(1) Fisheries Resources in the Waters around Japan

○In the management of fisheries resources, it is indispensable to estimate the resource abundance, catch strength, levels, and trends through stock assessment, and, based on the results of such assessment, to take appropriate management measures.

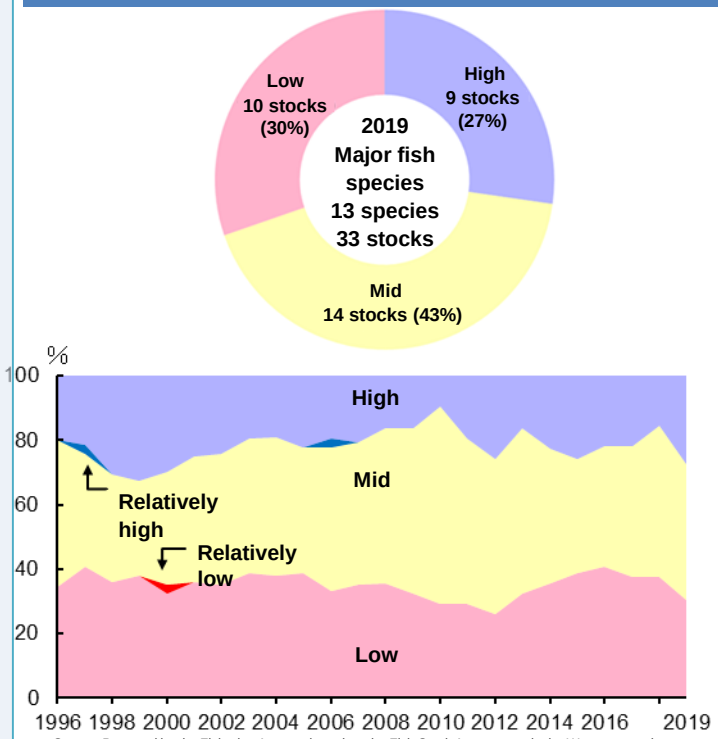
○In FY 2019, the number of fish species subject to stock assessment was increased from 50 to 67.

○The results of the FY2019 stock assessment in the waters around Japan (for 80 stocks) show that resource levels are high in 19 stocks, moderate in 26 stocks and low in 35 stocks.

○As for particular major 33 stocks of 13 species closely linked to the lives of people, resource levels are high in 9 stocks, moderate in 14 stocks and low in 10 stocks.

○For the implementation of new resource management, resource evaluation based on MSY is carried out for 7 stocks of 4 fish species, and the proposed resource management targets and catch scenarios are announced.

Status and Trends in Resource Levels in the Waters around Japan (Major Species)



Source: Prepared by the Fisheries Agency, based on the Fish Stock Assessment in the Waters around Japan (the Japan Fisheries Research and Education Agency and the Fisheries Agency)

(2) Japan's Fisheries Resource Management

i. Japan's Fisheries Resource Management System

○Techniques for resource management are primarily classified into 1) input control, 2) technical control, and 3) output control. These methods are appropriately used and combined in Japan to properly manage resources, taking into account the characteristics of fisheries, the number of fishers, the status of targeted stocks, etc.

○Shellfish and algae harvesting, set net fishing, aquaculture, and inland water fisheries are managed under the fishery rights system. Offshore and distant fisheries are managed on the basis of a fishing permit system.

○The TAC system has so far covered eight fish species. Currently, TAC fish species covers 60% of catch.

○In the future, the TAC will be set according to resource management targets, including the value of resource levels that achieve MSY. The goal is that 80% of the catch will be under control of TAC management by gradually expand the TAC species.

○The IQ system is introduced gradually, starting with the fishery permitted by the minister. For coastal fisheries, the possibility of introducing them when they are ready is discussed.

Correlation Between Resource Management Methods

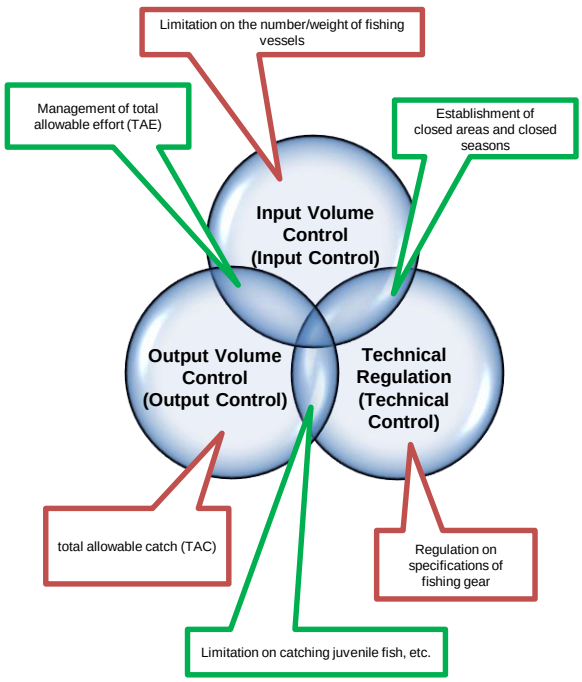
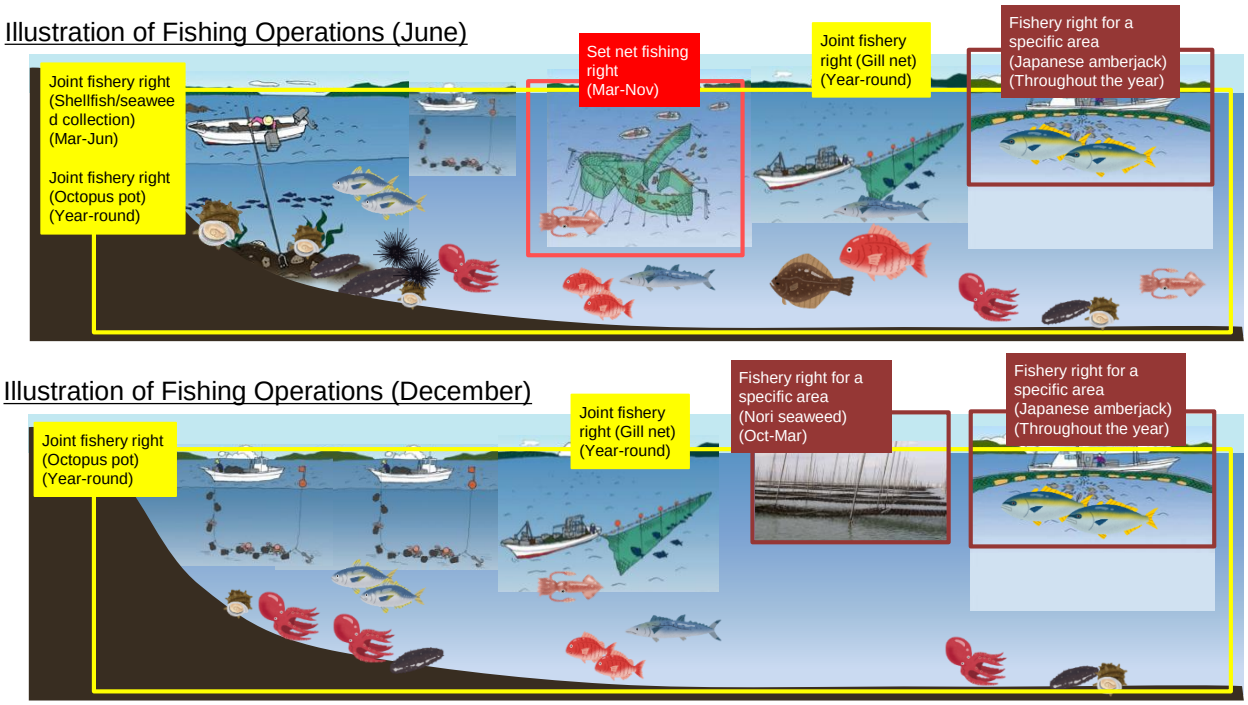


Illustration of Stereoscopic and Overlapping Use of the Sea Surface in Relation to Fisheries with Fishery Rights



ii. Joint Management Based on a Resource Management Plan

○ The national and prefectural governments set the Resource Management Guidelines and implement a resource management system from FY2011 and the fishers and groups of fishers develop and implement a resource management plan. In addition, the “Resource Management and Income Stability Measure” is implemented for fishers who are systematically engaged in resource management.

○ The previously-conducted Resource Management Plan based on the Resource Management Guidelines is gradually replaced by the Resource Management Agreement based on the new Fishery Act, with an aim at more effective voluntary resource management by fishers themselves.

(3) Approaches to Practical, Effective Resource Management

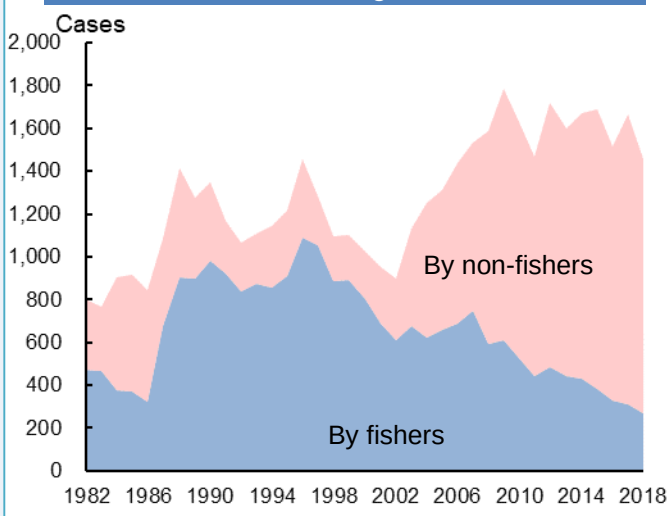
i. Prevention of poaching and fishery control in coastal areas of Japan

○ The number of arrests for violation of fisheries laws and regulations stood at 1,569 in 2018 (1,484 in coastal waters and 85 in inland waters). The number of poachings conducted by non-fishers has increased. In particular, the poaching of reef resources, which is systematically conducted by antisocial forces, has become more vicious and sophisticated.

○ Authorized fisheries supervisors are engaged in regulatory activities in cooperation with the coast guard and police officers while fishers belonging to fisheries cooperatives patrol fishing grounds and implement measures to prevent poached catches.

○ Under the new Fishery Act, the penal provisions are considerably strengthened, such as introducing penal provisions, in order to effectively cause disadvantage to offenders and prevent poaching.

Trends in the Number of Arrests for Violation of Fisheries Laws and Regulations in Japan‘s Marine Regions



Source: Prepared by the Fisheries Agency

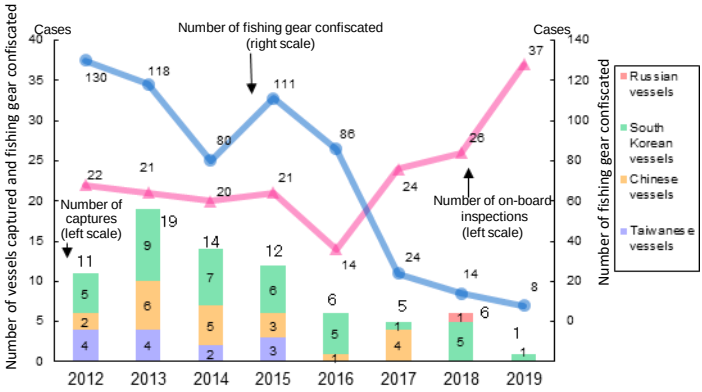
ii. Monitoring and prevention of foreign fishing vessels

○ In 2019, the Fisheries Agency conducted 8 on-board inspections and captured one foreign fishing vessel and the number of confiscations of illegal fishing gear totaled 37.

○ In waters surrounding Yamato ridge of the Sea of Japan, illegal operations conducted by fishing vessels belonging to North Korea, etc. is a problem that hinders the safe operation of our fishers. To this end, fishery control vessels have been intensively deployed in the same water area in collaboration with the Japan Coast Guard to address the situation. In 2019, the number of vessels recommended for removal by the Fisheries Agency totaled 5,122.

○ In response to illegal fishing operations by foreign fishing vessels in neighboring waters, the government is strengthening its fisheries control system by deploying two new fisheries control vessels to Niigata and Sakaiminato in FY2019.

Trends in the number of foreign fishing vessels captured or inspected



Source: Prepared by the Fisheries Agency

Fisheries control vessels discharging water to Chinese fishing vessels in the waters around Yamato ridge in the Sea of Japan

(4) Measures to Actively Enhance Fisheries Resources

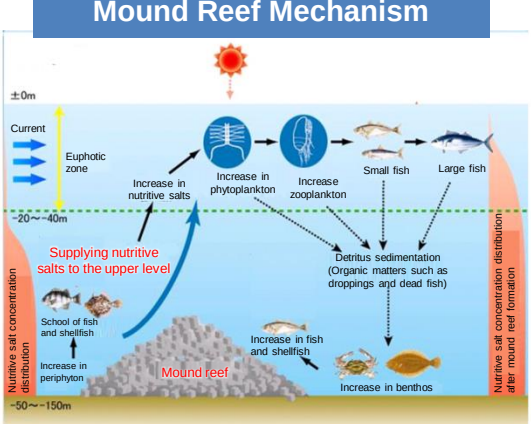
○ In each area, a seedling release program to raise juvenile fish to certain sizes for release in order to increase resources is conducted mostly by prefectural culture fisheries centers.

○ The government promotes such programs as the Resource-creating Farming Fisheries, in which part of adult fish are conserved for reproduction.

○ For the purpose of increasing fishery resources in the offshore area, the Fisheries Agency is developing preservation and nursery artificial reefs for spawning and rearing of snow crabs and other species, and mound reefs to increase the productivity of the sea area by generating vertical mixing.

○ Inland water fisheries cooperatives, meanwhile, are working on programs to release sweetfish/eel seedlings and set up spawning beds.

Mound Reef Mechanism



Column **The 39th National Convention for the Development of an Abundantly Productive Sea**

The 39th National Convention for the Development of an Abundantly Productive Sea—Akita Convention—Commemorating the Emperor's accession to the throne was held in Akita Prefecture in September 2019 as an event commemorating accession of the Emperor to the throne, based on the theme of "Sea development, continuing future, and rich community." The Emperor and Empress handed over sailfin sandfish, cherry salmon, ezo abalone, wakame seaweed fry, and other items, and later released them at various locations in Akita Prefecture.

The Emperor and the Empress handing over juvenile fish, etc.
(Photo courtesy: Akita Prefecture)

(5) Trends in Fishing Ground Environment

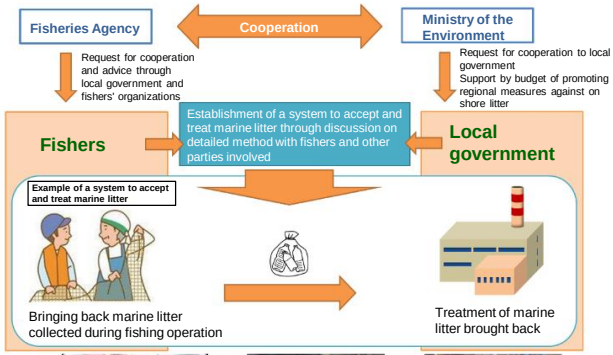
- It is important to raise the productivity of the entire ecosystem by preserving seaweed beds and tidal flats and recovery of their functions. The national government will promote wide-area measures in which the creation of seaweed beds and tidal flats by local governments and the conservation activities of fishers and others are combined.
- For aquaculture grounds, fishery cooperatives and other organizations have formulated a Fishery Ground Improvement Plan that summarizes water quality targets and the amount of fish that can be appropriately cultured. This is supported by the Fisheries Income Stabilization Measure.
- Decreased and unevenly distributed nutrients may have reduced the primary productivity of the sea, leading to fading of seaweed color and a decline in fish and shellfish. The government promotes surveys and research to find out the impact, and examination of the proper nutrient management.
- For inland waters, based on the " Guidelines on Promotion of Inland Water Fisheries ", the government promotes activities to recover and conserve the habitat in cooperation with related government ministries and agencies, local public organizations, and inland fisheries cooperatives.
- To mitigate effect of climate change, achievement of Smart Fisheries using ICT and implementation of electric or hydrogen fuel cell fishing vessels are promoted to reduce greenhouse gas emissions. The development of aquaculture breeds that are resistant to high water temperatures is also promoted as adaptation measure.
- Marine plastic litter affects not only the environment and ecosystems, but also fisheries, such as contamination of fish catches. The Fisheries Agency 1) develops and disseminates fishing gear recycling technology and develops fishing gear made of environmentally friendly materials, 2) promotes the collection of marine litter by fishers in cooperation with the Ministry of the Environment, and 3) supports local coastal cleanups.

Overview of climate change adaptations by the Ministry of Agriculture, Forestry and Fisheries (summary)

	Future forecast	Specific Measures
Marine fisheries	Decrease and downsizing of chum salmon and saury	Development of release methods for juvenile salmon and other fish that can respond to changes in the marine environment
Marine aquaculture	Areas suitable for aquaculture are predicted to move northward, causing some areas to become unsuitable for aquaculture.	Development of aquaculture breeds resistant to high water temperatures
Freshwater fisheries and aquaculture	Decrease in the number of specialty products (Isaza) due to the expansion of poor oxygenated water in Lake Biwa	Assessment of environmental changes in rivers and lakes and of the effects of these changes on the habitat and abundance of important resources
Developed fishing grounds	The distribution area of many of the target species moved north.	Understanding changes in the distribution area of marine organisms due to climate change, and promoting the development of fisheries in response to those changes
Fishing ports and fishing villages	Increased wave heights and increased high-tide deviation may cause damage to fishing port facilities.	Continued promotion to systematically raise fishing port facilities such as breakwaters and landing sites and develop coastal protection facilities with tenacious structures.

Source: Prepared by the Fisheries Agency, based on overview of climate change adaptations by the Ministry of Agriculture, Forestry and Fisheries (the Ministry of Agriculture, Forestry and Fisheries)

Collection and treatment of marine litter(measure by bringing back those in fishing net)



(Photo) Provided by Kagawa Prefecture

(6) Damage to Fisheries Caused by Wildlife and Mitigation Measures

- Reports have come out about damage to fisheries caused by wildlife such as steller sea lions and *Ascidiella aspersa*. For wildlife that range/migrate across prefectural borders, for which broad-based measures are expected to be effective for damage prevention/reduction, the national government supports investigations on the occurrence status, the provision of related information, the development of technologies to reduce damage, and control activities, etc.
- Inland water fisheries have been facing the problem of feeding damage to resources caused by largemouth bass, great cormorant, etc. Control measures against them are promoted.

<Steller Sea Lions>

Steller's Sea Lions' Feeding Damage to Catches

<Largemouth Bass>

Feeding Damage by Non-native Fish

(1) Trends in Fisheries and Aquaculture

○ The volume of domestic fisheries and aquaculture production was 4.42 million tons in 2018, which is higher by 120,000 tons than in the previous year. Marine fisheries production was 3.36 million tons, which was higher by 100,000 tons than in the previous year. The productions of scallops, saury, and skipjack increased, while those of anchovy and horse mackerel decreased. Marine aquaculture production increased by 20,000 tons to 1 million tons. Inland water fisheries and aquaculture production decreased by 5,000 tons to 57,000 tons.

○ The production value of domestic fisheries and aquaculture was 1, 557.9 billion yen in 2018, which is lower by 48.2 billion yen than in the previous year. The production value of marine fisheries decreased by 23.5 billion yen to 937.9 billion yen, that of marine aquaculture decreased by 19.1 billion yen to 506.0 billion yen, and that of inland water fisheries and aquaculture decreased by 5.6 billion yen to 114.1 billion yen.

Trends in the Production Volume and Value of Japan's Fisheries and Aquaculture

<Production volume> (1,000 tons)

		2017	2018
Production volume	Total	4,306	4,421
	Marine	4,244	4,364
	fisheries	3,258	3,359
	Distant water fishery	314	349
	Offshore fishery	2,051	2,042
	Coastal fishery	893	968
	aquaculture	986	1,005
	Inland water	62	57
	fisheries	25	27
	aquaculture	37	30

Source: Fisheries and Aquaculture Production Statistics (the Ministry of Agriculture, Forestry and Fisheries)

<Production value> (100 mil. yen)

		2017	2018
Production value	Total	16,061	15,579
	Marine	14,864	14,438
	fisheries	9,614	9,379
	aquaculture	5,250	5,060
	Inland water	1,197	1,141
	fisheries	198	185
	aquaculture	998	956

Source: Fisheries Output (the Ministry of Agriculture, Forestry and Fisheries)
Note: The fishery production value was obtained by adding the seedling production value to the fishery output (a value estimated by multiplying the production volume of fisheries and aquaculture by the wholesale prices in the landing area, etc.).

Column

About the poor catch of salmon, saury and squid

The catches of salmon, saury, and squid in 2019 are all at record low levels.

Causes for the poor catch may include the effect of seawater temperature and fishing of some fish species by foreign fishing vessels.

In order to clarify the causes, it is necessary to scientifically analyze factors such as the status of resources and changes in the marine environment based on a variety of data spanning multiple years, and it is important to establish a system for the continuous collection of data.

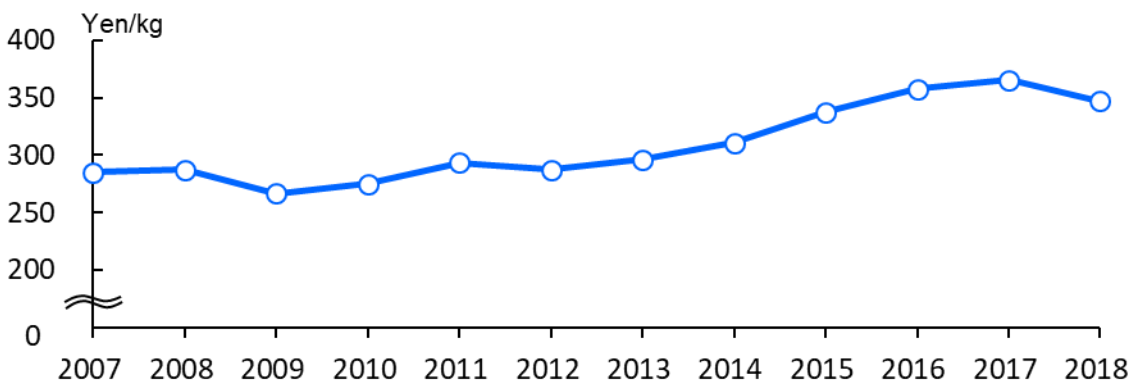
(2) Trends in Fishery Management

i. Trends in the Local Prices of Fish and Fishery Products

○ The prices of fish and fishery products vary depending on multiple factors such as fluctuations in resources, production status of various fish species due to weather and other factors, and trends in domestic and international demand.

○ In recent years, the average local price in fisheries and aquaculture was on an upward trend. In 2018, it decreased by 19 yen/kg from the previous price to 347 yen/kg.

Average Local Price in Fisheries and Aquaculture

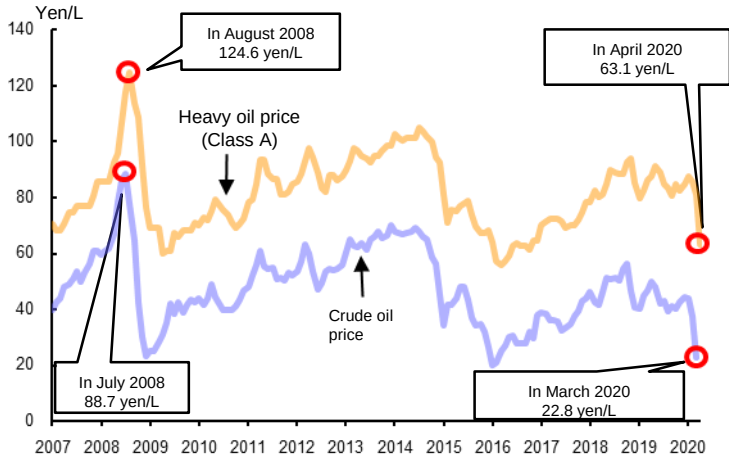


Source: Prepared by the Fisheries Agency, based on the Fisheries and Aquaculture Production Statistics and the Gross Fisheries Output (the Ministry of Agriculture, Forestry and Fisheries)
Note: Estimated with the fisheries/aquaculture output divided by its production volume.

ii. Trends in Management of Fisheries by Fishing Vessels/Aquaculture

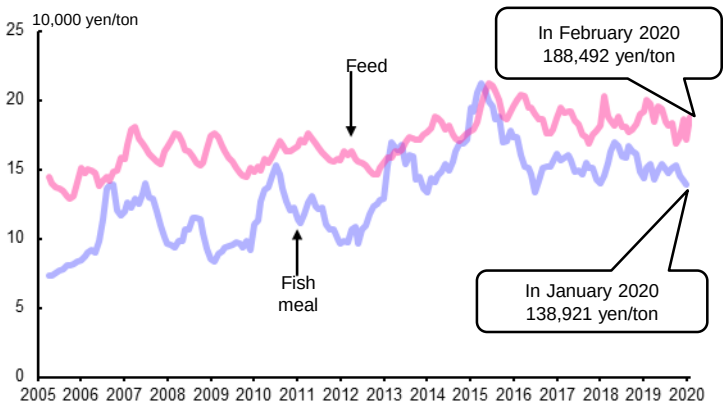
- The average fishing income of private management bodies of coastal fisheries using vessels in 2018 decreased by 320,000 yen to 1,860,000 yen. The business income including non-fishing income was 2,050,000 yen.
- Businesses engaged in fisheries by fishing vessels reported that, in FY2018, the fishing income continued to be in deficit, but the operating profit including the non-fishing profits (from fish processing, etc.) was 2,820,000 yen.
- Fuel oil prices are at their lowest level in four years since 2016.
- The fishing income of marine aquaculture households in 2018 decreased by 4.02 million yen to 7.63 million yen as compared to the previous year.
- Imported fish meal prices in April 2015 increased to nearly 2.6 times the average price in 2005. Subsequently, the prices have slightly leveled off.
- When the price of fuel oil or compound feeds rise, a subsidy is provided to the fisher from funds reserved in advance by the national government and the fishers, in order to mitigate the impact of the price rise.

Trends in Fuel Oil Prices



Source: Prepared by the Fisheries Agency

Trends in Feed Prices and Imported Fish Meal Prices



Source: Trade Statistics (the Ministry of Finance), Prepared by the Japan Fish Feed Association and by the Fisheries Agency

iii. Seashore Revitalization Plan to boost incomes

- The "Seashore Revitalization Plan" aims to boost fishing incomes by at least 10% in five years with voluntary efforts to come up with measures and implement them. 647 cases entered an implementation stage by the end of March 2020.
- In FY2015, the "Wide-Area Seashore Revitalization Plan" also started, in which efforts are made to enhance wide-range competitiveness. By the end of March 2020, 154 cases were established and carried out.

Case Example **"Seashore Revitalization Plan" Suits for Each Region's Circumstances**

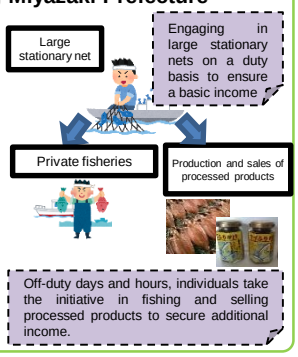
1) Regional Fisheries Revitalization Committee in Hyogo prefecture and Tajima Offshore Trawl Net Fisheries Subcommittee

Since FY2014, as part of the Seashore Revitalization Plan, new products have been developed and sold that maintain freshness, flavor, and texture by freezing fish on board, using cooled seawater tanks to maintain freshness, and introducing quick-freezing equipment. Through comprehensive efforts from production to distribution and consumption, an increase in fishing income of more than 10% was achieved in five years.

New firefly squid preserved fresh by quick freezing equipment "Hama hotaru" (Photo courtesy: Fisheries association in Hyogo Prefecture)

2) Regional Fisheries Revitalization Committee in Higashi District, Kushima City, Miyazaki Prefecture

Since FY2014, as part of the Seashore Revitalization Plan, the creation of a system that enables all fishers to engage in multiple fisheries, etc., with set net fishing as the mainstream, as well as branding and consumption expansion efforts in unison with the community. By working together as a community, an increase in fishing income of more than 10% was achieved in five years.



(3) Trends in Fishers

○ The number of fishers follows downward trends and totaled 151,701 in 2018.

○ Since 2002, the Fisheries Agency has been providing support for newcomers to the fishing industry, according to their stage of employment, so that even those with no fishing experience can enter and settle in the industry. In addition, in order to address the shortage of fishing vessel crews, we supported fishing guidance for students of fisheries high schools.

○ In the fisheries with vessels of 20 tons or more, problems of aging and shortage of licensed mariners have become serious. From FY2019, it has become possible for graduates of fisheries high schools to shorten the amount of time (one year and nine months) required to have a history of embarkation in order to sit for the Grade IV mariner examination.

○ Women play a more important role in the work ashore after landing and in the fishery processing industry. The national government supports the development of facilities for helping women's activities, consisting of waiting rooms for children, test kitchens, etc. It also sets up the Ocean Treasure! Suisan-joshi Genki Project in November 2018 to back up the reform of fisheries work sites into a women-friendly environment and to increase the appeal of fishery jobs.

○ Through the Specified Skilled Worker system, foreign nationals that satisfy certain criteria started to be accepted also in the fisheries field and the fishery processing industry from April 2019.

○ In the Technical Intern Training Program for Foreign Nationals, technical intern training is provided for nine types of fisheries/aquaculture work and eight types of fishery processing work.

(4) Trends in Fisheries Working Environment

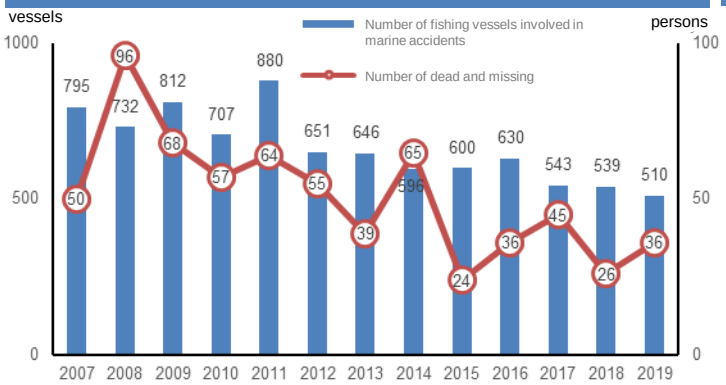
○ In 2019, the number of fishing vessels involved in marine accidents was 510, and the number of dead and missing reported in those accidents was 36.

○ Excluding those related to marine accidents, 81 fishers fell overboard in 2019, of which 51 persons were dead or missing.

○ Life jackets are vital to saving the lives of those who fall overboard (approximately doubling the survival rate.) In 2018 and ahead, all persons on board, in principle, any ship or vessel and outside the cabin are required to wear life jackets. In 2019, the rate of wearing life jackets in the event of a fall overboard was approximately 60%.

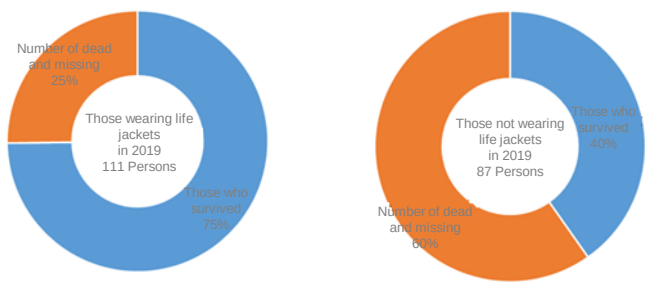
○ To improve the safety of small fishing vessels, demonstration tests to avoid collisions and grounding accidents by using smartphones are promoted.

Trends in the Number of Fishing Vessel Accidents and the Number of Dead and Missing Associated with the Accidents



Source: Marine accident status and measures (the Japan Coast Guard)

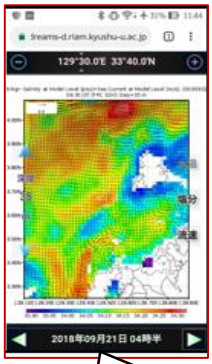
Survival Rates of Those Who Fell Overboard with and without Life Jackets



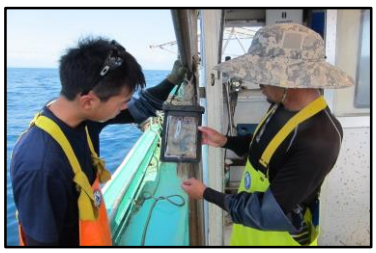
Source: Prepared by the Japan Coast Guard

(5) Development and Utilization of Technologies for Promoting Smart Fisheries

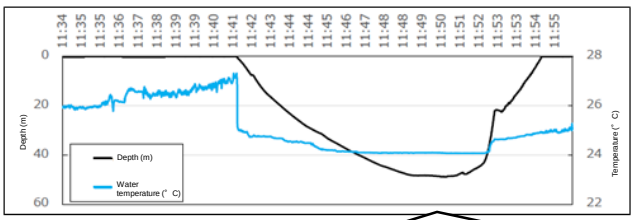
- In order to transform the fisheries industry into a growth industry, it is important to introduce and disseminate ICT, AI and other technologies to the fisheries and aquaculture.
- Support for efficient management, etc., through the development of Fisheries Data Coordination Infrastructure that enables the coordination, sharing, and utilization of data obtained in various fields.
- The Fisheries Agency has held Smart Fisheries Industry Study Workshop for Tomorrow's Fisheries since May 2019 to discuss promotion measures and other issues.



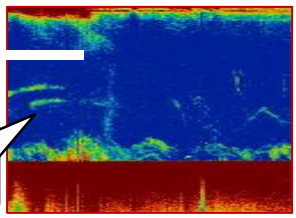
Seven-day prediction of flow speed and salt concentration
Display of motion picture of water temperature, salt concentration, and flow speed for each catch layer from surface to sea bottom



Guide based on data of new fishers



Visualization of underwater fishing gear motion which has not been clarified



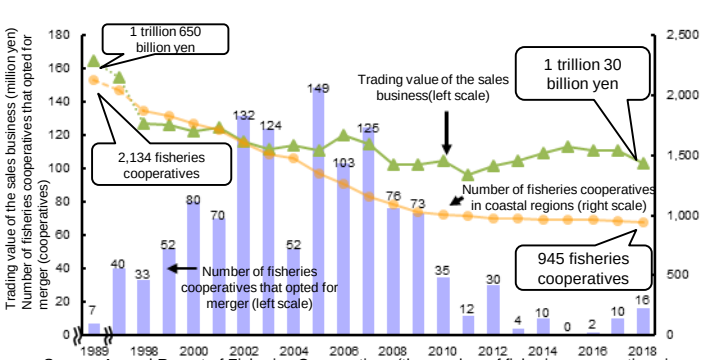
Visualization of fish finder's screen by smartphone

A smartphone-based fishery ground formation forecast screen, etc.

(6) Trends in Fisheries Cooperatives

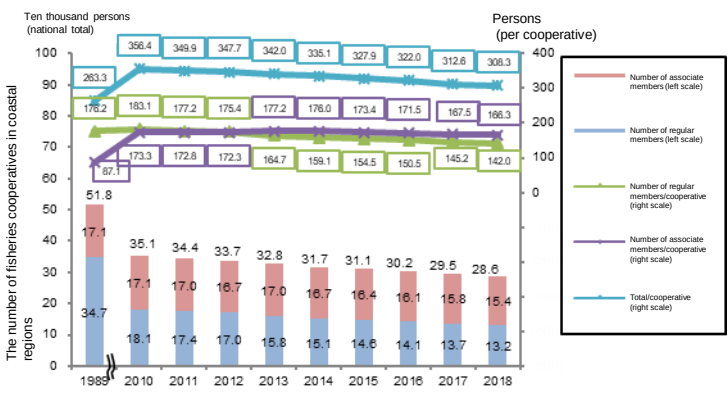
- A fisheries cooperative is an organization that plays a core role in contributing to stabilization and development of fishery management by business implementation such as sales, appropriately using and managing fisheries resources, and supporting regional economies and social activities in a fishing community.
- The number of fisheries cooperatives (in coastal areas) as of the end of March 2019 was 945.
- The number of fisheries cooperative members has been decreasing in line with a decline in the number of fishers. There are still many micro-cooperatives. There is a need to strengthen the cooperatives' business and management foundation through merger, etc. and to further reinforce their sales business.

Trends in the number of fisheries cooperatives in coastal regions, number of fisheries cooperatives that opted for mergers, and trading value of the sales business



Source: Annual Report of Fisheries Cooperatives (the number of fisheries cooperatives in coastal regions) and Statistics Table of Fisheries Cooperatives (trading value of the sales business) (the Fisheries Agency), and prepared by the JF Zengyoren (the number of fisheries cooperatives that opted for mergers).

Trends in the Number of Fisheries Cooperative Members



Source: Statistic Table of Fisheries Cooperatives (the Fisheries Agency)

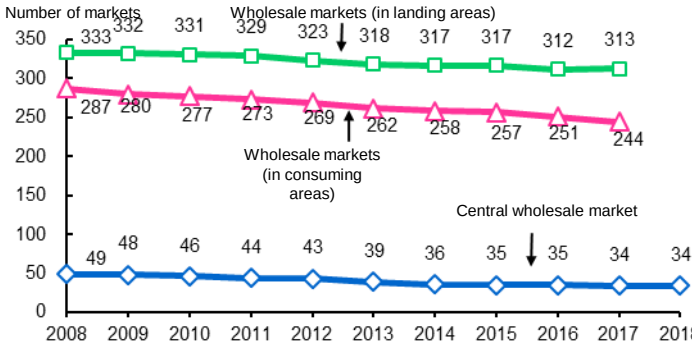
(7) Trends in the Distribution and Processing of Fish and Fishery Products

i. Trends in the Distribution of Fish and Fishery Products

○ The number of wholesale markets in landing areas had been flat in recent years and that of wholesale markets in consuming areas decreased.

○ Wholesales markets play a critical role in effectively distributing fish and fishery products. However, a challenge that wholesale markets in landing areas face is that many of such markets are small and in a weak position in terms of price formation. It is necessary to maintain and strengthen them through market abolition and consolidation, etc. For food distribution, it is important to respond precisely to the diverse needs of consumptive interests, etc.

Trends in the Number of Wholesale Fishery Markets



Source: Wholesale Market Database (the Ministry of Agriculture, Forestry and Fisheries)
Note: Data for central wholesale markets are the data at the end of every fiscal year but data for local wholesale markets are the data at the beginning of each fiscal year (up to FY2011) and at the end of each fiscal year (FY2012 or later).

ii. Role and Problems of the Fishery Processing Industry

○ Due to the growing trend of simplification and externalization of diet among consumers in recent years, the importance of processing has increased in the consumption of fishery products. It is necessary to develop products that meet the diversifying consumer needs.

○ Weaknesses in management, as well as strengthening the functioning of the entire region of production, are challenges for many processors.

iii. Response to HACCP

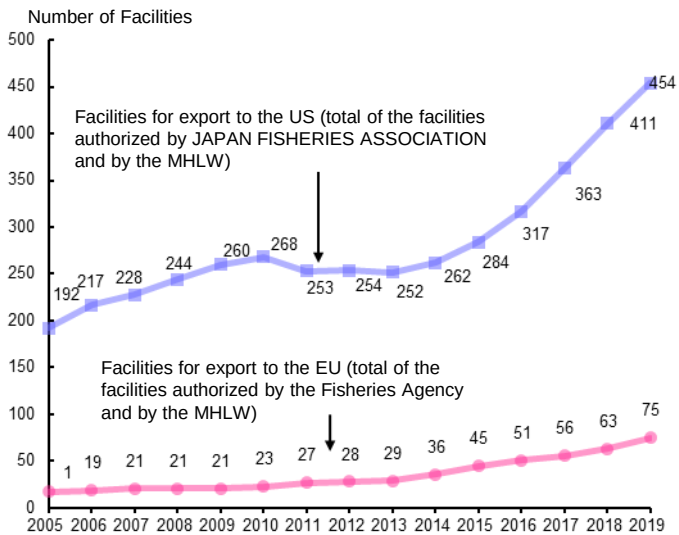
○ Fishery processing facilities, etc. need to implement the HACCP (Hazard Analysis Critical Control Point) system and to conform to related facilities criteria, as required by the export destination countries and regions, when exporting fish and fishery products to the United States, the EU, etc.

○ Accordingly, the government supports the holding of seminars, etc. about general sanitary control and HACCP-based sanitary control, and also supports the renovation, etc. of fishery processing and distribution facilities for acquiring the facility authorization required for export to the EU and the United States.

○ As of the end of March 2020, in the fishery processing industry, etc., the number of facilities authorized to export to the EU is 75, and the number of facilities authorized to export to the United States is 454.

○ Food business operators including fishery processors are going to be required to carry out HACCP-based sanitary control etc. after June 2020. (Current standards will be applied as a transitional measure until the end of May 2021.)

Trends in the Number of Facilities Authorized to Export to the EU/US in the Fishery Processing Industry, etc.



Source: Prepared by the Fisheries Agency