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Research Article

Problems and Countermeasures on the Fishery Development in the South China Sea*

Abstract

The South China Sea is one of the most abundant fishery areas in the world, which is a typical multi fish species area. The South China Sea Fisheries can be divided into four parts, the northern continental shelf offshore fisheries, Xisha Qundao, Zhongsha Qundao and Nansha Qundao coral reef fisheries, the northern slope fisheries and Southern Ocean, rising flow fisheries. In recent years, the ecological environment of the South China Sea has been severely damaged, resulting in the fisheries resources becoming poor increasingly, in the meantime, there exist other problems, such as the effect and validity of unilateral management of the fishery resources is still limited, bilateral and multilateral cooperation are not yet mature. Therefore, to strengthen the multilateral cooperation is the effective way for the development of fishery resources in the South China Sea. In order to avoid disputes, as a large marine ecosystem, the South China Sea with the ecosystem approach as a guide for cooperation, while carrying on the multilateral cooperation, shall keep in line with the characteristics of the fisheries resources. In the process of practical cooperation, we shall conclude the multilateral cooperation treaty, implement the fishing dynamic monitoring system in the South China Sea, establish the conservation organizations on fishery cooperation and promote the development of leisure fishery in South China Sea vigorously.

Preface

The South China Sea (SCS) is famous for its abundant fishery resources, which deeply influence the life style of the coastal residents [1]. The SCS is one of the most abundant fishery areas in the world, which is a typical multi fish species area. For centuries, The SCS has been on the coastal open, fishermen and other countries will not be driven or controlled by other countries [2]. However, with the increase of the coastal fishermen and the destruction of the environment, the SCS fishery resources are decreasing year by year.

Therefore, how to maintain the sustainability and balance the production and conservation is of great significance. At the same time, more and more fishery disputes need to be properly solved. These are the practical needs of the multilateral cooperation among the countries around The SCS.

This paper is divided into four parts: the first part introduces the distribution of the fishery resources in The SCS. The second part analyses the present situation and existing problems of fishery development in The SCS. The third part studies the countermeasures of the cooperation on the development of fishery resources in the SCS resources. The fourth part puts forward suggestions on the specific measures for the development of fisheries cooperation in the SCS.

The distribution of the fishery resources in the SCS

The SCS is located across the tropical and subtropical, from east longitude 109°3'E—118°45'E, consisting of more than 200 islands, reefs, beaches. Fishery in the SCS can be divided into the following parts.

Northern coastal continental shelf fishing ground: Generally speaking, this area refers to the depth of 200 meters within the

continental shelf area, which is one of the highest productivity about fishery resources in the SCS. This area is also the highest resource density. In addition, the fishery condition is good, but in recent years, due to over fishing and other reasons, there has been a serious trend of shrinking on fishery resources.

Xisha, Zhongsha and Nansha coral reef fisheries: There are nearly 2 million square kilometers of the fishing area above the coral reef, stands depth 200 meters in The SCS, of which the Nansha Islands accounted for nearly 80%. The total amount of fishery resources in the area is large, and there are many kinds of high quality, but in recent years also appeared in the trend of decline.

The northern slope fisheries: This area includes a depth of 200 to 1000 meters and 1000 to 2000 meters deep-water area, which is a relatively rich in fishery resources, however, this area is still in the initial stage of development. So, whether it is suitable for large-scale commercial development is also to be tested.

Southern Ocean, rising flow fisheries: This area is distributed a large number of Oceanic Fishery Resources, such as tuna and cuttlefish and so on, which has a great development value, and its potential is huge.

Overall, the fishery resources have been excessive development and utilization in some areas in the SCS, however, there still have enough place for the countries around the SCS to develop in the future.

Current situation and problems of the development of fishery resources in the SCS

The ecological environment of the SCS has been destroyed: The SCS is the largest marginal sea in the Asia Pacific, and has the

characteristics of marine species diversity, ecosystem diversity and genetic diversity. The SCS has many types of marine ecosystems as many as 5000 kinds of marine organisms, such as coral reefs, sea grass beds, islands, mangroves, upwelling and so on. Thus it is the center of the world's marine life. In the past 20 years, due to rapid population growth, economic development and the impact of globalization, this area has significant degeneration of ecological system, the ecological diversity is decreased and the habitat of biological resources has been severely damaged.

The fishery resources are declining in the SCS: As we know, the SCS is the natural fishing grounds. However, in recent years, neighboring countries recognize the importance of marine economy, and these countries has a long coastline, so they has a unique advantage while developing the marine fishery, in order to obtain the maximum economic benefits, they are focusing on the development of fishery resources in the SCS, and also take special support for their fishermen to encourage their fishing boats into the SCS. Fishing production of the countries around the SCS showed a rising trend. Although the fisheries resources are renewable, the SCS is a semi enclosed sea, which is not affected by marine environment factors. Provided the fishing activity is too much, it will lead to the limited capacity for regeneration, and is lack of capacity of the foreign supplement, but rely on its own water environment. Once the fishing capacity exceeds the capacity of resources, the marine ecological environment in the SCS has been seriously damaged, and the fishery resources are obviously declining.

The effect and validity of unilateral management of the fishery resources is limited: Compared with other biological resources, the biggest feature of marine fishes is migratory or swimming. Although some topographic features may cause obstacles to the fish swimming, the ocean is a connected whole. In the meantime, swimming fish do not belong to anyone but belong to the fishermen who caught them. The marine environment is a whole ecosystem, environmental factors that are needed between fishery resources and its survival or development influence each other. The pollution of a certain sea area will affect other waters, and the destruction of the marine environment will directly lead to the decline of fishery resources.

With the characteristics of public, overall, migratory, marine biological resources can't be achieved through the efforts of individual countries while conserving and managing. In order to protect marine biological resources, we must, first stand in the position of the whole human, ensure the unity and consistency of action, rather than seek international cooperation on the premise that the state will continue to expand its jurisdiction. Therefore, marine fisheries protection should be redirected to the road of strengthening international cooperation and the implementation of national responsibility.

Bilateral and multilateral cooperation are not yet mature: Currently, cooperation on the development of fisheries resources is still mainly in the form of bilateral in the SCS. Apart from the Tonkin Gulf Cooperation on conservation of fisheries resources between China and Vietnam is comparatively successful, the efforts made by other waters and their effect are relatively limited. Countries around the SCS have also participated in the organizations such as the ASEAN fisheries coordination organization, the Southeast Asian

Fisheries Development Center (SEAFDEC) and other fisheries organizations, but still have not solve the problem about illegal fishing in the SCS completely. Until now, the SCS region has not yet formed a multilateral fishery organization with public trust and executive power, has not established the overall monitoring, control and surveillance measures, no disputes settlement mechanism and has not made the overall arrangement of the fishing moratorium, fishing zone. Compared with other cooperation maintenance mechanisms about fisheries resources in the world, the fishery multilateral cooperation is still in the initial stage in the SCS.

Countermeasures on the fishery development in the SCS: multilateral cooperation

Legal basis for multilateral cooperation (UNCLOS): The article 61 of United Nations Convention on the Law of the Sea (UNCLOS) provides that the coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation. The article 61 of UNCLOS stipulates the actions shall be taken within the exclusive economic zones of two or more coastal States or both within the exclusive economic zone and in an area beyond and adjacent to it. Especially, the article 64 of UNCLOS provides the appropriate modes to protect the migratory species. In order to fulfill the liabilities above said, the article 123 of UNCLOS provides that the states bordering an enclosed or semi-enclosed sea should co-operate with each other in the exercise of their rights and in the performance of their duties.

SFSHMFS: Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (SFSHMFS) requires the coastal and marine flag state, port state shall cooperate with each other, so as to perform the maintenance and management measures for straddling fish behavior and highly migratory species more effective [3]. SFSHMFS provides the general principles and basic mechanisms for cooperation on for management and conservation of highly migratory fish among the coastal States and the high seas countries, calls for that the developed countries must pay attention to the requirement of the developing countries, settlement of disputes peaceful. Therefore, SFSHMFS provide a more specific legal basis for protecting the highly migratory fish in the SCS.

CMHMFS: For effective conservation and sustainable use of the western and Central Pacific highly migratory fish stocks, Japan, Indonesia, the Philippines, China and other countries around the SCS joined the Convention on the Conservation and Management of High Migratory Fish Stocks in the Western and Central Pacific Ocean (CMHMFS). CMHMFS stipulates the provisions about the concrete measures on the conservation and management of highly migratory fish stocks, the commission for the conservation and management of highly migratory fish stocks, the obligations of members of the commission, requirement of developing states, peaceful settlement of disputes and so on. It is no doubt that CMHMFS, as further refinement on the Conservation and Management of High Migratory Fish Stocks in the Western and Central Pacific Ocean, is

conducive to the promotion of cooperation between coastal states on the protection of highly migratory fish, to promote the development of the national economy in the coastal areas and enhance political mutual trust as well.

The choice of cooperation mode: Further to the choice of cooperation mode, in accordance with the principle of value choice and policy consideration, we can divide the model into four types. Regional agreement on the temporary fishery border agreement, such as the delimitation negotiations about exclusive fishing zone between Australia and Indonesia [4], regional agreement on grey zone [5], regional agreement on white zone [6], regional agreement on light grey zone [6].

The aforementioned four models for the SCS fishery cooperation, there exist some difficulties and limitations, since both temporary fishery boundary delimitation and the delineation of the joint development area will cause the ecological system in the SCS artificially fragmented. In order to avoid disputes, as a large marine ecosystem, the SCS with the ecosystem approach as a guide for cooperation, while carrying on the multilateral cooperation.

Large marine ecosystems (LMEs) was first proposed by the famous American scholar Sherman and Alexander, which adopts the different criteria with UNCLOS which determine the jurisdiction of states by distance criteria and natural extension. LMEs considers the marine ecosystem as an independent unit and manage it with this notion, so that it can achieve the purpose of better conservation of marine living resources. LMEs refers to the coastal areas from the river basin and the Gulf to the shelf edge of the continental shelf or to the edge of the coastal circulation system. LMEs is generally more than 200 thousand square kilometers, it has a unique characteristics of the seabed topography, hydrology, productivity and biological population and nutrient interdependence [7].

LMEs is adopted to manage the fisheries resources in the SCS, which is conducive to a comprehensive understanding of the status of fishery resources in the SCS, so as to formulate a management rules consistent with its own characteristic and the law of development, and through the implementation of coordinated and rules, we can avoid disputes during fishery production and realize the maintenance and development of fisheries resources in the SCS. Furthermore, in theory, based on the principle of LMEs, the fisheries cooperation is essentially an international cooperation, and it is in the common interest of the neighboring countries [8]. Of course, it is naive to discuss governance in the SCS without touching the territorial dispute, for as long as the operational framework of the marine management is still based on the partition, the territorial dispute is inevitable [9]. Therefore, while implementing the management of the SCS by the mode of the ecological system, it is bound to encounter many difficulties, and the divergences between countries are inevitable. Thus, it is not easy to achieve success. In any case, cooperation should be the best way to conserve fisheries resources, and sustainable use is the ultimate goal, we should not let the political barriers affect the cooperation between countries in an indefinite period.

Specific measures of cooperation

Countries around the SCS conclude a multilateral agreement: As a semi closed sea, there is a large number of neighboring countries

around the SCS, since the migratory fishes migrate to coastal States instability, single national protection can't achieve the effective result. From the perspective of LMEs, the SCS need more cooperation among peripheral countries, and it is conducive to the realization of the maximum benefit of the marine ecosystem, which is also in line with national interests around the coast. Therefore, it is feasible to conclude an agreement on the cooperation in the protection of fishery resources. We may refer to the provisions under UNCLOS, The Antarctic Treaty, SFSHMFS and CMHMFS, then conclude a Convention on the cooperation of protection of fisheries in the SCS. In this convention, it shall stipulates the basic principles and specific measures for fish conservation and management, the provisions about the requirement of developing states and cooperation between developed states and developing states, peaceful settlement of disputes dispute settlement procedures and establish more reasonable protection cooperation mechanism combined with the actual situation of the SCS. Considering the economic capacity and fishing income to support money to establish the cooperative conservation fund. In all, this convention shall be recognized as the legal basis on the fishery cooperation in the SCS.

Implementation of dynamic monitoring system for fishing: Firstly, we shall strengthen cooperation between neighboring countries and establish the guideline for cooperating based on practice. Further to the problem of illegal fishing, in order to regulate the production behavior of fishermen, abovementioned convention should establish a legally binding international treaty and punishment method. Secondly, countries around the SCS shall develop a unified standard to forbid some special fishing gear and methods and carry out joint conservation and management of fishery resources. Lastly, we shall learn from the measures adopted by Malaysia and Brunei, they adopted MCS measures (Monitor, Control and Surveillance, MCS), to strengthen fisheries management through fishermen registry, vessel position monitoring and other aspects.

Establishment of cooperation and protection organization on fisheries: With the enhancement of political mutual trust among the countries around the SCS, the development of improvement and protection of marine resources and practices on the fishery cooperation, it is advisable to establish an organization to protect the fish.

As we know, China and Japan signed the Sino Japanese fisheries agreement, in which provides for the establishment of Fishery Management Council that is responsible for fisheries matters of cooperation between the two countries, according to the resources status, their fishing, traditional fishing and other related factors. We can refer to Sino Japanese fisheries agreement, we may set up an organization for the protection of cooperation: establish the conservation organizations→ found the special protection and Management Committee →elect an executive council.

Promote the development of leisure fishery in SCS vigorously: Leisure fishery is a new way of fishery industrialization, and it is also the result of the fishery structure advancement. Leisure fisheries have developed rapidly since 1960s in Japan, Australia, Western Europe, Canada and other economically developed coastal countries and regions, and gradually become the country's pillar industries of Fisheries economy. Leisure fisheries have a major impact on the



economy, society and ecology, and it is a world industry with billions of dollars [10].

Conclusion

Although the SCS has abundant fishery resources, with the increase of the coastal fishermen and the destruction of the environment, the SCS fishery resources are decreasing year by year. In the recent years, the coastal states of the SCS has recognized the seriousness of this problem, and began to develop a sense of cooperation, however, cooperation on the development of fisheries resources is still mainly in the form of bilateral in the SCS currently. As a matter of fact, the most effective countermeasures on the fishery development in the SCS is multilateral cooperation, therefore, in the process of practical cooperation, we shall conclude the multilateral cooperation treaty, implement the fishing dynamic monitoring system in the South China Sea and establish the conservation organizations on fishery cooperation.

Highlights

The distribution of the fishery resources in The South China Sea

Current situation and problems of the development of fishery resources in the South China Sea

Countermeasures on the fishery development in the South China Sea: multilateral cooperation

Specific measures of cooperation

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