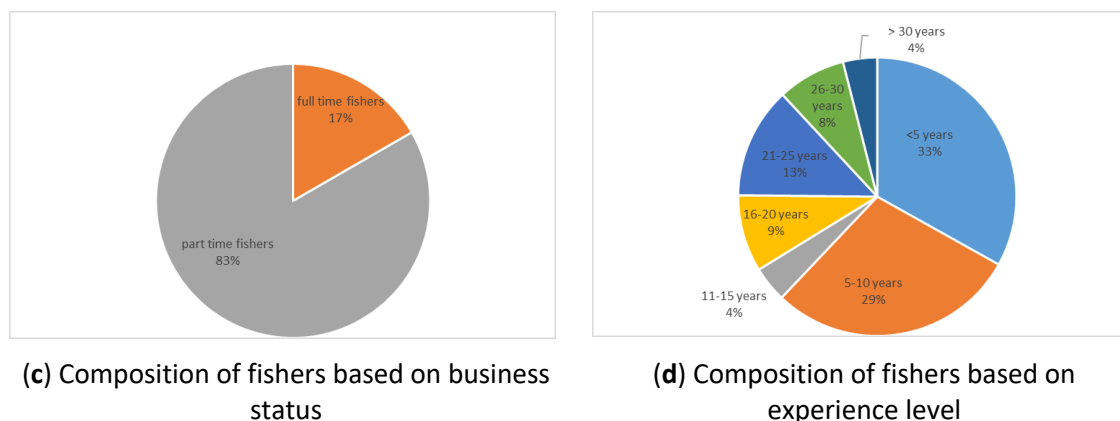


Figure 1. Fishers Profile in Tuing Waters

This condition illustrates that the fishers in the study area are a productive age group with a low level of education but are pretty experienced in fishing activities and indicates that young people are relatively active in adopting science and technology. A low level of education will affect the ability of a person/community to accept and adopt the development of knowledge and skills, perception, and level of understanding of fishers on the importance of coastal ecosystem functions and their management activities, including influencing the level of courage to make decisions about transformation. Business status as the main livelihood with an average experience level of > 5 years illustrates the high dependence and experience of the community on aquatic resources in their area.

Small-sized fleets/non-GT motorboats characterize fish resource utilization activities in these waters, even though around 10-15% are non-motorized boats. The types of fishing gear were not very varied, including squid fishing rods, nets, and stationary lift nets (Table 2).

Table 2. Types of fishing gear operated by local fishers in Tuing waters

No	Jenis alat tangkap yang beroperasi	Units
1	Squid fishing rods	390
2	Stationary lift net	7
3	Nets	120
4	Longline	4
5	Others	-

Source: based interview, 2021

The peak of the squid fishing season occurs twice a year, namely every change of season between March-May and August-October. In contrast, the decline in catches occurs between November-February along with the west wind season. Instead, fishers carry out work activities on lands, as farmers or in other sectors, such as mining and farm/garden workers.



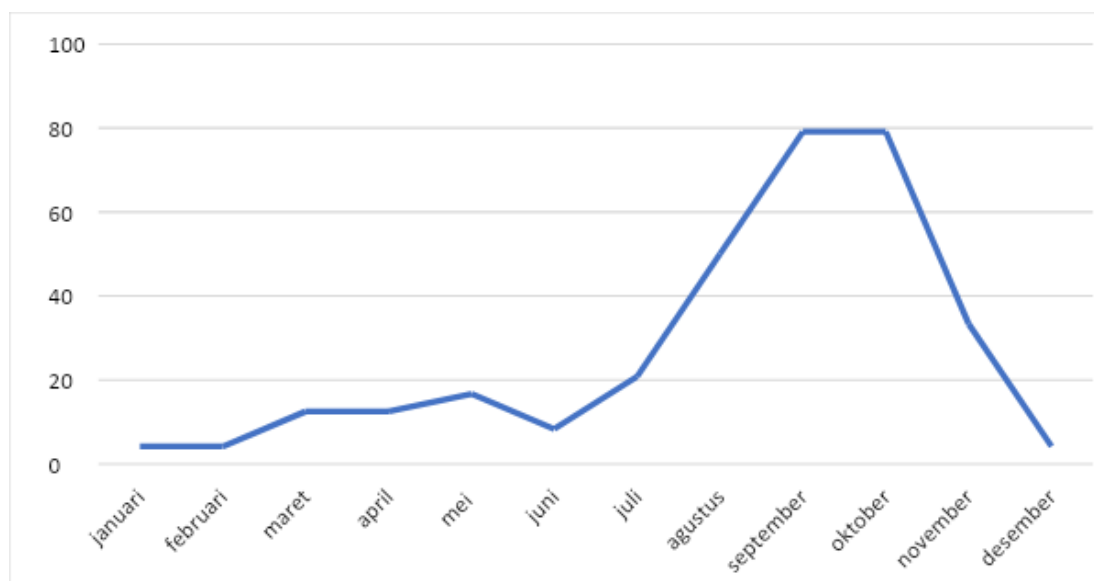


Figure 2. The peak season for squid fishing in Tuing waters

### The economic condition of squid fishermen

Squid resources are a target for local fishers and have high economic value. In Tuing waters, there are at least two species of squid, *Uroteuthis (L.) chinensis* and *Sepioteuthis lessoniana*. Table 3 shows the price of squids at various marketing levels.

Table 3. Prices of squid by type and size at several marketing levels

No.	Type	Prices (Rp/kg)		
		Fishers	Collectors	Retailers
1.	Small <i>Uroteuthis (L.) chinensis</i>	25,000	30,000	35,000
2.	Medium Small <i>Uroteuthis (L.) chinensis</i>	30,000-32,000	35,000	40,000
3.	Large Small <i>Uroteuthis (L.) chinensis</i>	57,000-60,000	60,000-65,000	70,000
4.	Medium <i>Sepioteuthis lessoniana</i>	27,000	30,000	35,000
5.	Large <i>Sepioteuthis lessoniana</i>	45,000	50,000	55,000

Source: Based interview, 2020-2021

Squid marketing from fishers to consumers through the role of collectors or intermediary traders, which in the study area is better known as "toke." The squids are marketed as fresh and frozen. Marketing large squid based on size with head (head-on), usually to fulfill export market. Meanwhile, small or mixed squid are generally used to meet local communities' needs and as ingredients for various processed foods. The marketing flow of the squid is shown in Figure 3.

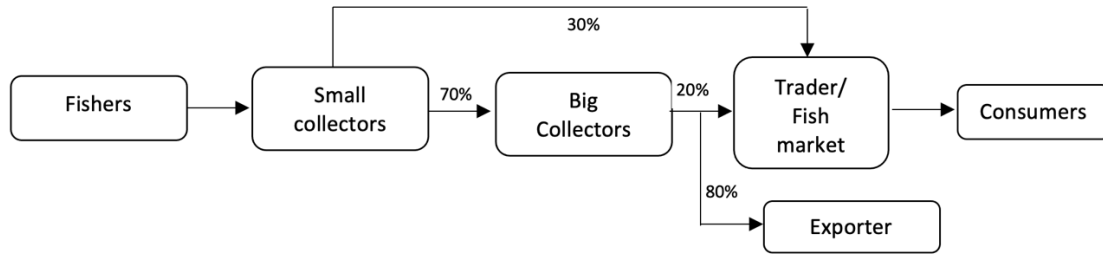


Figure 3. The marketing flow of squid

### Fishers Institution

The formation of fishers groups can indirectly be useful to increase the fishing business's productivity through joint business management. The existence of fishers groups is also expected to be useful in jointly solving existing problems, such as fulfilling fishery production facilities and increasing the production and marketing of catches. Fishers groups can also be used for good organizational learning and cooperation between fishers.

The awareness of the fishing community for groups is relatively high. Almost all fishers have joined the Joint Business Group (JBG) in every village formed since 2019. Until now, in the Riau Silip sub-district, there have been 8 JBGs established, with the development level of JBG at the norming level. Norming is a form of adult-level institutional growth, where aspects of supervision and sanctions have become part of the integrity of local institutions in carrying out their roles and functions. However, several elements have not been implemented in the adult-level institutions in the system, so institutional strengthening should be carried out through coaching and mentoring.

In addition to institutional social capital, the social system in the study area has local wisdom by indigenous people that have the potential as social capital to manage coastal and marine resources. Some of the most prominent forms of implementation of local wisdom are the agreement not to carry out offshore tin mining activities, as has been done by coastal communities in surrounding locations. The Malay Indigenous Peoples in Tuing, or the Lom tribe (Mapur Tribe), are the oldest indigenous peoples on Bangka Island, residing in Mapur, Tuing, Pejem, Puntik, and Air Rabik hamlets. The Lom tribe has a close relationship with the 'Legend of Akek Antak', which is known to the public and is the background for the belief of the Lom tribe to protect the sea and metamorphic geosites on the Tuing coast for hundreds of years (Taufik Wijaya & Nopri Ismi, 2021).

### Stakeholders

Freeman (1984) defines the stakeholders as parties who can influence or be influenced (receive the impact) of the decisions taken. Meanwhile, Salam & Noguchi (2006) define stakeholders as people, groups, or institutions who have concerns and can influence the outcome of an activity. Based on this definition, stakeholders concluded as parties, individually and in groups, which can influence the decision-making and the objective activity achievement. In the context of the fisheries sector, stakeholder organizations can be categorized in a broader scope: the government, non-governmental organizations (NGOs), the private sector, and the community. Individually or in groups, stakeholders include government officials (national to local scope), research institutions, extension workers, fishers, collectors (production facilities and products), service providers (tools, machines, and transportation), and other related parties.

The results of observations and interviews with several key informants revealed that stakeholders related to the utilization and management of squid resources include: (1) the Ministry of Marine Affairs and Fisheries, (2) Provincial/District Governments, (3) fishers, (4)

collectors, (5) exporters, (6) Joint Business Groups/Community Watch Groups, (7) Indonesian Fishing Ports (8) extension workers, (9) Quarantine, (10) Surveillance for Marine and Fisheries Resource, (11) NGOs, (12) Universities/Research Institutes, and (13) Village government.

The stakeholders mentioned above are grouped into primary and secondary stakeholders. Townsley (1998) defines primary stakeholders as parties directly interested in resources and areas, either livelihoods or parties directly involved in resource areas' use and management. At the same time, secondary stakeholders are parties who have an indirect interest/interest or parties who depend on some of the wealth or business generated by the resource. Based on their authority, primary stakeholders have the authority to utilize and manage squid fisheries sustainably. Meanwhile, secondary stakeholders have the authority to set rules, conduct socialization and guidance, enforce laws, and evaluate policies concerning utilization and management. Based on the definition put forward by Townsley (1998), the primary and secondary stakeholder groups and their interests/roles in managing squid resources are presented in detail in Table 4.

Table 4. Identification of stakeholders, interests, and roles in the management of squid resources

<b>Stakeholders Groups</b>	<b>Stakeholders</b>	<b>Interests/Roles</b>
Primary	Fishers	Have an interest in the utilization and management of fishery resources to fulfill their daily needs
	Collectors	Have an interest in the utilization and management of fishery resources to fulfill their daily needs
	Exporters	Have an interest in the utilization and management of fishery resources to fulfill the needs of their business/company
	Processor	Interested in processing fisherman's catch
Secondary	MMAF	Interested in managing stock status and protecting the sustainability of squid resources
	Local Government (Provincial/Regency)	Have an interest in the management, utilization, capacity development, and contribution and sustainability of Squid Resources
	Joint Business Groups/Community Surveillance Groups	Play a role in supervising the utilization/surveillance of resources
	Village Government	Have an interest in improving the welfare of the fishing community
	NGO	Play a role in increasing community capacity through mentoring activities and strengthening community institutions
	Fishing Ports	Play a role in increasing the capacity of the community through the implementation of facilities, infrastructure, and facilities
	Surveillance for Marine and Fisheries Resource	Play a role in providing support for supervision and prosecution of disregarding resource utilization activities
	Universities/ Reasearch Institutes	Play a role in providing research support that can be applied to the community and help stimulate effective management

Fisheries Extension

Play a role in increasing community capacity through mentoring activities and strengthening community institutions

Activities Documentation











