

2013 Annual Report on Aquaculture in Japan (Draft)

UJNR Japan Panel

1. Introduction

This report showed the latest topics in aquaculture, trends in production volume of major aquaculture species, and the aquaculture policy in Japan.

2. National policy on aquaculture

General

The New Basic Plan for Fisheries formulated in March 2012 defines recovery from the Great East Japan Earthquake as its top priority. It also calls for: (a) the full utilization of fishery resources primarily from the waters surrounding Japan, positioning resource management/fishery income compensation measures as a core policy; (b) the promotion of measures, including the creation of sixth industries and the improvement of sanitation control, in order to enhance processing, distribution, and consumption; and (c) the development of safe fishing communities.

The Plan sets the self-sufficiency rate of fish and fishery products for human consumption in 2022 at 70%.

Measures to be taken for Aquaculture and Stock Enhancement based on the New Basic Plans for Fisheries include the followings.

1-1 Steady Implementation of the Aquaculture Area Improvement Plan and Promotion of a Switch to Artificial Seedlings

As a step to ensure the sustainability of both abundant fishery resources and fishery business management, the Resource Management/Fishery Income Compensation Measure was launched in FY2011, and for aquaculture operators, for example:

If an operator strictly observes “the appropriate volume of cultured organisms” specified in “the aquaculture area improvement plan” prepared by a fisheries cooperative, etc., a decreased income of the operator will be compensated by the Resource Management/Fishery Income Compensation Measure so as to further facilitate establishment of the appropriate volume of cultured organisms and the observance thereof, and the aquaculture area improvement.

In addition, for eel, yellowtail, amberjack, Pacific bluefin tuna and other species in which the almost all of seedlings for farming come from the nature, steps are taken to develop the production technology of artificial seedlings and promote a switch to the

use thereof in order to achieve stable aquaculture production that gives consideration to the resource conservation. Furthermore, it is also important to pursue diversification of aquaculture area including offshore areas, land facility, etc., based on the characteristics of coastal regions which are susceptible to environmental changes.

1-2. Measures against red tide, etc.

Research & Development on the occurrence mechanism of novel-type red tide due to changes in the marine environment are accelerated in order to prevent or alleviate fishery damage by red tide. On the other hand, not only the frequency of oxygen-deficient water mass occurrence but also the scale thereof have recently increased, therefore, steps are taken to investigate the occurrence mechanism thereof and develop continuous monitoring devices such as an automatic observation buoy.

1-3. Advancement of Disease Control

We take measures to refine technologies of rapid diagnosis, prevention and treatment for diseases against commercially important aquaculture species. Steps also are taken to operate appropriately and effectively the Import Quarantine of Aquatic Animals system (conducted by the Animal Quarantine Service at the time of importation of aquatic animals) based on “the Act on the Protection of Fishery Resources (Act No. 313 of December 17, 1951)” and the Domestic Quarantine of Aquatic Animals system based on “the Sustainable Aquaculture Production Assurance Act (Act No. 51 of May 21, 1999)”.

1-4. Efforts for Resource Enhancement based on Stock Release

For wide-area species in which the number of the release of juveniles reared in hatcheries has been decreasing, the Council for Promotion of Stock Enhancement by Water Area facilitates liaison and coordination for the release activity in cooperation with the relevant prefectures.

It is encouraged to challenge resource enhancement based on stock release, which aims at increasing recruitments to not only a fishery but also natural population by supplementing a number of new broodstock through the release of hatchery-reared juveniles, instead of the conventional policy that the release of artificial juveniles has been intended to increase fishery production by retrieving released/grown individuals

from an open water as much as possible.

We make efforts to implement more efficient and effective programs of stock enhancement through intensive release, prioritization of target species, and the establishment of a joint work structure among hatcheries.

For inland-waters, while the release of healthy juveniles is promoted in order to protect the incidence of ayu (*Plecoglossus altivelis*) cold-water disease and other diseases, steps are taken to refine release methods of juveniles that give consideration to the genetic diversity of native population. In addition, measures are taken to promote advanced stock enhancement, for example, surveying/releasing to an optimum site and forming/constructing spawning grounds based on the characteristics of river/lake environments.

3. The latest topics in aquaculture

Topics 1.

Poor catch of commercially important species (chum salmon, Japanese eel) and measures therefor

In FY2012, the catch volume of important species such as chum salmon and Japanese eel resulted in a poor catch. In this regard, it is pointed out that the reasons of the poor catch include a variety of causes, for example, a high seawater temperature and changes in the habitat environment. It is important to investigate the causes as well as to take appropriate measures.

A small amount of chum salmon came to Pacific coastal regions, and furthermore the size of chum salmon migrated to Japan, as a whole, was relatively smaller. The Fisheries Agency plans from FY2013 to implement the investigation on the ecology of released fry in coastal areas after migrating down to the sea and other investigations.

A poor catch of juvenile eel (grass eel) for the third consecutive year in Eastern Asia such as Japan, China and Taiwan caused price hikes not only of grass eel for farming but also of kabayaki (a teriyaki eel) and other articles. The Fisheries Agency has conducted emergency measures for the eel industry (1. Measures for Eel Farm Operation, 2. Release of eel and Improvement of the River Habitat, 3. National/International Resource Management, and 4. Strengthening of Surveys and Research) in cooperation with relevant organizations since June, 2012.

Topics 2.

Strengthening of Resource Management for Pacific Bluefin Tuna

With respect to Pacific bluefin tuna, Japan is the largest fishing nation as well as the almost exclusive consuming nation of this species, and major Pacific bluefin tuna spawning grounds are around Japan, therefore, Japan has a special responsibility for the sustainable use of this species.

The Fisheries Agency announced “Actions toward effective conservation and management for Pacific bluefin tuna (May, 2010)”, having introduced the conservation and management measures in order to obtain accurate information on the reduction in the fishing mortality of juvenile fish and catching/farming reports in offshore fisheries, coastal fisheries and aquaculture, respectively.

In response to increase in the quantity of juvenile catches for farming as bluefin tuna aquaculture has grown, the Ministry of Agriculture, Forestry and Fisheries issued instructions of the Minister to prevent the number of farms and the capacity of cages from being more extensive than the present status (Oct, 2012).

The Fisheries Research Agency has initiated the Research Program toward developing the technology for the security of fertilized eggs, which is an important object for establishing the stable supply of artificial seeds. A new spawning land-facility for Pacific bluefin tuna was completed at Nagasaki at the end of March 2013,

Topics 3.

Research and development Strategy for Genetic Improvement of Aquatic Plant and Animals - How to advance future research? -

Fisheries Research Agency (FRA) developed the Research and Development Strategy for Genetic Improvement of Aquatic Plant and Animals to promote the breeding research in the fishery field effectively and efficiently.

The Strategy is composed by two chapters, (1) the present status of R & D in the field of fishery breeding, and (2) R & D strategy of this field for the future.

FRA would use this Strategy for the innovative research and development which contribute to improvement in the productivity in the aquaculture industry of Japan.

Contents

Objectives

Present status of R & D in the field of fishery breeding

(1) Breeding technology

(2) Organizations

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- R & D strategy for the future
- (1) Principle
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- Afterword

Topics 4.

Developed the New Methods of Aquaculture.

FRA has developed new methods of aquaculture on bivalves and land aquaculture. This culture method, has been attracting attention from all over the Japan .

New Methods of Bivalves Aquaculture

Manila clam “Japanese name Asari” is the one of the important coastal fisheries production in Japan, which is generally caught around tidal flats. But its wild catch is under the serious situation. We find the new technique to collect juveniles of Asari efficiently. To collect juveniles, we use “Careshell”, this is solid gravels made from powdered oyster shells, and gravel. Both are packed in mesh bags are set on the tidal flat. In next year, many juveniles can be found in these bags. We expect this system protect juveniles from physical disturbance and predations. These collected juveniles are used for suspended (hanging) culture, because the growth, body condition and survival rate in suspended culture show much better than that of wild Asari on tidal flats. These culturing Asari are delicious and sold at premium price. Moreover, we expect that these techniques might contribute to recover the wild populations and the catches through its reproduction.

Advanced Closed Recirculation Land Aquaculture System

An advanced closed recirculation aquaculture system for seawater fishes is now developing. This system needs little seawater, less fuel, and can keep fishes away from diseases. Some hatcheries have already innovated this system and made success in efficient seed production. It is expected that closed recirculation system will be popular in seawater fish aquaculture and contribute to food supply.

4. Production trends in aquaculture (Production volume in 2012)

In 2012, domestic fishery and aquaculture production increased 1.6% from the previous year to 4.84million tons. However, it is a decrease of 471,000tons (8.9%) in comparison with the 2010 production that before the East Japan great earthquake occurred.

3-1 Mariculture

In 2012, aquaculture production volume was 1,043,100 tons, a 174,400 tons (20.1%) increased from the previous year. The reason was that the production volume of scallops and algae increased.

Finfish Culture

Finfish culture's production volume was 250,500 tons, an 18,700 tons (20.1%) increased from the previous year.

Yellowtail's (*Seriola* spp.) production volume was 159,300tons, a 13,100 tons (9.0%) increased from the previous year.

Red sea bream's (*Pagrus major*) production volume was 57,700tons, a 3,500 tons (5.7 %) decreased from previous year.

Coho salmon's (*Oncorhynchus kisutch*) production volume was 9,700 tons, a 9,600 tons (9600.0%) increased from the previous year. The reason was that the culture facility destroyed by the Great East Japan Earthquake was partially restored in Miyagi prefecture.

Shellfish Culture

Shellfish culture's production volume was 349,700t, a 64,800tons (22.7 %) increased from previous year.

Japanese scallop's (*Patinopecten yessoensis*) production volume was 184,200 tons, a 65,800 tons (55.6 %) increased from previous year.

Oyster's (*Crassostrea* spp.) production volume was 165,000 tons, a 900 tons (0.5 %) decreased from previous year.

Algae Culture

Algae culture's production volume was 440,800 tons, a 91,100 tons (26.1 %) increased from previous year.

Laver's (*Porphyra* spp., *Monostroma* spp.) production volume was 340,900 tons, a 48,600 tons (16.6%) increased from previous year.

Wakame's (*Undaria pinnatifida*) production volume was 48,900 tons, a 30,100 tons (160.1 %) increased from previous year. The reason was that the culture facility destroyed by the Great East Japan Earthquake was partially restored in Miyagi prefecture and Iwate prefecture.

Konbu's (*Saccharina* spp.) production volume was 34,100 tons, a 900 tons (35.9%) increased from previous year.

3-2 Inland Waters Aquaculture

Inland aquaculture's, production volume was 33,963 tons, a 4,930 tons (12.7%) decreased from previous year. The reason was that the production of the eel decreased.

Japanese eel's (*Anguilla japonica*) production volume was 17,377 tons, a 4,629 tons (21.0%) decreased from previous year. The reason was that a poor catch of juvenile eel in coastal Japan.

Trout's (Salmonidae) production volume was 8,152 tons, a 70 tons (0.9%) decreased from previous year.

Ayu's (*Plecoglossus altivelis*) production volume was 5,195 tons, a 225 tons (4.2%) decreased from previous year.

Carp's (*Cyprinus carpio*) production volume was 2,964 tons, a 169 tons (5.4%) decreased from previous year.