

## **Advisory Opinion**

# **The Future of Japan's Fishery Resource Utilization: A Medium- to Long-Term Perspective**



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**Science Council of Japan**

**Subcommittee on Fisheries Science ,  
Committee on Food Science**

This Advisory Opinion summarizes and publishes the results of the deliberations of Subcommittee on Fisheries Science, Committee for Food Science, Science Council of Japan

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## **EXECUTIVE SUMMARY**

### **1 Background**

The fishing industry, along with the coastal communities that utilize it as an industrial base, are currently encountering several challenges, including decline in fishery resources, number of fishers, and demand for seafood in addition to an aging population. The Subcommittee on Fisheries Science published a report on these issues in 2004 and subsequently provided recommendations in 2011, 2014, and 2017. This article discusses several aspects, including fishery products as food, supply and demand of fishery products, aquaculture, ocean monitoring, carbon neutrality, distribution and consumption, and social awareness and education, which have not been discussed in previous expressions of intention. Furthermore, we have organized such aspects based on scientific evidence to outline the necessary measures for medium-to-long-term utilization of fishery resources toward 2050. Moreover, considering the urgent need for effective management of fishery resources, this paper also proposes an improvement plan for fishery resource management based on the current harvest state, with the goal of achieving optimal and sustainable production.

### **2 Current situation and problems**

Human activities have caused substantial changes in the global environment and ecosystems, with discernible impacts on the ocean, resulting in considerable decline in marine biodiversity. Such changing global environment and ecosystem have also caused changes in the distribution and productivity of fishery resources. With regard to medium-to-long term implications, there is now a need to reassess the current utilization of fishery resources which is based on the assumption that these resources remain stable. Hence, several issues exist in the utilization of fishery resources, ranging from production to consumption.

### **3 Proposal**

#### **(1) Fishery products as food**

The global demand for seafood as a healthy and sustainable source of nutrition continues to increase. In order to encourage conservation of biodiversity and the sustainable utilization of Japan's diverse fishery resources, particularly from the perspective of consumption behavior, it is urgently required to evaluate the impacts from fishing and aquaculture on environment and biodiversity for various target species in Japan

respectively. Furthermore, it is essential to establish a certification system in Japan based on this assessment ahead of other countries.

## (2) Supply and demand of fishery products

There is high uncertainty regarding the perspective of the supply and demand of fishery products, emphasizing the need to maintain and reinforce domestic production systems. To this end, systematic efforts should be made to strengthen the management of fishery resources and preserving the fishing environment, such as implementing aquaculture production compatible with the changing environmental conditions; devising strategies to reduce losses in the production, processing, and distribution processes of fishery products and waste at the consumption stage; and promoting local production for local consumption and distribution of substandard fishery products through diversification of distribution.

## (3) Fishery resource management

There is an urgent need to appropriately manage fishery resources. Prior to the establishment of an ecosystem approach-based fishery resource management system, adaptive resource management should be implemented promptly by estimating and analyzing the number of young fish newly recruited to the stock every year, calculating the biologically allowable catch, and setting the allowable catch based on this information.

## (4) Aquaculture and breeding

Efforts should be made to improve production efficiency in various aquaculture industries including introduction of new species for aquaculture, and the introduction of information and communications technology (ICT), artificial intelligence (AI), and robot technology, and to enhance productivity by developing useful traits through selective breeding. In addition, it is crucial to foster global collaboration in addressing challenges common to the field of aquaculture production, leveraging Japan's extensive expertise, experience, and technological advancements that Japan has accumulated so far.

## (5) Ocean monitoring

In order to understand environmental and ecosystem changes and the state of resources and to contribute to measures to address the related issues, fishery practices and oceans should be monitored to dramatically increase the spatiotemporal density of data acquisition, and resource assessment research based on this should be promoted.

## (6) Carbon neutrality

In addition to direct reductions in CO<sub>2</sub> emission in fishing and aquaculture operations, there is a need to make efforts to promote use of certain types of foods at lower trophic

levels, local production and consumption of fishery products, and reduction of food loss, and awareness-raising activities toward the above-mentioned efforts. Furthermore, there is also a need to promote the development of new methods for preserving fishery products with minimal energy input. Additionally, initiatives aimed at conserving natural seaweed as a carbon sink and promoting seaweed cultivation should be actively encouraged.

#### (7) Consumption and distribution

There is also a need to promote research and development aimed at efficient distribution and consumption of the abundant aquatic flora and fauna in Japan. This entails creating developing systems to align unique products generated in limited quantities, with a diverse array of products and varied consumer needs.

#### (8) Social awareness and education

To effectively implement the aforementioned measures, it is imperative for producers and consumers to comprehensively understand proper utilization of fishery products. For this purpose, there is a need to foster environmental improvement by promoting understanding of fishery products and fishing industry through social awareness and school education. Furthermore, it is vital to secure environment, including establishing sustainability standards for the certification of fishery products; ensuring more easy access to information for consumers regarding the life cycle assessment (LCA) of products among other parameters and developing guidelines for promoting consumption of healthy and sustainable food.