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LICY BRIEF



The Fishing Closure Policy in the Visayan Sea: Impacts and Issues

The Visayan Sea, located at the center of the Philippines, is a major source of food, income, and livelihood for 22 municipalities in the four provinces surrounding it. However, overfishing and degradation have been threatening the productivity of the Visayan Sea for many years.

The establishment of closed season for the period November 15 to February 15 annually is one of the key initiatives in the conservation of sardines, mackerel, and herring found rich in the Visayan Sea. Started in 1939, the closed season policy underwent a number of revisions and suspension, and was strictly implemented starting 2012. The fishing closure, however, has both positive and negative impacts on the livelihood of those dependent on the fishery. Although the impact on fish biomass has been documented, the economic impact has not been studied in much detail. A PCAARRD-funded study assessed the impacts of the closed fishing season for sardines, herring, and mackerel in the Visayan Sea. It focused on the policy's impacts on the income of fishers, traders, and processors between two periods: 2011 (base period, before revival of the fishing closure) and 2015 (fishing closure was ongoing). It also provided policy recommendations that would help maximize the benefits of the closed fishing season for sardines, herring, and mackerel.

THREATS TO VISAYAN SEA: OVERFISHING AND DEGRADATION

The Visayan Sea covers about 10,000 square kilometers (km²) and is bounded by 22 municipalities across of Iloilo, Negros Occidental, Cebu, and Masbate (Fig. 1). It is relatively shallow, with water depths of 40 meters (m) or less and divided into municipal (8,460.3 km²) and commercial waters (1,539.7 km²). While there are regulations that separate the fishing ground for commercial and municipal fisheries, commercial fishers continue to operate in municipal waters and significantly extract fishery and other aquatic resources in the area.

The Visayan Sea, well known for sardines, herrings, and mackerel; contributes 10–13% of the national fish production. The sharp decline of 24% in the catch volume of sardine and mackerel from 600,000 metric tons (mt) in 2010 to 472,000 mt in 2011 triggered the Bureau of Fisheries and Aquatic Resources (BFAR) to strictly implement the closed season for sardines, mackerel, and herring in portions of the Visayan Sea and adjoining waters (portions of Capiz waters and Guimaras Strait).

CLOSED FISHING SEASON POLICY ENFORCED IN THE VISAYAN SEA TO MANAGE AND PROTECT FISHERY RESOURCES

The closed fishing season policy started in 1939, when the national government through the Fish and Game Administrative Order



Fig. 1. Location map of the Visayan Sea.



Fig. 2. Map of the Visayan Sea showing the covered area during the closed season. Source: BFAR Regional Office VI.

(FGAO) No. 13 established a closed season for sardines, herrings, and mackerels from November 15 to March 15 each year in the Visayan Sea. This was enforced in the waters between Bantayan Island, Cebu, northern Negros, Gigantes Island in Iloilo, and Culasi Point in Capiz. FGAO No. 13 was further amended in 1946 through Fisheries Administrative Order (FAO) No. 13-1, in 1989 through FAO No. 167, and in 1990 through FAO No. 167-1.

However, it was only in 2012 that the 4-month closed season was seriously implemented. Later, in 2013, the closed season in the Visayan Sea was shortened to three months, starting from November 15 to February 15 each year, through the BFAR's FAO No. 167-3.

The closed season prohibits the catching of sardines belonging to the family *Clupeidae* under the following scientific and local names: *Sardinella lemuru* ('tuloy'); *Sardinella fimbriata* (fimbriated sardines, 'tunsoy,' 'lao-lao,' 'tabagak,' 'tamban,' and 'liryan'); *S. perferata* (deep-bodied herrings, 'halobaybay,' 'tamban,' 'lapad,' 'tamban lison,' and 'lapa');

S. longiceps¹ (Indian sardines, 'tamban tunsoy,' and 'haul-haul' or 'hawol-hawol'): Dusumieria acuta (round dwarf herring, 'tulis,' 'balantiyong,' and 'hilos-hilos'); Sardinella gibbosa (gold-stripe sardines, 'hawol-hawol,' and 'tamban/tabagak'). Also covered are the mackerels belonging to the family Scombridae and known under the following scientific and local names: *Rastrelliger* brachysoma (short-bodied mackerels, 'hasa-hasa'), and R. chrysozonus (striped mackerels, 'alumahan,' and 'bulao'). It covers the following areas: from the mouth of Danao River in Escalante. Negros Occidental on the northeastern tip of the Bantavan Island to Madrideios. thru the lighthouse on Gigantes Island, to Olutava Island, to Culasi Point in Capiz province, southward along the eastern coast of Iloilo to the mouth of Talisay River, westward across the Guimaras Strait to Tomonton Point in Negros Occidental, eastward along the northern coast of Negros Island and back to the mouth of Danao River (Fig. 2).

IMPACT ON INCOME OF FISHERS, TRADERS, AND PROCESSORS

The study conducted a financial assessment to estimate the impact of the policy on the income of the fishers, traders, and processors involved in sardine fishery. It used the value chain framework approach in identifying the key players in the chain, how they are linked and affected by other chain segments, and how much they are gaining/losing. The study examined the trend in the production of sardines, herring,

¹Although listed as one of the fish species covered by the closed season policy, *S. longiceps* is not found in the country. This is considered as one of the issues with the FAO 167-3.



son-bodied mackarel, hasa-hasa

A sample poster on FAO 167-3. Image credit: Panay News



Rastrelliger kanagurta In mackerel, alumahan, bulau) and mackerel in the Visayan Sea before and during the strict implementation of the policy. Particularly, the four major species considered in the study are tamban, bulao, haul-haul, and tuloy.

Data collection included both primary and secondary data covering two periods: 2011, as base period when closed fishing season was not yet strictly implemented, and 2015, during the strict implementation of the policy. The collection covered the following provinces surrounding the Visavan Sea and its adjoining waters namely: northern Iloilo (Ajuy, Batad, Carles, Concepcion, Estancia, and San Dionisio): northern Negros (EB Magalona, Cadiz City, Escalante City, Manapla, and Sagay City); northern Cebu (Bantayan, Daan Bantayan, Madridejos, Medellin, San Remigio, and Santa Fe); and Capiz (Roxas City). This involved 406 fishers (23 commercial boat captainowners, 35 boat captains, and 84 crew members; 129 municipal boat captain-owners, 77 boat captains, and 58 crew members), 82 processors, and 32 traders.

Results revealed that the average volume of sardines and mackerels caught in 2015 was significantly less than those caught in 2011. Specifically, the calculated mean catch in 2015 was 37.5% lower than in 2011. The observed drop in the mean annual catch volume was mainly due to the significant decline in the catch of tamban, bulao, and haul-haul. The estimated average catch for tamban, bulao, and haul-haul in 2015 was estimated to be 37.6%,

Table 1. Food safety regulatory functions for agencies of DA.

	2011	2015	Mean Difference
Annual volume of catch (kg)	59,404.93	37,150.18	(22,254.75)***
Per species			
Annual volume of catch of 'tamban' (kg)	47,808.87	29,853.51	(17,955.36)***
Annual volume of catch of 'bulao' (kg)	8,370.88	5,434.76	(2,936.12)**
Annual volume of catch of 'haul-haul' (kg)	133,070.80	67,793.99	(65,276.83)***

Note: Annual volume of catch includes 'tuloy' (but not shown in the per species presentation since there is no significant difference in the catch between 2011 and 2015). Source: Data from study survey. ** significant at p<0.05

*** significant at p<0.01

Table 2. Mean monthly net income of fishers, 2011 and 2015.

Variable	2011	2015	Mean Difference
Monthly income (P) of commercial boat captains/owners	147,184.40	79,674.44	(67,510.00)***
Monthly income of commercial boat crew	19,859.79	11,393.29	(8,466.50)***
Monthly income of municipal boat captains/owners	46,789.77	31,445.96	(15,343.80)***
Monthly income of municipal boat crew	16,711.46	8,576.74	(8,134.72)***

Source: Data from study survey.

***significant at p<0.01.

Table 3. Real net income of fishers, 2011 and 2015.

Variable	2011	2015	Mean Difference
Monthly income of commercial boat captains/owners	147,184.4	71,003.16	(76,181.28)***
Monthly income of commercial boat crew	19,859.79	10,153.31	(9,706.48)***
Monthly income of municipal boat captains/owners	46,789.77	28,023.58	(187,66.19)***
Monthly income of municipal boat crew	16,711.46	7,643.30	(9,068.16)***

Source: Data from study survey.

***significant at p<0.01.

Table 4. Mean per cycle net income and real net income (in PhP) of processors, 2011 and 2015.

Variable	2011	2015	Mean Difference
Net Income	8,227.8	5,864.95	(2,362.86)*
Real Net Income	8,227.8	5,226.64	(3,001.16)**

Source: Data from study survey.

* significant at p<0.1

** significant at p<0.05

Table 5. Real net income of fishers, 2011 and 2015.

	Fresh		Dried		Total	
	2011	2015	2011	2015	2011	2015
Net Income	10,547.99	10,547.82	4,900.77	5,826.79	5,783.15	6,564.45
Real Net Income	10,547.99	8,376.83	4,900.77	4,627.51	5,783.15	5,213.34

Source: Data from study survey.

35.1%, and 49.1% less than those in 2011, respectively (Table 1).

Given the significant decline in the volume of sardines caught from 2011 to 2015, the volume of fish consumed, processed, and sold also decreased. Net income of fishers (including those of the boat captain/owner and crew) from sardine fishing, processors from processing sardines, and traders from selling fresh or dried sardines was affected because of the decline in the volume of catch during the strict implementation of the closed season policy.

On the average, the net income in 2015 of the commercial boat captain/owner and that of the crew was less than 45.9% and 42.6%. respectively compared with the net income in 2011. Similarly, on the average, there were 32.8% and 48.7% decline in the net income of municipal boat captain/owner and crew, respectively (Table 2). Even when adjusted for natural rate of inflation at 12.21%, similar trend was observed in the comparative results on the real net income of fishers in 2011 versus 2015 (Table 3). Across municipalities covered by the study, the mean net income of fishers interviewed also indicated a marked decline.

In the case of processors, both the net income and real net income significantly declined between 2011 and 2015. Estimates show a 28.7% decline in average net income in 2015 as compared with that in 2011 (Table 4).

For the traders, despite the significant decline in volume of sardines traded, the rise in the





selling price was able to maintain the net income of the trader per cycle (no significant difference in mean incomes). In real terms, however, there was an observed decline in the real net income, as the perceived rise in the price was offset by the natural inflation rate from 2011 to 2015 (Table 5).

WHY IS THERE NO POSITIVE IMPACT OF THE CLOSED FISHING SEASON IN GENERAL?

There are a number of reasons why the economic impact of the closed fishing season is negative in general, including the following issues:

Issues with the policy

1. Policy lacks accuracy, precision, and clarity.

FAO 167-3 failed to include the goals and objectives (pertaining to the natural resources, to economics, and social and cultural aspects), which are important elements of a policy. Also, performance indicators to evaluate its effectiveness to conserve. preserve, manage, and sustain the development of the sardine fishery are absent. Moreover, it does not provide precise coordinates to effectively manage the areas covered. There was also no mention of the prohibited types of fishing. Furthermore, the FAO missed to mention the major sardine species in the Visayan Sea tuloy, which is currently being covered in the implementation of the ban. The order does not also use gender-sensitive language and assumes that



the fishers involved in sardine fishery are male, even if women's involvement has become increasingly visible. This causes misunderstanding of the FAO coverage that could be a loophole for exploitation.

2. Inconsistent and conflicting fishery policies. The FAO on closed fishing season, fishery laws, and other related laws should be in harmony. For instance, the FAO and Republic Act (RA) 10654 (The Philippine Fishery Code), particularly pertaining to penalty for violations in municipal waters, are not consistent with each other. Also, FAO, which only considers sardines, herrings, and mackerel, is not in line with the ecosystem-based approach that is stipulated in Section 2f of RA 10654. Targeted species do not exist in isolation. but are affected

and, likewise, affect other resources in the ecosystem. Given this perspective, it is easy to understand that the gains from the closed fishing season inside the covered area can be easily negated by heavy fishing in the open area.

Issues in implementation and enforcement

1. Implementation of the closed fishing season is highly fragmented. There is wide variation in the implementation of the policy between and among 23 cities and municipalities independently managing their own territorial waters and the BFAR managing commercial waters. The 23 local government units (LGUs) have different levels of capacity in managing the municipal waters; they also have limited institutional capacity to manage the closed fishing season or the fisheries in general.

2. Weak enforcement of the policy. Despite the strict implementation of the fishing closure in the Visayan Sea starting in 2012, violation is still rampant and voluntary compliance is even promoted in the area. Also, there was no apprehension recorded at the local level. This may be due to the inadequate LGU resources to implement the policy.

Issues in governance affecting implementation

1. Governability is low. The systems-to-be-governed (the natural and social systems) as well as the governing system in the Visayan Sea are characterized as:



- a. Highly diverse The Visayan Sea is characterized by abundant and diverse species of flora and fauna. Its social system is composed of various users – municipal and commercial fishers, fishery managers at BFAR and at the local level, and other stakeholders.
- b. Complicated Its natural system is characterized by highly interlinked species, habitats, and ecosystems while its social system is characterized by competing goals and visions of governing institutions and the users.
- c. Dynamic This refers to the growing number and types of fishers with different attitudes, values, and beliefs. This also includes the various policies, which had governed and is currently governing the Visayan Sea.
- d. Spatial The Visayan Sea has a wide area coverage, with four provinces consisting of more than 22 municipalities. Also, it has a wide range of stakeholders from local (municipal waters) to national government (commercial fishing area) to international arena.

e. Poor interaction among stakeholders resulting in low governability.

The current system is inadequate in responding to the challenges posed by the natural and social systems of sardine fishery.

2. Disconnection among major stakeholders: the fishers, fisheries managers, and the scientists. Poor communication and differing perspectives characterized the relation among the fishers, the fisheries managers (local and BFAR), and the scientists. The fishers have limited access to



Launching of Closed Fishing Season Policy (FAO 167-3) in Brgy. Bakhawan, Bantayan, Cebu in November 2017. Image credit: BFAR Regional Office VI

scientific information. Hence, they opt to use traditional knowledge, which is quite different from science.

3. Weak link between science and implementation of the policy. There is a limited number of researchers or research projects on sardines in the Visayan Sea and adjoining waters that can provide the science behind the implementation of the closed season or the management of sardine fishery in general.

RECOMMENDATIONS

There is a need to review the science, management, and administration mechanism of closed fishing season, capacitate local governments, and improve community participation if closed fishing season policy is to continue. Specifically, the study recommends the following:

- 1. Revise FAO 167-3. Consider including the goals and performance indicators to evaluate the policy implementation; improve accuracy (e.g., species prohibited), precision (e.g., use of coordinates of area covered), clarity (e.g., type of fishing covered), and language (e.g., gender-sensitive); harmonize with RA 10654 (The Fisheries Code) and other existing laws; and expand the area to include the whole of the Visayan Sea. Include also a provision on imposing market denial of banned species during the closed season in fish ports surrounding the Visayan Sea.
- 2. Explore jurisdictional

change. Consider providing bigger role to the province over management of marine fisheries. This can be attained through jurisdictional change where reconsolidation at the province level can be made. This will ease up the management work for the BFAR and the LGUs. For instance, instead of coordinating with 23 cities and municipalities, BFAR will only coordinate with four provinces covered by the FAO.

3. Expand the LGU's capacity to manage the resources. Invest in the capacity of the LGU on resource management, more floating assets, and creation of stronger partnership between the LGU and the BFAR.



4. Improve communication between and among major stakeholders. Create

mechanisms and opportunities where fishers have direct involvement in scientific activities associated with the assessment process (e.g., participation in research vessel surveys, data sharing, scientific orientation programs, more fisher/scientist/manager interactions). The increase in direct contact between scientists and fishers can improve mutual understanding in building consensus on the state of sardines fishery. The fishers can help monitor sardine resources and environmental conditions. There is also a need to conduct information drive year round and not just before the closed

fishing season. Designating an office, which will liaise between the different offices, improve communication, and allow scientists to present ideas, as well as appointment of fulltime Science Communication Officer may also be necessary.

5. Establish the Sardines Science Program. Expand and strengthen the scientific community for sardines, which includes academe, LGUs and research institutions. Primarily, capacitate local institutions and invest in scientific training on fisheries biology, marine science, fisheries social science, fisheries management, policy making and law enforcement, among others. Critical masses of scientists are needed to conduct more biological, social, and governance studies. This will help in developing stronger technical and scientific support for sound fisheries management and ensure survival of sardine fishery.

6. Adopt joint management. Integrate the local and national fisheries management functions through the creation of a joint sardine fisheries management body, which derives its authority and regulatory capacity from both levels of government. Such management regime is essential for government to collectively address fundamental policy issues and establish the sardine fishing industry on a more solid foundation.

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EDITOR'S NOTE

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POLICY BRIEF highlights DOST-PCAARRD's stance on policy issues on S&T in agriculture, aquatic, and natural resources through the coordination of the *Policy Advocacy Group (PAG)*. The PAG spearheads policy and advocacy related to PCAARRD Medium-term Plan.

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