Environmental Impact and Resource Assessment: Brief for Certain Fishing Communities in the West Philippine Sea

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Introduction

The West Philippine Sea is defined as "maritime areas on the western side of the Philippine archipelago are hereby named as the West Philippine Sea. These areas include the Luzon Sea as well as the waters around, within and adjacent to the Kalayaan Island Group and Bajo De Masinloc, also known as Scarborough Shoal."[1] The West Philippine Sea (WPS) represents marine areas under the jurisdiction of the Philippines in accordance with the maritime zones under the UN Convention on the Law of the Sea (UNCLOS), thus comprises the 200 nautical mile EEZ and continental shelf measured from the main archipelago, and the territorial sea areas around its separate islands territories in the Kalayaan Island Group and Bajo de Masinloc (Scarborough Shoal).[2] In addition to the rich inter-island fisheries of the country, the sea areas of the WPS have historically accounted for much of the capture fisheries production of the Philippines. In 2019, the Philippines was estimated to have caught 450,200 tons of fish worth a total of 383.91 Million USD from the South China Sea, continuing a downward trend in production that began after reaching a peak of 630,800 tons worth 776.21 Million USD in 2010. The aggregate average value of fisheries production also declined, from 1,230.51 USD/ton in 2010, to 852.75 USD/ton in 2019.

[1] Administrative Order No. 29, s. 2012. Naming the West Philippine Sea of the Republic of the Philippines, and for other purposes., OFFICIAL GAZETTE OF THE REPUBLIC OF THE PHILIPPINES (2012), https://www.officialgazette.gov.ph/2012/09/05/administrative-order-no-29-s-2012/ (last visited Feb 19, 2023).

[2] See Rep. Act No. 9522 (2009). An Act establishing the archipelagic baselines of the Philippines.

In 2018, fishing communities in the provinces of Zambales and Pangasinan, sought the assistance of the People's Development Institute (PDI) to organize into people's organizations and associations in response to a general concern that their livelihoods were threatened. Capture fishing in the offshore areas, particularly in the waters around Bajo de Masinloc (Scarborough Shoal), a large coral atoll some 124 nautical miles from Luzon which since 2012 had been under the coercive control of the People's Republic of China. The bulk of the fishing fleet that fish in Bajo de Masinloc (Scarborough Shoal) are concentrated in the fishing communities principally of Infanta, Pangasinan and Masinloc, Zambales, with some residing in Sta. Cruz, Zambales. Due to the concentration of fishing vessels and fishworkers in the first two towns, this paper focuses on the particular issues and concerns of these fishing communities and their deep-sea/ offshore fishing activities in the WPS.

General Situation

Infanta, Pangasinan The Municipality of Infanta, Province of Pangasinan is a 3rd class municipality[3] with a population of 26,242, divided among 6,460 households.[4] The municipal population growth rate was measured at 1.38% between 2015 and 2020. [5] In 2015, it was estimated that the median age was 24, with 68 out of every 100 residents being young or senior dependents of the economically active population and members of the workforce.[6]

[3] Third class municipalities are those with an average annual income of between 35 to 45 Million PHP only.

[4] Philippine Statistics Authority. Census of the Population (2020): Region 1 (Ilocos Region). Online, https://psa.gov.ph/sites/default/files/attachments/ird/pressrelease/Region%201.xlsx

[5] PhilAtlas: Infanta, Province of Pangasinan. Online, https://www.philatlas.com/luzon/r01/pangasinan/infanta.html

[6] PhilAtlas: Infanta, Province of Pangasinan. Online, https://www.philatlas.com/luzon/r01/pangasinan/infanta.html

Infanta is a coastal municipality with a total land area of 254.29 sq km, roughly rectangular in shape but shoreline length of only about 8 to 12.5 km. There are 13 barangays, of which 6 are coastal, centered around Barangay Cato, and concentrated within a 4 km stretch on the inner portion of a concave coastline. Satellite imagery shows the fishing community squeezed into a very narrow strip of land between the sea and a small tributary which provides inland access to small banca. Majority of fishers in the WPS reside at Barangay Cato.

In 2020, the municipality generated only 150.8 Million PHP in revenue and assets of 399.8 Million PHP, but spent 136.2 Million PHP and incurred liabilities of 123.6 Million PHP, leaving very little for social services and welfare programs beyond that included in regular government appropriations. The Department of Trade and Industry ranked Infanta's economic competitiveness at 507th out of the 656 3rd class municipalities. [7] Scores for economic productivity, local economy size and growth, employment generation, infrastructure, LGU investment, transportation, education, and innovation were particularly low.[8] The municipality officially lists farming, fishing, and salt-making as its principal economic industries.

Poverty incidence in Infanta was rated at 12.78% in 2018 by the Philippine Statistics Authority.[9] Fishing communities

[7] Department of Trade and Industry. Cities and Municipalities Competitive Index. Online, https://cmci.dti.gov.ph/lgu-profile.php?lgu=Infanta%20(PS)

[8] Department of Trade and Industry. Cities and Municipalities Competitive Index. Online, https://cmci.dti.gov.ph/lgu-profile.php?lgu=Infanta%20(PS)

[9] PSA releases the 2018 Municipal and City Level Poverty Estimates. PSA, 15 Dec 2021. Online, https://psa.gov.ph/content/psa-releases-2018-municipal-and-city-level-poverty-estimates the basic sectors in 2018 at 26.2%, down from 36.9% in 2015

normally rate as the poorest of the poor in rural areas, with incomes below the official poverty thresholds; fisherfolk held among the high poverty incidence among the basic sectors in 2018 at 26.2%, down from 36.9% in 2015.[10]10 Capture fisheries all across Pangasinan also registered a 22.87% decline in production between 2019 and 2020, exacerbating the fishersfolk's situation.[11]

Masinloc, Zambales

In contrast, the Municipality of Masinloc is a 2st class municipality with a population of 54,529 in 13,377 households.[12] The population grew 2.85% between 2015 and 2020,[13] and the median age is likewise 24. For every 100 persons, 62 are young and old-age dependents of the working population.

As a coastal municipality, Masinloc has a total land area of about 316.2 sq km, also roughly rectangular in shape but with a more complex coastline of three bays clustered around two nearby islands, San Salvador and Matalvis. This configuration creates a relatively sheltered concave coastline spanning approximately 28.2 km. Eight of the 13 barangays are coastal, with the fishing communities

[10] Philippine Statistics Authority. Farmers, fisherfolks, individuals residing in rural areas and children posted the highest poverty incidences among the basic sectors in 2018. PSA, 03 June 2020. Online, https://psa.gov.ph/content/farmers-fisherfolks-individuals-residing-rural-areas-and-children-posted-highestpoverty

[11] Philippine Statistics Authority Regional Statistical Services Office, Ilocos Region's Fisheries Production Decreases In 2nd Quarter 2020, PHILIPPINE STATISTICS AUTHORITY (2020), http://rsso01.psa.gov.ph/content/ilocos-regionsfisheries-production-decreases-2nd-quarter-2020 (last visited Feb 20, 2023).

[12] Philippine Statistics Authority. Census of the Population (2020): Region 3 (Central Luzon). Online, https://psa.gov.ph/sites/default/files/attachments/ird/pressrelease/Region%203.xlsx

[13] PhilAtlas: Masinloc, Province of Zambales. Online, https://www.philatlas.com/luzon/r03/zambales/masinloc.html

principally clustered for 4 km around the Poblacion and on the shores of San Salvador Island. Majority of the fishers of the WPS reside in Barangay Inhobol.[14]

Masinloc generated revenues of 639.3 Million PHP and had assets worth 1,930 Billion in 2020, though its expenditures were only 438.8 Million PHP and liabilities amounted to 499.7 Million PHP. It hosts one of the largest fish ports in the province.[15]15 Unlike Infanta, Masinloc receives additional income from the presence of the Masinloc-Oyon Bay Marine Reserve, and the Masinloc Coal Plant. The marine reserve is one of country's the National Integrated Protected Areas Sites, which enables the municipality to benefit from the resulting tourism industry, while the Masinloc Coal Plant provides the municipality with a share in the development and utilization of national wealth computed at 0.01 PHP per kilowatt hour generated. [16]

In spite of its assets and revenue sources, Masinloc was ranked 229th, or in the middle, among 512 1st class municipalities by the DTI Cities and Municipalities Competitive Index.[17] Masinloc scores similarly to Infanta, with its lowest scores counting in productivity, local

[14] Hazel O. Arceo et al., Estimating the potential fisheries production of three offshore reefs in the West Philippine Sea, Philippines, 149 PHILIPPINE JOURNAL OF SCIENCE 647, 650 (2020).

[15] Vera, C.A. The struggle of the small-scale fsherfolk of Masinloc and Oyon Bay for good governance in a protected seascape. Online, https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/1527/Vera_Struggle_040512_Paper106g.pdf?sequence=1&isAllowed=y

[16] Bureau of Local Government Finance. Memorandum Circular No. 03-01-2017, s. 2016. Online, https://blgf.gov.ph/wp-content/uploads/2017/10/BLGF-MC-No.-03-01-2017-ENRDMT-Advisory.pdf; also Department of Energy. Energy Regulation No. 1-94, s. 1994. Online, https://policy.asiapacificenergy.org/sites/default/files/ENERGY%20REGULATION%20NO.%201-94.pdf

[17] Department of Trade and Industry. Cities and Municipalities Competitive Index. Online, https://cmci.dti.gov.ph/lgu-profile.php?lgu=Masinloc

economic size and growth, employment generation, infrastructure, LGU investment, innovation, transportation, infrastructure, and innovation. [18] Farming, fishing, and mining are among the listed industries in the municipality.

Deep-sea Fishing and Fishery Resources

Traditional deep-sea fishing

The fishers of Masinloc and Infanta who fish in the WPS are comprised of small- to mediumscale commercial fishers[19] using traditional banca or wooden boats equipped with double bamboo outriggers for stability. The more common commercial fishing vessels (CFV) found in Infanta are about 20-25 meters long, equipped with diesel engines and capable of carrying 15- 20 or 10-30 persons.

Figure 1. One of the larger commercial fishing vessels that fish in the deep sea, anchored at Infanta, Pangasinan

Most fishermen own only small, non-motorized banca that can carry 1 or 2 persons; at times when they are unable to go on a voyage with a CFV, they act as municipal fishermen for

[18] Department of Trade and Industry. Cities and Municipalities Competitive Index. Online, https://cmci.dti.gov.ph/lgu-profile.php?lgu=Masinloc

[19] Using fishing vessels between 3.1 to 20 gross tons, or 20.1 to 150 gross tons in weight, respectively.

daily sustenance. Few actually own the larger CFV, as they can cost as much as One Million Pesos. The CFV often carry one to three small banca on a fishing trip, the former acting as a motherboat and carrier, while the smaller boats act as catcher vessels. It has been reported that 121 CFV operate from Zambales, while 20 come from Pangasinan.[20]

Figure 2. One of the smaller commercial fishing vessels based in Infanta, Pangasinan. This is carrying a small non-motorized banca.

A fishing trip has no specific schedule; it largely depends on the weather and sea conditions, and the lunar calendar. The decision to sail rests on the owners of the CFV, unless barred by the Philippine Coast Guard for safety reasons.[21] Between fishing trips and seasons, small fishermen or fishworkers rely on the vessel owner for daily necessities such as food and money, which they pay back by working as crew on the CFV. This is similar to the landlord-tenant relationship in agrarian relations, where the landowner provides the tenant-farmer with necessities and inputs to farm the land, in return for the harvest.

[20] Christine Cudis, DA promotes sustainable livelihood for WPS fishers, PHILIPPINE NEWS AGENCY (2021), https://www.pna.gov.ph/articles/1151821 (last visited Feb 20, 2023).; DA-BFAR, Zambales Fisheries Profile, DABFAR REGION 3, https://region3.bfar.da.gov.ph/cmsFiles/region3/fisheriesprofile/pdf/17a62cef-c45d-40c2-9e1ee0def5e4766f(01-24-2017).pdf (last visited Feb 20, 2023).

[21] Lisa Marie David, When waves are strong, LISA MARIE DAVID, https://www.lisamariedavid.com/dvj-multimedia (last visited Feb 20, 2023).

Instead of grain, fishworkers share the catch from each fishing trip. Depending on the volume and value of fish catch they take home, fishworkers can earn much or none at all, due to their debts to the owner of the CFV

The fishing activity in the northern sector of the WPS congregates at and around Scarborough Shoal, some 124 nautical miles from Luzon. The trip takes as much as 18 hours. Fishing in Scarborough Shoal is undertaken with spearguns, gillnets, and hook & line fishing gear, and it is not unusual for multiple gears to be used by fishers on the same trip. Many used to fish inside the shoal's lagoon, a large shallow area of about 150 sq km, but rarely do so at present due to the persistent efforts of the China Coast Guard to prevent them from entering the shoal. Instead, the CFV deploy payao in the deep waters away from the shoal.

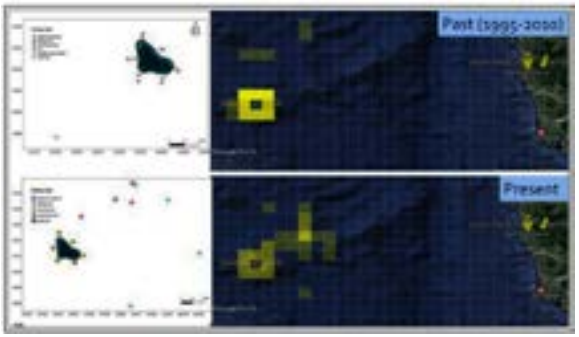

Figure 3. Comparison of the location of Philippine fishing activities in the area of Scarborough Shoal, before and after their exclusion by the China Coast Guard, prepared by Arceo, et al, 2020. Darker yellow color indicates higher fishing intensity. Note the movement of location from the shoal to areas northeast.

Payao are fish aggregating devices comprised of a heavy, weighted sinker which acts as an anchor on the seabed connected to a cylinder floating just beneath the surface of the water, from which are hung palm fronds that are weighted so that they float freely underwater. These create

shelters for pelagic fish, which tend to gather around them, ready to be caught by the fishers.

Figure 4. Payao under construction on the shore of Infanta, Pangasinan. The rope is the most expensive part, since it must be durable and of high quality, and several hundreds or thousands of meters long depending on the depth of the water in which it will be deployed.

The use of payao was heavily promoted by the Philippine government as part of its national tuna management policy; deployment of payao in the northern sector of the WPS became more urgent after fishers were denied access to Scarborough Shoal.[22]

A study conducted in 2017 found that, based on interviews with fishers, fishing at Scarborough Shoal could yield an estimated 2.0 to 31 metric tons per sq km each year.[23] Arceo at al (2020) indicate that this level of productivity was

[22] Fisheries Administrative Order No. 244, s. 2012. National Tuna Fish Aggregating Device Management Policy. Online, https://www.bfar.da.gov.ph/wp-content/uploads/2021/04/FAO-No.-244-s.-2012.pdf

[23] Arceo et al., supra note 14 at 660.

Figure 5. Several well-used payaos at the fishport, likely undergoing repair.

among the highest among Philippine coral reefs studied; this equates to significant losses in the country's fishery production and income for the fishing communities of Infanta and Masinloc.

Site	Area fished (km²)	Yield (mt/km²/yr)	Source
Apo Is., Negros Oriental	1.5	15–20	Mappa *et al.* (2002)
Sumilon Island, Cebu	0.5	14.0–36.9	Dalzell (1996)
Pamilacan Is., Bohol	1.8	10.7	Dalzell (1996)
Hulao-Hulao Reef, Negros Occidental	0.5	5.2	Dalzell (1996)
Bolinao, Pangasinan	24	10.1–14.5	Campos *et al.* (1994)
Malalison Is., Antique		5.8	Amar *et al.* (1996)
Pagasa Island, KIG	0.1225	5.4–15.2	This study
Sabina Shoal, KIG	0.1225	8.5–20.0	This study
Scarborough Shoal	0.1225	2.0–31.0	This study

Figure 6. Comparison of yields of different coral reefs in the Philippines, prepared by Arceo et al (2020). Note that Scarborough Shoal's productivity (before 2012) is the second highest; even allowing for a wide margin of error, it likely rated fairly well compared to other reef areas.

The kinds of fish caught have differed over the years, with the denial of fishing grounds inside the Shoal marking the sharp change. Scombridae (tuna and mackerel) and Carangidae (scads and trevally) used to dominate fishing with hook and line, but now Lethrinidae (emperor fish) and Mullidae (goatfish) are more commonly caught. Emperor fish

and Scarinae (parrotfish) also used to be more plentiful for spearfishing, but have been replaced by Haemulidae (grunts, sweetlips).[24] Notably, spearfishing and hook and line are considered to be environmentally more friendly and sustainable methods of fishing due to high selectivity and low by-catch.

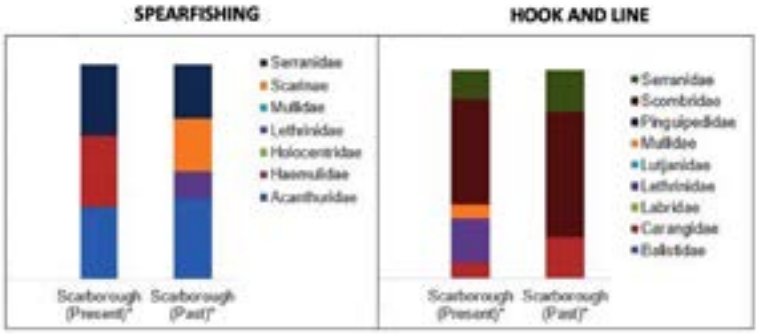

Figure 7. Comparison of fish catch before and after the exclusion of Philippine fishermen from Scarborough Shoal by the China Coast Guard. Extract from Arceo, et al. 2020.

Environmental Impact

Denial of access to Scarborough Shoal has inflicted serious negative impacts on fishing operations. Fishermen are no longer able to shelter in the lagoon, which is what permitted them to maximize their catch and profits from a fishing voyage. Before 2012, fishing was concentrated within or near the shore; the CFV could drop off small 1- or 2-man

boats inside the lagoon to carry out spearfishing while the mother-boat deployed nets at the reef periphery. Every other night or two, the mother-boat would retrieve the catch of the small boats and resupply them, allowing them to take more fish than their size permitted. From the time that Chinese Coast Guard vessels forced the CFV out of the shoal, they have had

[24] Id. at 651–652.

to make do with the open sea outside the shoal perimeter and at least 25 nautical miles away to the northeast. This makes fishing more dangerous; unfavorable sea conditions and weather would force them to return to Zambales or Pangasinan since they are prevented from taking shelter in the Shoal's lagoon, just two hours away. They, including the small boats, are forced to make the 16-18 hour journey back, even if they have not yet caught enough to break even on their trip.

Since 2012, the fishermen have consistently and regularly reported the deliberate destruction of the coral reef of Scarborough Shoal, under the watchful eye and perhaps even supervision of the China Coast Guard. The latter presides over clam digging operations involving a fleet of small boats that use their propellers to cut up and pulverize the reef, allowing the Chinese fishermen to gather the thousands of giant clams (Tridacna Gigas) underneath. The conduct of these operations were detailed by Prof. John McManus and Prof. Kent Carpenter in their experts' report to the Annex VII Arbitration Panel which heard the South China Sea Arbitration.[25]

Despite the fact that such clam digging operations are banned in China,[26] they continued to operate every year; in April 2019, an ABS-CBN news crew was even able to document them working under the protection of the China Coast Guard.[27] Clam digging operations leave devastation

[25] McManus, J. Offshore coral reef damage, overfishing, and paths to peace in the South China Sea. 2015. Online, https://pcacases.com/web/sendAttach/1917

[26] Rachel Bale, Crackdown Could Help End Giant Clam Poaching in Critical Reefs, ANIMALS (2017), https://www.nationalgeographic.com/animals/article/wildlife-watch-giant-clam-regulations-china (last visited Feb 20, 2023).

[27] Zambrano, C. Exclusive: Chinese harvesting giant claims in Scarborough Shoal. ABS-CBN News, 15 April 2019. Online, https://news.abs-cbn.com/news/04/15/19/exclusive-chinese-harvesting-giant-clams-in-scarborough-shoal

Figure 8. Totally devastated and lifeless coral reef after Chinese clam digging operations. Taken by John McManus, University of Miami.

in their wake,[28] and deprive fish of important offshore habitats. Scarborough Shoal being an isolated atoll surrounded by deep sea for more than 100 nautical miles, it is an important breeding ground and migration path. Studies reveal genetic relationships between

species caught on Scarborough Shoal and in coastal and inter-island waters of the Philippines.[29] The shoal undoubtedly forms part of the great Coral Triangle in

Southeast Asia that is reputed to be the center of marine biodiversity in the world.[30]

[28] China's Most Destructive Boats Return to the South China Sea | Asia Maritime Transparency Initiative, https://amti.csis.org/chinas-most-destructive-boats-return-to-the-south-china-sea/ (last visited Feb 20, 2023).

[29] See Patrick R. Pata & Aletta T. Yñiguez, Larval connectivity patterns of the North Indo-West Pacific coral reefs, 14 PLOS ONE e0219913 (2019).; also Patrick R. Pata & Aletta T. Yñiguez, Spatial Planning Insights for Philippine Coral Reef Conservation Using Larval Connectivity Networks, 8 FRONTIERS IN MARINE SCIENCE (2021), https://www.frontiersin.org/articles/10.3389/fmars.2021.719691 (last visited Feb 20, 2023).

[30] Youna Lyons et al., Moving from MPAs to Area-based Management Measures in the South China Sea, 35 THE INTERNATIONAL JOURNAL OF MARINE AND COASTAL LAW 1 (2019).

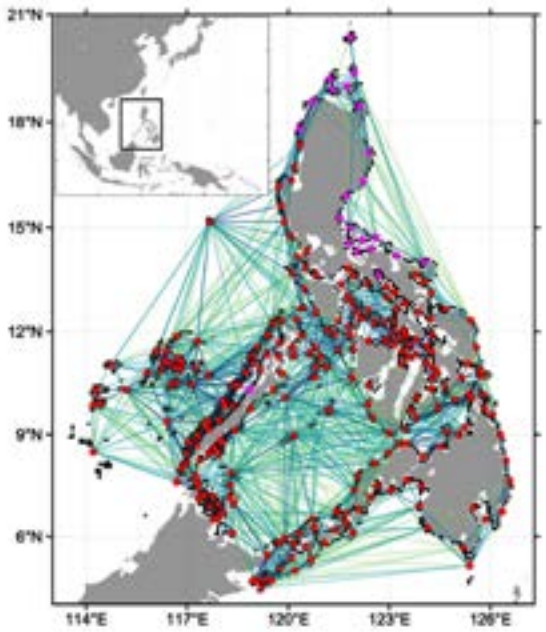

Figure 9. Connectivity network for branching coral, prepared by Pata & Yñiguez (2021), vividly illustrates the relationship between coral species in Scarborough Shoal and the rest of the Philippine archipelago.

China has also encouraged overfishing in the South China Sea. In 2013, no less than CCP Chairman Xi Jinping exhorted the fishermen and maritime militia of Hainan to assert China's rights to the fishery resources further south of the South China Sea, asking them to "not only lead fishing activities, but also collect oceanic information and support the construction of islands and reefs."[31] China has subsidized the modernization of

[31] Baijie An, President pays visit to Hainan fishermen|Politics|china-daily.com.cn, CHINA DAILY (2013), http://usa.chinadaily.com.cn/2013-04/11/content_16394643.htm (last visited Feb 20, 2023). See also Geronimo, R. Trends and Patterns of Fishing Activities in theWest Philippine Sea and the broader South China Sea (2007 to 2021). Paper presented at the 16th National Symposium on Marine Science, 23 July 2021. Also, DA-BFAR ET AL., PHILIPPINE IUU FISHING ASSESSMENT REPORT 2021 (2022).

a huge fleet of large steel-hulled fishing vessels that also double as maritime militia, alternating between fishing and asserting China excessive maritime claims. [32] The thousands of Chinese fishing vessels already marked a gross overcapacity in fishing effort, exerting serious pressure on dwindling fishery resources, as well as acting as a maritime militia force that establishes persistent presence in and around reefs, shallow areas, and low tide elevations. [33] The presence of the Chinese maritime militia intimidates Philippine fishermen to stay away from their former fishing grounds.

It goes without saying that China's construction of artificial islands in the Kalayaan Island Group are likely to have also contributed to the declining productivity of the West Philippine Sea. Given the species connectivity across the Kalayaan Island Group and Scarborough Shoal, despite hundreds of miles of separation, a loss of habitats and corresponding productivity seriously impacts the ecosystem health of the West Philippine Sea. Scientists have sounded the alarm, projecting that over 60% of fish stocks in the South China Sea will be gone by 2045.[34] China is the

[32] R. Trends and Patterns of Fishing Activities in theWest Philippine Sea and the broader South China Sea (2007 to 2021). Paper presented at the 16th National Symposium on Marine Science, 23 July 2021. Also, DA-BFAR ET AL., PHILIPPINE IUU FISHING ASSESSMENT REPORT 2021 (2022).

[33] Gregory Poling, Illuminating the South China Sea's Dark Fishing Fleets, STEPHENSON OCEAN SECURITY PROJECT (2019), https://ocean.csis.org/spotlights/illuminating-the-south-china-seas-dark-fishing-fleets/ (last visited Feb 20, 2023).

[34] Adam Minter, Consequences of overfishing in the South China Sea, BANGKOK POST, Nov. 18, 2015, https://www.bangkokpost.com/thailand/general/768692/consequences-of-overfishing-in-the-south-china-sea (last visited Feb 20, 2023). Also Kent Harrington, Commentary: South China Sea may run out of fish at this rate of overfishing, CNA (2022), https://www.channelnewsasia.com/commentary/south-china-sea-china-environmentalecological-damage-coral-reefs-overfishing-international-law-2469871 (last visited Feb 20, 2023).

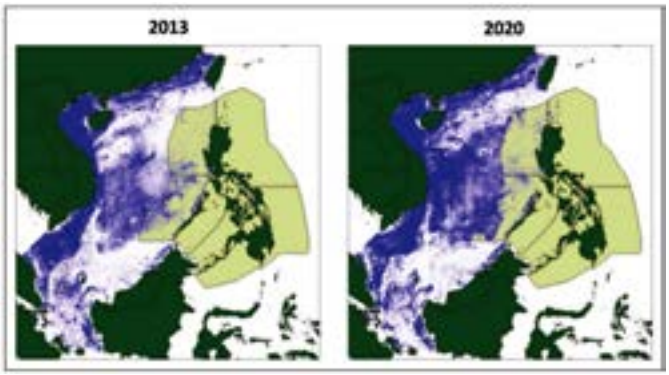

Figure 10. Comparison of night-time light detections indicating fishing vessel activity in the South China Sea in 2013 and 2020, providing evidence of China's more intensive fishing effort in the intervening years. Prepared and presented by R. Geronimo at the 16th National Symposium on Marine Science, 2021. See

principal contributor to the huge fishing effort; taking nearly half the fish catch since 2013.[35]

Economic Impact

Fuel and provisioning expenses and payao construction and deployment currently comprise the biggest expenses for fishing operations. These are normally paid for by CFV owners and associations up front before a fishing voyage. Fuel and supply costs vary depending on world oil prices and local inflation, while payao cost at least 100,000 PHP depending on the quality of materials and length of the anchoring line (which in turn is determined by the depth of the sea at the location of deployment). The DA-BFAR registered 677 payao in the WPS in 2021, of which 366 were provided by LGUs and 311 were privately and commercially produced.[36] During a visit in late January

[35] Minter, supra note 34.
[36] Cudis, supra note 20.

2023, numerous new payao were seen under construction on the shore of Barangay Cato in anticipation of the fishing season. These are used in conjunction with the larger CFV equipped with bag-nets or ring-nets.

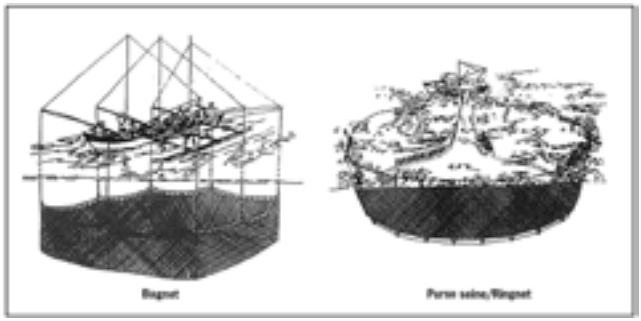

Figure 11. Gear types in common use by commercial fishing vessels in the deep sea.

Before 2012, fish catch reached 2 to 3 tons of various high value species, enough to earn a respectable profit, since CFV could stay for weeks on end at Scarborough Shoal. Carrier vessels could retrieve their catch and resupply their provisions. But at present, it is becoming economically unfeasible to fish in the deep sea. Aside from the dwindling fish catch, risks and harassment by Chinese vessels, fishing is increasingly unprofitable and dangerous. CFV can no longer stay at sea as long as they used to, and are forced to return to shore if inclement weather arrives because they are unable to shelter in the calm and protected waters of Scarborough Shoal. In the past year, fishers have had to abandon their fishing trips

due to inclement weather, even without breaking even on their investment in fuel and supplies. They used to break even within 3 days of commencing fishing operations, but now they consider themselves lucky if can even earn anything after more than a week at sea.

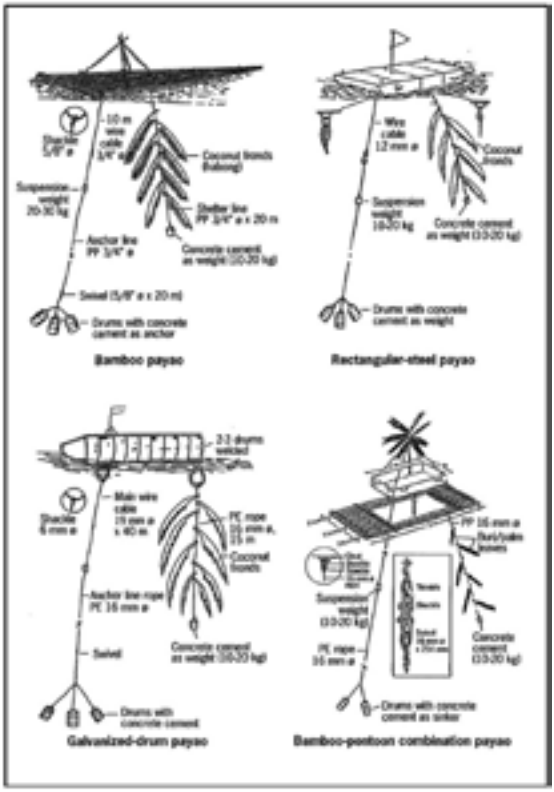

Figure 12. Different kinds of payao used in the Philippines. In the West Philippine Sea, the galvanized-drum type is used.

Fishing trips now average only a week in duration, which if could earn the voyage about 150,000 PHP with good fortune. But a third of this amount would normally pay for the capital advanced for fuel, ice, food, and water for the CFV workers and crew. The remaining 100,000 PHP would then be divided between the vessel owner who takes half of the amount, while the other 50,000 PHP is divided among the rest of the crew and fishworkers, who often number more than ten. However, the fishworkers usually also owe debts to the CFV owner due to cash advances the latter gave to their families before they

sailed. Whatever remains (if any) would have to pay for rice, rentals, and any advances made at the local sari-sari store for their daily needs. Fishermen are often left with nothing after all due debts have been paid.

For CFV owners and associations, payao are also a continuing operational expense. Despite their high costs, payao normally do not last more than two to three months because sea conditions eventually break them apart. Lately, they have also noted that payao are being destroyed by China Coast Guard and militia vessels. Even in cases where the payao are not destroyed, Chinese and Vietnamese fishing vessels also compete with the Philippine fishers for the aggregated catch, harvesting the fish even before the owners are able to visit them and collect the catch. Chinese and Vietnamese fishing vessels also use very strong super-lights generating 500 to 5,000 watts at night, which create enough heat that they kill small fish and larvae floating near the water surface around the payao.

Income from fishing has steadily and consistently declined since 2012. In 2015, it was reported that daily income from commercial fishing plunged from 50,000 PHP to only around 10,000 PHP for a day's worth of fishing.[37] In 2017, it was already noted that nearly half of the fishermen who used to frequent Scarborough Shoal had decided not to return due to the dangers they faced from exclusion. Lately, fishermen have turned to artisanal fishing activities nearshore, due to the increasing unprofitability of deep sea fishing.[38]

[37] Bea Cupin, From Masinloc to The Hague: A question of livelihood, RAPPLER (2015), https://www.rappler.com/nation/98783-masinloc-zambales-china-scarborough-shoal/ (last visited Feb 19, 2023).

[38] The Unseen Women Fisherfolk of Zambales in the Philippines, EARTH JOURNALISM NETWORK (2021), https://earthjournalism.net/stories/the-unseen-women-fisherfolk-of-zambales-in-the-philippines (last visited Feb 20, 2023).

At present, individual fishermen complain that they used to be able to make 8,000 to 10,000 PHP a week from fishing, but now would be fortunate to make 2,000-3,000 PHP, if at all. Either way, they would still be deep in debt by the time they make any money. The loss of significant income has exacerbated the situation of fishing communities, despite being already "the poorest of the poor" according to the government's own statistics.

Challenges and Future Prospects in the WPS

The long term viability of deep sea fishing in the WPS are clearly under threat. On one hand, exclusion from their richest fishing ground, Bajo de Masinloc or Scarborough Shoal, deprived them of the opportunity to access higher quality and larger volumes of catch since 2012. But more recently, the destruction of the coral habitat on Scarborough Shoal due to Chinese clamdigging operations has reduced their chances of catching a sufficient amount and quality of fish catch even if they were able to re-enter the shoal. Continuing denial of the area, even for safety purposes as sheltering areas during inclement weather and rough sea conditions, has also made venturing into the deep sea around Scarborough Shoal much more risky and less cost-efficient. Constant intimidation and harassment, coupled with destruction of their payao or taking of their payao's aggregated fish stock, have made deep sea fishing much, much less profitable economically. Fishermen have been constrained to turn to less dangerous fishing activities near the shore or in municipal waters, which however produce much less income. Overfishing and stock depletion further aggravate their situation, leading to more intensive competition with other fishers and diminishing catch even in the nearshore areas.

In this context, what is needed to assist the fishing communities over the long term are the following:

(1) Efforts must be exerted to stop the destructive fishing activities of the Chinese fishing fleet and maritime militia. Constant monitoring and exposure of their nefarious activities, from the destruction they have wrought on Scarborough Shoal, to the excessive overfishing they are illegally conducting in the WPS and in the SCS, must be a undertaken and brought to the world' attention.

(2) Movements of the Chinese fishing fleet and maritime militia must be constantly monitored and exposed to the world at large. China's IUU fishing activities extend far beyond the SCS and reach as far as the far end of the Pacific and the Atlantic Oceans, but more than half their fishing effort is concentrated in the South China Sea. Combatting Chinese IUU fishing in the WPS therefore still make a significant impact, which the world community can support considering the increasing concern over IUU fishing worldwide.

(3) Philippine fishermen must be given the means and ability to act as guardians of the WPS, to assist the Philippine maritime law enforcement and military forces in their function of patrolling and discouraging illegal Chinese fishing activities. A system of reporting and data consolidation must be established in order to enhance the country's maritime domain awareness and enable it to get an accurate picture of China's movements and activities in the WPS. Affordable technology now exists to equip fishermen with the rudimentary tools, what remains is training and capacity-building to make sure they are able to provide useful and accurate data and information.

(4) Efforts must be undertaken to inventory and catalogue the damage and injury being sustained by the Philippines, including individual fishing companies and fishermen, on account of the illegal interference of Chinese government ships and militia vessels with legitimate Philippine resource activities in the WPS. An accurate picture will assist the government in its positioning and advocacy before multi-lateral international forums and in bilateral dealings, and give it added leverage in negotiations and deliberations.

(5) Government, especially maritime law enforcement forces and the military, must work with the fishermen who are more numerous and able to be more present in the WPS. Formal cooperation should be established between the key relevant offices of the PN, PCG, and PNP-MG and fishermen's organizations or associations, so that they can help each other in addressing the competitive challenges posed by China and its excessive claims.

(6) Government must remain steadfast and firm on insisting upon its rights and entitlements under international law, especially to its marine resources according to UNCLOS, to complement the fishing communities' efforts and advocacies. Its policy positions and postures must be aligned with the need to protect our fishermen's rights and activities in the WPS, especially since it is they who are the real front lines in the exercise of our nation's rights and the utilization and conservation of our heritage.

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