

## Pandemic Struggles and its Effects to Mangrove Crab Farming Industry

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**Abstract:** The COVID-19 pandemic had made its mark on many aspects of the Philippine economy. With many sectors adjusting to the new-normal, the mangrove crab industry has also taken a big hit. The pandemic had caused many businesses to avoid the once common face-to-face transactions and to transfer to a more digital approach. Online groups in social media sites have been popping left and right with new and alternative forms of transaction. Mangrove crab sellers have also started to rely on online marketing to reach customers. This paper looks at the impact of the pandemic on the mangrove crab industry: the difficulties and the innovations within the growing online community. Purposive interviews from members of social media groups revealed that sellers had little to no engagement during the first three months of the initial lockdowns. The low demand for the high-value product forced sellers to innovate and use their crabs as raw material for other products such as bottled crab meat, crab paste, frozen crab goods, and cooked crab food. Despite these challenges, mangrove crab farmers and sellers have become more interested in new technology, practices and techniques in growing mangrove crabs. There is a strong demand for faster communication between farmers and governing agencies, and for programs that will strengthen seller and consumer relationships.

**Key Words:** Mangrove crabs; COVID-19; Agriculture; Social Media

### INTRODUCTION

The COVID-19 pandemic has immobilized the Philippine industry, as the country suffers the longest community quarantines compared to other countries. Cases are still increasing daily, which forces local government units to continue the imposition of community quarantines, travel restrictions, closedown of public facilities, and limiting of transportation to flatten the so-called curve of cases. This pandemic has also immobilized agriculture and aquaculture activities, in the absence of basic provisions for transport of goods and the shutdown of institutions where products could be traded (Sunny et al, 2020; Ali et al., 2020; Purkait et al., 2020). This problem is not limited to the Philippines, as there are more than 820 million people around the world who are suffering from hunger and malnutrition as the world facing food security challenges across the globe as the cases increases.

As an agricultural country, it is very important to undertake different measures in ensuring resources and inputs from various sectors to continue its productivity. One of the most affected

sectors during the pandemic are the aquaculture and fisheries industries that suffered halted the operations. According to the Food and Agriculture Organization of the United Nations (2020), small scale fishermen, processors, traders, and sellers face the consequences of COVID-19 infection and risking exposure in order for them to feed their families. One of the hotspots for rapid spread of infection are the fishing communities and ports due to exchanges and migratory nature of fishers. In addition, the absence of accessible health services, testing, treatments and sanitation contributed to the widescale spread of infection within the rural fishing communities. (Bennett et al., 2020)

The mangrove crab farming industry delves in the trade of a high-value resource that accounts for a Php 5.2 billion industry, but it too has been halted by the Covid-19 pandemic. Farmers and traders have resorted to a digital approach as traditional face-to-face transactions have been severely limited. This paper shares the experiences of “digital-era” mangrove crab stakeholders during the pandemic, the market activities they have started using social media, and the innovations they have made to stay afloat during the nationwide quarantines.

## METHODOLOGY

The study employed purposive sampling through interviews with 48 mangrove crab farmers, and sellers from six (6) different Facebook pages and groups based in the Philippines that trade mangrove crabs.

Within these groups, data were also gathered by observing organic interactions of the sellers, traders, and farmers about different crab farming practices, and different process in coping with pandemic due to restrictions.

### Data Collection

This study was conducted based on primary and secondary data sources. Primary data were collected through different Facebook engagements such as comments, prices, and interactions which are posted regularly within the groups. Secondary data was also collected based on different scientific articles, technical reports, and aquaculture related data coming from BFAR (Bureau of Fisheries and Aquatic Resources) and DA (Department of Agriculture) for further materials.

## RESULTS AND DISCUSSION

### Overview of Social Media Activities

Pre-pandemic engagements were mostly from direct suppliers of resources needed to maintain grow-out ponds. This included trade in crablets, crab feed, and large-scale orders for adult crabs to restaurants, groceries, and wet markets. Pages were also used to share articles and best practices on crab farming. Polls about potential crab farm locations were also found.

The social media groups were also used as a mechanism to share problems and difficulties faced by mangrove crab farmers. Members would often look for experts for proper training, and education for crab farmers to ensure efficient growth of the mangrove crabs. The use of different techniques, such as vertical crab farming, and applications, including the species identification application called Crabifier, are introduced and discussed widely in the social media groups. Alternatives and suggestions for feeds were also discussed.

Sellers were observed to have had little to no engagements within the Facebook groups for three months during the start of the nationwide lockdown, specifically from May 1 to August 22, 2020. This was regardless of the product, be they crablets for grow out, full grown crabs for consumption, or processed crab products. The lack of engagements was brought about by absence of products for sale, due to closedown of actual farms due to the inability to maintain the needs of ponds because of lack of access to resources. There was also a low demand for high-value products during the lockdowns as a significant portion of Filipinos lost income during the early months of the pandemic (Aruta, 2021).

### Market Trends

The prices of mangrove crabs, regardless of size, showed a downward trend during the start of the pandemic, with occasional spikes, during the first six months of the nationwide lockdown (Fig. 1). The initial decrease in prices was due to high supply but low demand for the products.

Mangrove crabs before the lockdowns have a high demand for export, local restaurants, and direct to consumer. Thus, the supply for mangrove crabs is typically lower than the demand before the pandemic, specially during the early months of the year during the holiday celebrations, hence the high prices. Conversely, the shift to low prices were due to a crash in demand leading to a surplus of mangrove crabs that were not sold during the lockdowns.

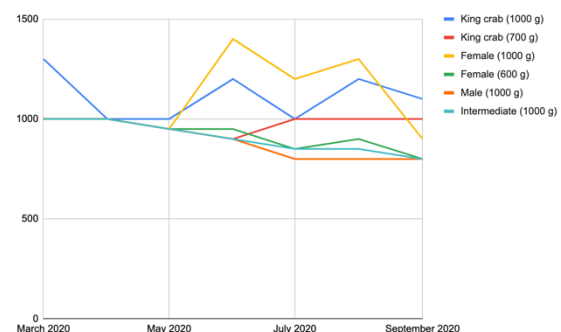
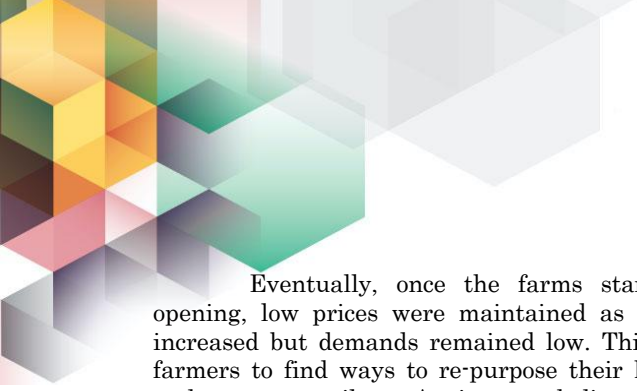


Figure 1: Price per kilogram of mangrove crabs during the first six months of the 2020 nationwide lockdown.



Eventually, once the farms started re-opening, low prices were maintained as supplies increased but demands remained low. This forced farmers to find ways to re-purpose their harvests and prevent spoilage. An increased discussion on how to create frozen, cooked, and bottled products were seen around May to July, which also led to a spike in alternative crab-derived products for sale by August.

The production in agricultural products from the months of January to March of 2020 was lower by about 1.2% compared to the performance of the first quarter of 2019, based on the report of Philippine Statistics Authority (PSA, 2020). Different resources of aquatic products such as tiger prawn, mangrove crabs, and sardines had increased its production in recent years but due to the pandemic, there was difficulty in selling these commodities because of transport and community. According to the National Economic and Development Authority (NEDA), income loss by fishermen in the past year was around USD 3.6 million, which affected 4.2 million families who are solely dependent in selling agricultural products. (Pamplona, 2020)

## Market Innovations and Dangers

The emergence of different applications for delivery services and cash transfers through online banking and e-wallets made transactions more convenient for businesses and consumers as the quarantine progressed. Online marketing is a relatively new process for the aquaculture sector but has proven to be an effective mode to sell products and services.

Mangrove crab fishers have also started maximizing the productivity of their fishponds proceeding with multi-species set up for their ponds, which included lobster and shrimp. Fish, oysters, and clams are also now being sold alongside mangrove crabs in previously exclusive social media groups. Farmers are also pivoting on their increased supply of mangrove crabs by converting them into processed food products such as bottled crab meat, crab paste, jarred *aligue*, frozen crab goods, and cooked crab food.

The recent growth of the mangrove crab trade, as facilitated through social media, also has its risks.

Popular posts of alleged scamming by a seller, and no-show customers, were found frequently in all pages. This indicates a need to safeguard the integrity of these social media groups, or to create an alternative online forum that requires security checks prior to acceptance of members. Participants also need to be educated on what to do in case of scamming incidents, the proper agencies from the Department of Trade and Industry (DTI) to contact, and how to watch out for warning signs common across fraudulent trades.

## Government support for fishermen

Based on the reports released by the Bureau of Fisheries and Aquatic Resources (BFAR) and the Department of Agriculture (DA), their programs and services continued even during the height of the pandemic lockdowns. This included fingerlings and seaweed dispersal, laboratory testing and monitoring of red tide, and other types of technical assistance. Their offices also provided essential starter or replenishment tools to 3,380 fishermen households to help stabilize the food supply chain in the fishery sector (BFAR, 2020).

Different local government campaigns that promote patronizing of local agricultural products have been ongoing. These strongly discourage the importation of food products and uplift the morale of the local farmers. This is also supported by efforts from Center for International Trade Expositions and Missions (CITEM), that in turn promotes Filipino products and produce for trade to other countries.

## CONCLUSION

This study provides a snapshot of the impacts of the Covid-19 pandemic to the mangrove crab industry. It showed how trade was also frozen during the first three months of the pandemic's onslaught but highlighted the capacity of traders to innovate and create alternative products and sources of income. Mangrove crab farmers have a strong demand for technological support and is in need of faster communication between farmers and governing agencies, and for programs that will strengthen seller and consumer relationships.



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## REFERENCES

- Ali, M., Siddik, M., Khanam, T., & Khatun, M. M. (2020). Analysis of the Problems and Minimization Initiatives Addressed by Bangladeshi Farmers During the Covid-19 Pandemic. *Asian Journal of Agriculture and rural Development*, 10(4), 773-781.
- Aruta, J. J. B. R. (2021). Socio-ecological determinants of distress in Filipino adults during COVID-19 crisis. *Current Psychology*, 1-11.
- Bennett, N. J., Finkbeiner, E. M., Ban, N. C., Belhabib, D., Jupiter, S. D., Kittinger, J. N., ... & Christie, P. (2020). The COVID-19 pandemic, small-scale fisheries and coastal fishing communities. *Coastal Management*, 48(4), 336-347.
- DA-AFID. (2020). Food production is equally important as the war against Covid 19. From <https://www.da.gov.ph/food-production-is-equally-important-as-the-war-against-covid-19/>
- Department of Agriculture, Bureau of Fisheries and Aquatic Resources. (2020). *DA-BFAR sustains programs, services despite community lockdowns due to covid019* [Press release]. Retrieved from <https://www.bfar.da.gov.ph/files/img/photos/DABFARSUSTAINSPROGRAMS,SERVICEDESPITECOMMUNITYLOCKDOWNSDUETOCOVID19.pdf?fbclid=iwar38pd0u9xfi6ejr7qfmkuzsopmx1p9fgkfe91kxx8zbzpvx6nrm94mvi>
- Food and Agriculture Organization of the United Nations [FAO]. (2020). How is COVID-19 affecting the fisheries and aquaculture food systems.
- Pamplona, R. S. (2020). An Overview of Philippine Agriculture during the Transition Phase to the New Normal. *Jayapangus Press Books*, 330-352.
- PSA, P. S. A.-. (2020). Performance of Philippine Agriculture, First Quarter 2020. (2020 078). Retrieved from <https://psa.gov.ph/ppa-main/id/161874>.
- Purkait, S., Karmakar, S., Chowdhury, S., Mali, P., & Sau, S. K. (2020). Impacts of novel coronavirus (COVID-19) pandemic on fisheries sector in India: A Minireview. *Ind. J. Pure App. Biosci*, 8(3), 487-492.
- Sunny, A. R., Sazzad, S. A., Datta, G. C., Sarker, A. K., Ashrafuzzaman, M., & Prodhan, S. H. (2020). Assessing impacts of COVID-19 on aquatic food system and small-scale fisheries in Bangladesh.