The issues of artisanal fisheries and aquaculture in sustainable food systems in Southeast Asia

MIYATA Tsutom

Director, Fisheries Division

Japan International Research Center for Agricultural Sciences (JIRCAS), Japan

Dr. MIYATA Tsutom has been the Director of the Fisheries Division at JIRCAS since 2021. He received his Ph.D. at Tokyo University of Fisheries in 2006. He had been fisheries official and Chief Scientist of fisheries socioeconomics at Iwate Prefecture from 1994 to 2007, and head of research group on fisheries economics at the Fisheries Research Agency/Japan Fisheries Research and Education Agency from 2007 to 2021. His specialty is socioeconomics and management of fishery and marine product.

ABSTRACT

The expansion of intensive agriculture, livestock industry, and fisheries in pursuit of economic efficiency has further increased global greenhouse gas emissions, and has had a negative impact on the global food supply system, such as increased scale of natural disasters and erosion of coastal areas due to climate change. Therefore, we are conducting research and development of community-based artisanal aquaculture that maintains the ecosystem in collaboration with universities and research institutes in the Philippines, Myanmar, Thailand and Malaysia[1].

According to previous study in the Philippines, fishers in the research site were aware that their fishing grounds and fisheries resources had been deteriorating since the 1980s, therefore almost all fishers indicated the need for fishery management to be introduced in the site. However, most fishers indicated that they would not implement fisheries management until the main target fish stock was reduced to about half of its current level. Even though almost all of fishing households were getting poor and fishing was still their main source of income, they insisted on postponing the implementation of fisheries management[2].

A bottom-up fisheries management cannot be introduced without the agreement of almost all fishers. Therefore, implementation of fisheries management in the area was very difficult. This was due to the fact that the fishing regulations associated with fisheries management had avoided catch reduction, and the majority of fishermen believed that fishery resources would someday recover without the need to implement fisheries management by themselves[2].

These results led to the need for measures that will enable fisheries management with catch restriction to be implemented while generating alternative income. In addition, previous study showed that marine protected areas were effective in the Philippines[3]. Thus, it is highly recommended that measures should be taken to generate new income through oyster farming and to simultaneously make marine protected areas where ordinal fishing gears cannot be laid down by implementing oyster aquaculture facilities.

[1] Miyata, T. (2022) Research and development for sustainable artisanal aquaculture for developing countries, *JIRCAS Koho* **10**, 3 ISSN2434-1886 (in Japanese).

[2] Miyata, T. et al. (2017) Consciousness of fishers for fisheries resources in poor fishing village: Case of Northern Panay Island, Philippines. *Journal of International Cooperation for Agricultural Development* **15**, 21-31 (in Japanese with English abstract).

[3] Pollnac, R.B. et al. (2001) Discovering factors that influence the success of community-based marine protected areas in the Visayas, Philippines. *Ocean and Coastal Management* **44**, 683-710.

The issues of artisanal fisheries and aquaculture in sustainable food systems in Southeast Asia

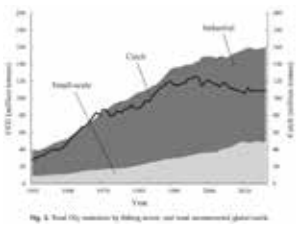
MIYATA Tsutom
Director, Fisheries Division

Japan International Research Center for Agricultural Sciences

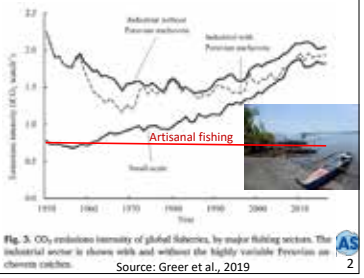
1

Introduction

The expansion of intensive fisheries in pursuit of economic efficiency has further increased global greenhouse gas emissions, and has had a negative impact on the global food supply system, such as increased scale of natural disasters and erosion of coastal areas due to climate change.



Source: Greer et al., 2019

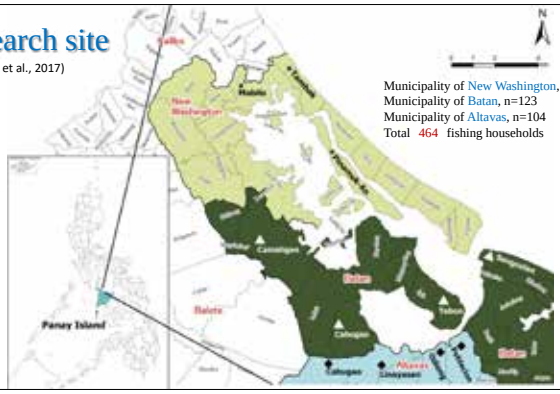


Source: Greer et al., 2019

2

Research site

(Miyata et al., 2017)

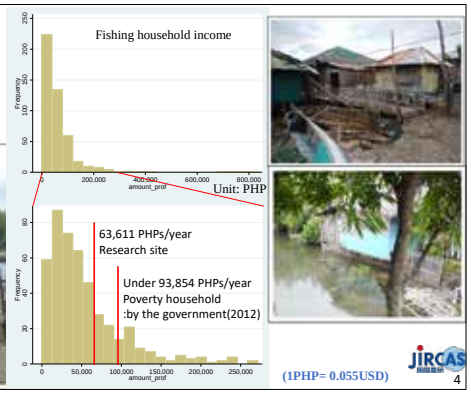


3

Income

Unit: PHP

The research site belongs to Western Visayas, the average household income in the region was 214,492 PHPs/year (2012)



(1PHP= 0.055USD)

4

Overfishing

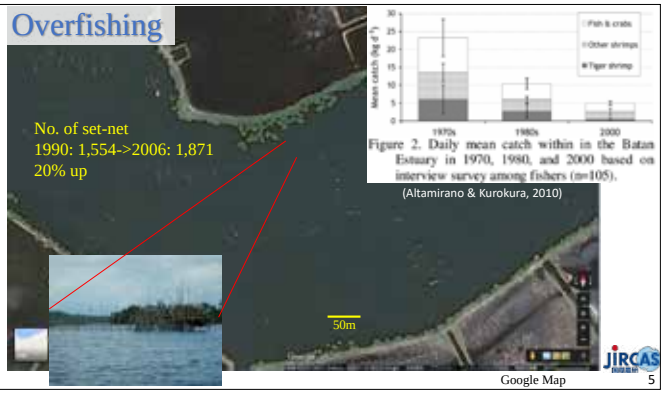


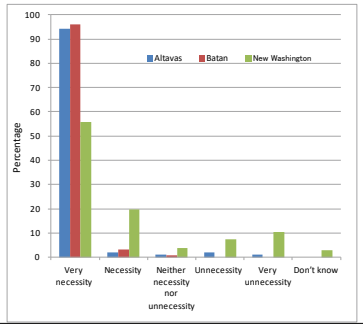
Figure 2. Daily mean catch within in the Batan Estuary in 1970, 1980, and 2000 based on interview survey among fishers (n=105).

(Altamirano & Kurokura, 2010)

Google Map

5

Necessity of Fisheries Management



6

How many years/months can you tolerate the reduction in catch associated with the introduction of fisheries management?

Unit: Percentage

Year	0	1	2	3	4	5	10	don't	Amount
ALT	70	2	4	3	4	4	0	13	100
BATAN	87	1	1	1	1	1	2	7	100
NW	46	18	6	3	1	3	3	20	100
Amount	62	10	4	2	1	3	2	15	100

76%

ALT: Altavas,
NW: New Washington
Don't: Don't know

The result shows that it is too short to recover the resource, because it generally takes more than 3 years

7

Do you agree that there is no need to worry about the sea and the fish ?

Unit: Percentage

Degree	Strongly Disagree	Disagree	Somehow Disagree	No Opinion	Somehow Agree	Agree	Strongly Agree	Amount
ALT	10	36	6	0	8	24	17	100
BATAN	15	31	2	1	6	14	32	100
NW	15	41	4	1	5	20	15	100
Amount	14	37	4	1	6	19	20	100

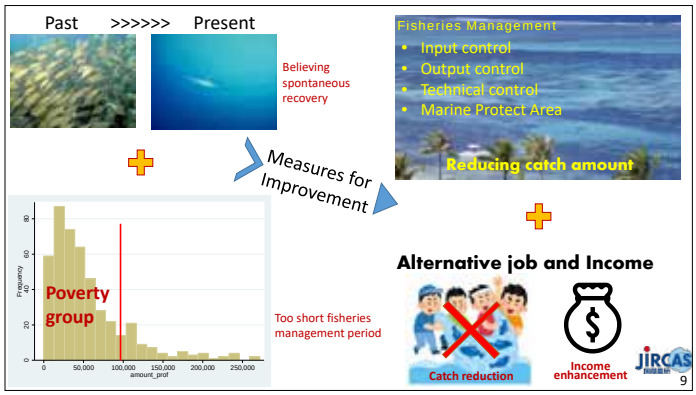
Alt: Altavas
Nw: New Washington

55%

45%

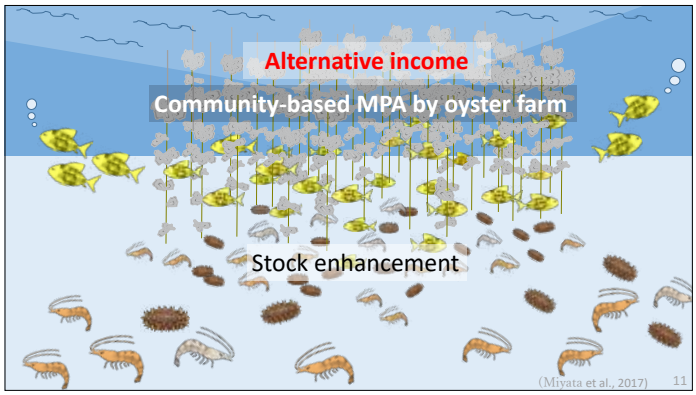
They believed spontaneous recovery

8

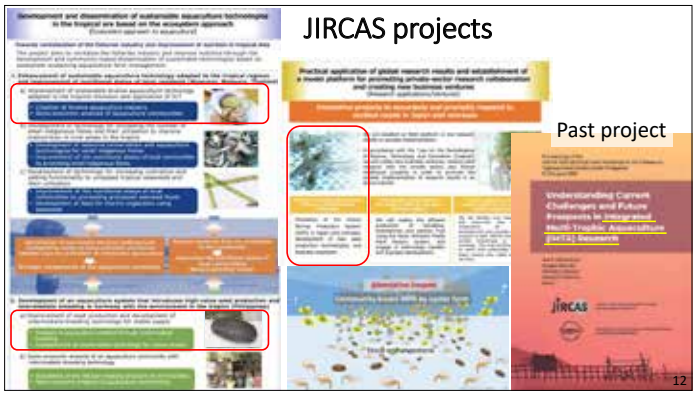


9

10



11



12

Acknowledgments

This case study in the Philippines has been supported by the Research Institute for Human and Nature (Area capability project, No.14200061)

References

- Greer, K., Zeller, D., Woroniak, J., Coulter, A., Winchester, M., Palomares, M. L. D., & Pauly, D. (2019). Global trends in carbon dioxide (CO2) emissions from fuel combustion in marine fisheries from 1950 to 2016. Marine Policy, 107.
- Tsutom Miyata, Ryutaro Kamiyama, Alice Joan G. Ferrerr (2017). Consciousness of Fishers for Fisheries Resources in Poor Fishing Village: Case of Northern Panay Island, Philippines. Journal of International Cooperation for Agriculture development, 15, 21-31.(in Japanese with English Abst.)
- Altamirano, J. P., & Kurokura, H. (2010). Failing inshore fisheries in Batan Estuary, Aklan, Central Philippines. Journal of Nature Studies, 9(1), 13-20.
- Wilson, D. C. and McCay, B. J. (2001). Fishery management, human dimension. Encyclopedia of Ocean Sciences (2nd edition) vol. 2, pp 116–121, Elsevier Ltd
- Altamirano, J., Nambu, R., Salayo, N. D., & Kodama, M. (2022). Understanding current challenges and future prospects in Integrated Multi-trophic Aquaculture (IMTA) research. Proceedings of the JIRCAS-SEAFDEC/AQD Joint Workshop on IMTA research held at SEAFDEC/AQD, Tigbauan Main Station, Iloilo, Philippines on 6-8 August 2019.

13