China Aquatic Products Processing and Marketing Alliance
Qingdao Marine Conservation Society

Recommendations on strengthening the conservation of crab resources and management of seahorse habitat in Minnan-Taiwan Bank fishing ground

Respected Bureau of Oceanography and Fisheries of Fujian Province,

We hereby send you a special letter serving as reference for policy-making, with information related to the background of our project, the main problems found and recommendations to strengthen the conservation of crab resources and the management of seahorse habitat in Minnan-Taiwan Bank fishing ground.

1. The background of the project

Located in the transition area between the East China Sea and the South China Sea, Minnan-Taiwan Bank fishing ground is one of the important marine fishing grounds of southern China, with rich nutrients and high primary productivity. These fishing ground contain abundant and diverse fishery resources, including fishes, crustaceans and cephalopods, among which crab resources account for 12%-17% of the total. Major crab species with high economic value, including *Monomia haanii*, *Portunus sanguinolentus*, *Charybdis natator*, *Cancer pagurus*, *Charybdis feriatus*, are the main catches of local coastal fishermen.

Zhangzhou City in Fujian Province is an important center of marine crab fishing in China and the largest processing base of crab products exported to the United States. However, since 2013, despite measures of resource conservation such as the summer fishing moratorium system, relevant domestic exporters and U.S. importers have reported that the crab resources in Minnan-Taiwan Bank fishing ground, on which the industry depends, have already shown signs of a decline.

In order to assist the government in better assessing the fishing sustainability of crab resources in Minnan-Taiwan Bank fishing ground, conserving and using fishery resources on the basis of science, and promoting the healthy development of fisheries, in August 2018, several organizations including China Aquatic Products Processing and Marketing Alliance (hereinafter referred to as “CAPPMA”), Qingdao Marine Conservation Society (hereinafter referred to as “QMCS”), the US-based National Fisheries Institute Crab Council and Ocean Outcomes collectively launched the Red Swimming Crab (*Monomia haanii*)

Fishery Improvement Project (FIP) in Zhangzhou City. Through long-term cooperation among industry associations, NGOs, academic institutions and fishing communities, based on scientific knowledge and practical experience, this project aims to assist the Bureau of Fisheries in identifying the existing problems and propose recommendations for policy making, ultimately promoting the sustainable management of fishery resources of Minnan-Taiwan Bank fishing ground with two targeted species—*Monomia haanii* and *Portunus sanguinolentus*.

2. Main problems

Professor Liu Min's team from the College of Ocean and Earth Sciences of Xiamen University who provided scientific support for the project and QMCS jointly conducted continuous surveys and data collection between 2019 and 2021 on bottom trawling and trap fisheries in Dongshan County of Zhangzhou City. The main problems derived from the research results are as follows:

1) Compared with the historical data from 1993 to 1995, the CPUE for *M. haanii* is significantly decreasing, showing a clear trend of decline of its resources.

2) Through surveys, crabs share a main spawning season in February-April, with another season in August-September. The current fishing moratorium policy is not able to effectively protect the main spawning season from February to April. Due to the unavailability of data during the fishing moratorium, it is unknown if there is an additional spawning season during this period;

3) The bottom trawl gear does not meet the minimum legal mesh size, and the selectivity of caught species is very low.

4) Among the bottom trawl catch of *M. haanii*, the average percentage of individuals smaller than the legally defined minimum catch size is significant;

5) The proportion of "feed fish" (the part of harvest used for feed instead of direct human consumption) in bottom trawl catch is relatively high;

6) Bycatch of seahorses and other endangered, threatened and protected (ETP) marine species by bottom trawl fishery were recorded during port surveys;

7) Compared with the bottom trawl fisheries, the trap fisheries are more selective for the target catch. In order to avoid competition with bottom trawlers, fishers conducting trap fisheries often choose to work at sea on windy or even stormy days, and the situation of overloading crab cages was observed. This is causing higher operational risks;

8) Trap fisheries are dependent on wild pelagic fishery resources to some extent due to need for baits;

9) There is a problem of gear loss for trap vessels. This could potentially cause the problem of "ghost fishing".

Some of the above-mentioned project results have been published in research reports. Three academic papers have been successively published in influential international journals— *Fisheries Science* and *Frontiers in Marine Science*. This project has filled the gap in the biological study of crab resources in Minnan-Taiwan Bank fishing ground.

To address the issue of ETP species bycatch in bottom trawling fisheries, supported by Zhilan Foundation, in 2020, QMCS conducted special research in Minnan-Taiwan Bank fishing ground.

3. Policy recommendations

The period of the "14th Five-year Plan" is crucial to the high-quality and modern development of the policy of China's fisheries "Ensuring supply, increasing income through sustainable development". Ensuring the safe and effective supply of aquatic products and fishers' continuously increasing income should be considered as the primary task. The state needs to comprehensively deepen the reform of the fishing management system, to effectively break many bottlenecks of the development of "fishing industry, fishing village and fishers" (promoting high-quality and efficient fisheries, making fishing villages suitable for living and working, ensuring the well-being and increasing income of fishermen), to ultimately comprehensively promote rural revitalization.

The state has clearly pointed out that in terms of marine fishing, it will continue to promote the rational utilization of fishery resources, reduce fishing capacity, strictly control fishing activities that are highly destructive to resources and the environment, explore fine fishing management, steadily achieve the full implementation of the total allowable catch (TAC) system, and push forward the reform and improvement of the management system of fishing ports. In terms of fisheries resources conservation, China will continue to enhance the capacity of conservation and restoration, improve the fishing moratorium system, strengthen the protection and management of rare and endangered aquatic wildlife, severely punish the stealing, indiscriminate fishing and other illegal use of aquatic wildlife, actively promote the establishment of the laws and regulations of aquatic wildlife protection, improve supporting rules and regulations, lay a solid foundation for advancing the governance of fisheries and safeguarding national ecological security.

Based on the above objectives and initiatives, in order to better conserve and utilize crab resources in Minnan-Taiwan Bank fishing ground, to protect biodiversity as well as to promote the sustainable and healthy development of marine fisheries, five specific recommendations are provided by CAPPMA and QMCS as the followings:

First, attach importance to adjusting the structure of fishing capacities. In accordance with the fishery resources and the ecological carrying capacity of Minnan-Taiwan Bank fishing ground, it is recommended to implement the "double reduction" in bottom trawling (reduction total number of trawlers and total amount of engine powers of trawlers) that

causes most severe damage to the fishery resources and the ecological environment of the fishing ground. On the basis of science, it is encouraged to replace part of bottom trawl capacity with cage & pot capacity, which is more friendly to fisheries resources and the fishing ground environment. The promotion of the use of cage & pots installed with release holes for juvenile crabs could further reduce the pressure on fisheries resources.

Second, strictly enforce the regulations on the mesh size. The Ministry of Agriculture and Rural Affairs prohibits the use of fishing gears with mesh sizes below relevant minimum size requirements. The minimum mesh size of trawl in the area of the East China Sea is 54 mm.

Third, strictly implement the regulation on the minimum harvestable size for all relevant target species. In accordance with the regulations released by Fujian Province, the minimum catch size for *M. haanii* is set at 8.0 cm CW. It also requires the proportion of juveniles in the total catches of all species per vessel per trip to be <30% in 2019, and <20% in 2020 and afterward.

Fourth, establish marine protected areas covering key seahorse habitats as soon as possible. Based on our preliminary research of seahorse habitat (the concentrated areas) in Minnan-Taiwan Bank fishing ground, it is recommended to take further effort to locate all major seahorse habitats and protect these areas from bottom trawling. It would be great to establish part of the Minnan-Taiwan Bank fishing ground of high conservation value as legally defined marine protected areas, with a purpose of reducing bycatch of seahorses and other endangered, threatened and protected marine species and potential benefits for the recovery of commercially important fisheries resources.

Fifth, strengthen the supervision and management of fishing ports in accordance with the law. Starting from the main ports and docks in Dongshan County, it is suggested to implement the reform of fishing port management on a trial basis, to enforce the management of landing of fishing vessels at designated points, to strengthen the supervision of the fishing vessels' entering and leaving the port as well as the counting and verification of the landed catch.

Yours sincerely,

China Aquatic Products Processing and Marketing Alliance
Qingdao Marine Conservation Society
December 8, 2021

Copy to: Bureau of Ocean and Fisheries of Zhangzhou City

CAPPMA has shared this document with the Bureau of Fisheries and Fisheries Administration of the Ministry of Agriculture and Rural Affairs of the Central Government.