



20
18

Presented at the DLSU Research Congress 2018
De La Salle University, Manila, Philippines
June 20 to 22, 2018

Moving Forward with Urban Coastal Food Security in the Philippines

Jose Santos R Carandang VI¹, Mary Jane Cruz-Flores², Julien L Carandang^{3*}

¹ Full Professor, Biology Department – De La Salle University

² Assistant Professor, Biology Department – De La Salle University

^{3*} Lecturer 3, Political Science Department – De La Salle University

julien.carandang@dlsu.edu.ph

Abstract: 1) Overfishing, climate change, and environmental degradation continue to adversely affect the food security of urban coastal cities in the Philippines, particularly those dependent on the fisheries sector. 2) The study looks into the impact of overfishing, climate change, and environmental degradation to the coastal fisheries sector and their stakeholders with respect to volume catches and value of productivity. 3) Data from literature reviews and agency reports were validated by key informant interviews and focus group discussions with different stakeholder groups. 4) As a response to threats to productivity, current fishing industry practices are starting to recognize and implement climate and environment sensitive fishing practices. Conversely, sustainable fishing practices in local communities that are practical, and cost-effective examples of environmental stewardship have also gained recognition. 5) Lessons from industry and local communities could lead to the development of a sustainable food security program for urban coastal cities to adopt and implement.

Key Words: sustainability; food security; urban coastal communities

1. INTRODUCTION

Food security exists in a community, whenever its members have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and preferences for an active and healthy life (FAO, 1996). Unfortunately, recent trends have shown, that urban coastal cities in the Philippines are experiencing difficulty in attaining their community food security. Cases of overfishing, the onset of climate change, and continuous environmental degradation have been found to contribute to lower annual volume of fish catches and value of productivity in the fisheries sector (Agardy, 2000; Hauge, Cleeland, & Wilson, 2009; Khan & Khan, 2011).

This decline in productivity not only affects the commercial industry and their clientele, but more so the municipal fishing communities who rely on

their catch as a source of income, livelihood and nourishment. The need to study the impacts of fish catch decline to urban coastal communities becomes more imperative as we now understand that achieving food security requires the technical considerations for food production, as well as the economic situation of food producers, the climate and ecosystems within which they operate including the available markets for their goods (Tamiru et al., 2011).

2. MATERIAL AND METHODOLOGY

Literature survey and review of current legal and fiscal policies pertaining to urban coastal cities were conducted to find out the current issues and challenges affecting fisheries production and value in the Philippines. Findings from these surveys were compared to or confirmed by key informant interviews.



3. RESULTS AND DISCUSSION

1. What is the state of Philippine Fisheries?

Recent reports from the Fisheries statistics report a marked decline in volume of catch and value of catch from the 2014 to 2016 data (see Figure 1, Figure 2).

Sector	2014	2015	2016
All Sectors	4,689,084.71	4,649,312.63	4,355,792.42
Commercial	1,107,220.80	1,084,624.70	1,016,948.05
Municipal	1,244,258.95	1,216,526.72	1,137,931.03
Marine	1,029,394.45	1,011,792.73	976,941.19
Inland	214,864.50	204,733.99	160,989.84
Aquaculture	2,337,604.96	2,348,161.21	2,200,913.34
Brackishwater Fish cage	979.85	1,171.99	978.88
Brackishwater Fish pen	855.55	832.22	2,086.18
Brackishwater Fishpond	320,832.86	323,629.00	337,582.24
Freshwater Fish cage	87,742.22	94,723.06	97,568.86
Freshwater Fish pen	62,643.29	60,833.27	56,610.84
Freshwater Fishpond	148,740.62	147,569.40	145,655.32
Marine Fish cage	110,712.56	105,606.47	106,257.36
Marine Fish pen	14,256.41	11,148.66	11,307.24
Oyster	22,355.21	20,260.80	19,512.36
Mussel	18,761.77	15,949.13	18,774.55
Seaweed	1,549,575.98	1,566,361.70	1,404,519.23
Small Farm Reservoir	146.47	72.05	56.68
Rice Fish	2.17	3.46	3.59

Figure 1. Philippine Fisheries Volume of Production, 2014-2016 (Metric Tons)

Sector	2014	2015	2016
All Sectors	241,943,849.72	239,702,373.57	228,934,096.52
Commercial	66,189,808.47	64,875,286.41	58,866,556.69
Municipal	81,805,031.27	81,486,171.48	78,925,620.10
Marine	71,925,095.59	71,717,976.27	71,131,590.39
Inland	9,879,935.68	9,768,195.21	7,794,029.71
Aquaculture	93,949,009.98	93,340,915.68	91,141,919.73
Brackishwater Fish cage	109,123.89	131,205.50	106,726.60
Brackishwater Fish pen	90,051.93	88,244.27	216,205.43
Brackishwater Fishpond	48,514,554.40	50,442,504.14	51,787,201.75
Freshwater Fish cage	7,079,864.57	7,557,626.57	7,559,895.76
Freshwater Fish pen	3,455,062.23	3,325,220.05	2,815,492.38
Freshwater Fishpond	11,127,191.66	11,019,392.79	10,179,933.47
Marine Fish cage	11,267,269.64	10,927,989.60	10,776,760.70
Marine Fish pen	1,374,424.25	1,130,985.47	1,113,250.84
Oyster	179,511.69	180,873.99	203,357.76
Mussel	222,694.18	215,420.95	273,755.44
Seaweed	10,517,705.06	8,315,270.35	6,104,737.53
Small Farm Reservoir	11,328.56	5,873.12	4,334.42
Rice Fish	227.92	308.88	267.65

Figure 2. Philippine Fisheries Value of Production, 2014-2016 ('000 Pesos)

Decades of studies on the issues in Philippine fisheries abound. They frequently cite

overfishing, habitat loss and more recently climate change as likely causes for the decrease in catch rates and the profitability of the sector (see Table 1).

2. What are the factors that led to the decline of Philippine Fisheries sector?

Table 1. Issues in the Philippine Fisheries Sector

Dimensions	Issues	Factors
Environment and Climate Change	<ul style="list-style-type: none"> Loss of marine biodiversity Declining fish stocks 	<ul style="list-style-type: none"> Overfishing Illegal and destructive fishing Habitat degradation/change
Financial	<ul style="list-style-type: none"> Loss of revenues and benefits from fisheries and coastal resources 	<ul style="list-style-type: none"> Post-harvest losses
Social	<ul style="list-style-type: none"> Inequitable distribution of benefits from fisheries and coastal resource uses 	<ul style="list-style-type: none"> Low awareness and participation in management Lack of employment of fishers
Political	<ul style="list-style-type: none"> Weak institutional and stakeholder capacity to plan and implement fisheries management 	<ul style="list-style-type: none"> Inadequate interagency coordination for fisheries and coastal resource management Weak and inadequate law enforcement

(Adapted from Padilla, 1996; Cruz-Trinidad, White, Gleason & Pura, 2002; Shannon, 2002; Lehodey, Senina, Calmettes, Hampton & Nicol, 2013).



3. What can be done to address the decline of Philippine Fisheries and what role do urban coastal communities play in them?

Green et. al.'s Philippine Fisheries in Crisis: A Framework (2003) presents a viable framework for addressing the decline of fish catch and the consequent decrease in profit for the fisheries sector. Their study emphasized the role of municipal fishing communities in addressing the need for better management and monitoring in the fisheries sector. The inherent vulnerability of coastal municipal fishermen to shocks in the fisheries sector provides an incentive for these communities to actively participate in the monitoring and management of key areas and interests in the sector allowing for policies and programs to not only address key issues, but also ensure a transparent and participatory approach to urban coastal food security practices. Earlier studies further support this claim that the way forward to urban coastal food security is to not only focus on commercial interests, but more importantly to holistic and participatory approaches to fisheries management in coastal areas (NRC, 1999).

Locally, the case of Navotas exemplifies this approach. This urban coastal city is also known as the "Fish Capital of the Philippines" as well as the home of the Navotas Fishport Complex and can be found on the extreme northwest shore of Metro Manila. Ironically, despite being considered as the "Fish Capital of the Philippines" it is only a fish trading city and not a significant fish producing city, as it gets its fish catch from all over the country. Two previous studies by Carandang, Flores & Carandang (2014; 2015), found that the Local Government of Navotas made significant efforts in creating a food secure environment for its citizenry. Although operating without a food security program or plan of action, its policies on poverty alleviation, the provision of social welfare and basic health care has in fact helped promote the realization of creating a food secure environment in the city. It remains to be seen if this development is merely incidental to Navotas and whether or not other coastal local governments will create their own food security initiatives, not only for their commercial interests but also for sustenance and livelihood of the coastal community.

4. CONCLUSIONS

This paper presented the current fisheries situation in the Philippines, the decline in fish catch productivity and value and the potential approaches to address these concerns. The study likewise found that progressive coastal communities have the potential to initiate their own activities to address the impacts of overfishing, climate change, and environmental degradation to the coastal fisheries sector and their stakeholders with respect to volume catches and value of productivity. Further studies on community approaches and industry innovations is proposed as these findings could lead to improvements in fish catch productivity and value.

5. ACKNOWLEDGMENTS

Some data utilized by this study were from previous projects funded by the Angelo King Institute.

6. REFERENCES

- Agardy, T. (2000). Effects of fisheries on marine ecosystems: a conservationist's perspective. *ICES Journal of Marine Science*, 57(3), 761-765.
- Cruz-Trinidad, A., White, A. T., Gleason, M., & Pura, L. (2002). Philippine fisheries in Crisis: a prescription for recovery. *Aquaculture*, 981(35.4), 33-2.
- Carandang, J. S., Cruz-Flores, M., & Carandang, J. (2014). Developing A Sustainable Food Security Program for an Urban Coastal City, Navotas City, Metro Manila. Accessed at: http://www.dlsu.edu.ph/conferences/dlsu_research_congress/2014/_pdf/proceedings/FNH-II-010-ft.pdf
- Carandang, J. S., Cruz-Flores, M., & Carandang, J. (2015). Developing A Sustainable Food Security Program for an Urban Coastal City, Navotas City, Metro Manila. Part 2. Accessed at: http://www.dlsu.edu.ph/conferences/dlsu_research_congress/2015/proceedings/FNH/013FNH_Carandang_JL.pdf



- FAO. (1996). Rome Declaration on World Food Security and World Food Summit Plan of Action. Food and Agriculture Organization of the United Nations. Accessed at: <http://www.fao.org/docrep/003/w3613e/w3613e00.HTM>
- Green, S. J., White, A. T., Flores, J. O., Carreon III, M. F., & Sia, A. E. (2003). Philippine Fisheries in Crisis: A Framework. *Philippine: Cebu*. Accessed at: http://www.oneocean.org/download/db_files/philippine_fisheries_in_crisis.pdf
- Hauge, K. H., Cleeland, B., & Wilson, D. C. (2009). Fisheries depletion and collapse. *IRGC report "Risk Governance Deficits: An analysis and illustration of the most common deficits in risk governance". International Risk Governance Council Chemin de Balaxert, 9(1219), 21.*
- Khan, S. R., & Khan, S. R. (2011). Fishery degradation in Pakistan: a poverty–environment nexus?. *Canadian Journal of Development Studies/Revue canadienne d'études du développement, 32(1), 32-47.*
- Lehodey, P., Senina, I., Calmettes, B., Hampton, J., & Nicol, S. (2013). Modelling the impact of climate change on Pacific skipjack tuna population and fisheries. *Climatic Change, 119(1), 95-109.*
- National Research Council. (1999). *Sharing the fish: toward a national policy on individual fishing quotas*. National Academies Press.
- Padilla, J. E. (1996). Water quality and fisheries issues accompanying population growth in the Philippines. *Journal of Philippine Development, 23(2), 315-337.*
- Philippine Statistics Authority. (2016). Fisheries Statistics of the Philippines, 2014-2016. Accessed at: <https://psa.gov.ph/sites/default/files/FStatPhil14-16docx%282%29.pdf>
- Shannon, D. (2002). The future of municipal fisheries in the Philippines: does the Philippine Fisheries Code do enough. *Pac. Rim L. & Pol'y J., 11, 717.*
- Tamiru, A., Bruce, T.J., Woodcock, C.M., Caulfield, J.C., Midega, C.A., Ogot, C.K., Mayon, P., Birkeet, M.A., Pickett, J.A. and Khan, Z.R. (2011) Maize landraces recruit egg and larval parasitoids in response to egg deposition by a herbivore. *Ecology Letters 14(11): 1075–83.*