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NEWSLETTER INTERNATIONAL

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May 2013, No. 44

FOR CONSERVATION AND SUSTAINABLE USE OF TUNAS

Bluefin tuna farming

Large scale bluefin tuna spawning facility to go on-stream this summer

The building for experiment on parent bluefin spawning, which the Fisheries Research Agency (FRA) had been constructing at the Seikai National Fisheries Research Institute in Nagasaki, western Japan, for the promotion of bluefin tuna farming, completed at the end of March this year. The new facility will go into full operation this coming summer.

The building was constructed in line with the Project Research entrusted by the government's Agriculture, Forestry and Fisheries Technology Conference, which aims to achieve stable production of 100,000 bluefin seedlings under the collaboration between the government and the private sector. The experiment facility with total floor space of about 4,600 square meters on a 9,556-square-meter site has two aquariums (with a diameter of 20 m and depth of 6 m), each with a capacity of 1,800 tons.

The 2.1-billion-yen project will be the first attempt in the world to collect bluefin tuna eggs on a land-based facility.

Amid rising expectation toward bluefin tuna farming-in response to strengthened international tuna stock management, the facility aims to procure eggs at a stable pace from parent fish not affected by natural environment, and supply seedlings for farming on a constant basis.

The land-based large-scale aquariums are capable of raising a total of 200 juveniles (100 for each). They are designed to promote maturity of parent fish by controlling

water temperatures and the amount of light at appropriate levels for egg collection in a bid to achieve stable egg acquisition.

Upon completion of the facility, FRA plans to transfer from late May to June the two-year-old bluefin tuna juveniles raised at its Amami Fish Farming Center, southernmost Japan.

In order to ensure the diversity of the species, the facility will initially aim to achieve stable egg production from juveniles collected and to be raised from the wild. In the future, it will pursue stable supply of seedlings for release into the ocean. Keiichi Mushiake, the head of the Seikai National Fisheries Research Institute's Tuna Propagation Center, expressed the hope to contribute to management of the bluefin tuna stock in Japan, the world's top tuna consuming country.

(This is a translation of an article of the SUISAN-KEIZAI, a Japanese fisheries daily.-Editor.)

Pacific bluefin tuna juveniles caged decreased 60%-- Fisheries Agency reports

The domestic shipments of farmed Pacific bluefin tuna in Japan in 2012 totaled 9,592 tons, slightly less than 10,224 tons in the previous year, according to the Fisheries Agency of the Japanese government on March 29. From 2010, the Ministry of Agriculture, Forestry and Fisheries (MAFF) required tuna farmers to report on the production results in order to tighten management of the Pacific bluefin tuna stock. Based on these figures, MAFF has been making the Pacific bluefin tuna production public on a calendar year basis since last year.

The 2012 results show that the number of enterprises engaging in bluefin tuna farming in Japan in 2012 remained unchanged from the previous year at 83 while the number of farming sites increased by three to 140 and that of farming cages increased by 160 to 1,191.

There has been no significant increase in bluefin tuna farming since October 26, 2012 when the Minister of



Agriculture, Forestry and Fisheries issued instruction to the effect that the scale of bluefin tuna farming sites and cages should not be expanded from the current level, in accordance with the management measures of the Western and Central Pacific Fisheries Commission (WCPFC).

The shipment volume of farmed bluefin tuna in 2012 totaled 176,000 fish, which was a decrease of 14,000 fish from the preceding year. Of this amount, 168,400 fish were derived from wild seedlings while 7,300 were taken from artificial seedlings. The shipment volume was 9,592 tons, down 623 tons–9,348 tons from the wild seedlings and 244 tons from artificial seedlings.

On the other hand, fish transferred into cages largely decreased as the catch of juvenile bluefin tunas saw poor catch on a nationwide scale, in a trend that continued from 2011. The number of fish transferred in 2012 decreased from 752,000 in 2011 to 474,000. Notably, wild seedlings decreased from 539,000 fish in 2011 to 206,000 fish, while artificial seedlings showed a slight increase from 214,000 fish to 268,000 fish.

The decrease does not immediately affect the shipment volume as farmed tunas are shipped after 2-3 years of farming period. But it remains to be seen how the shortage in cage transfer last year would affect the shipments in next year and afterwards.

Status of tuna resources

Is skipjack resource in the Western and Central Pacific sustainable?

--Fisheries Research Agency's report on the Status of International Resources in FY2012"--

Japan's Fisheries Research Agency (FRA) recently published its fiscal 2012 (April 2012-March 2013) report on "the Status of International Resources," in which it summarized the latest stock level, trend and management measures concerning 41 fishery resources including tunas which require international management. Our interest goes to tuna species in the Western and Central Pacific Ocean (WCPO). Will the skipjack, which has shown a rapid increase of catch volume in recent years, be able to sustain under the ever increasing fishing pressures? What will happen to the state of bigeye tuna, for which overfishing is taking place? In what follows, we present an excerpt of the portions of the report pertaining to those tuna species, together with bluefin and southern bluefin tunas--the two species whose stock levels were assessed as being at low levels.

WCPO skipjack

The overall catch of skipjack in the WCPO in 2011 stood at 1,557,000 tons, accounting for 87% of the total catch in the entire Pacific at 1.87 million tons. By type of fishing

method, the catch by purse-seine fishing accounted for 77% (preliminary figures), with that of pole-and-line fishery standing at about 13% and that of the remaining fisheries at 10%.

The catch volume in the WCPO, which had stayed at around 400,000 tons by the 1970s, increased to nearly one million tons in the 1990s, further rising to 1.2 million tons in 2002 and reaching 1.8 million tons in 2009. In 2011, though, the catch receded to 1.56 million tons. At present, the stock is being caught at a medium level, with fishing mortality rate staying at a sustainable level. However, high-level catch of skipjack in the tropical area is causing contraction in the distribution of its stock.

Amid drastic changes in the fishing mortality rates and stock indexes related to maximum sustainable yield (MSY) in recent years, the increasing trend in fishing effort should be closely monitored. Further increase in the purse-seine fishing efforts will allow only minimal increase in the catch from the long-term viewpoint but will also cause increase in the fishing mortality of bigeye and yellowfin. This aspect should be duly considered in the management of overall fishing efforts in the WCPO.

WCPO bigeye tuna

The catch of bigeye in the Pacific increased at a gradual pace from around 120,000 tons in early 1980s, with the catch staying at around 250,000 tons since 2000. The catch of the Pacific bigeye in 2011 was 235,266 tons, the lowest level in the past decade. Of this amount, the catch in the WCPO accounted for 159,479 tons (or about 68% of the catch in the entire Pacific). The MSY of bigeye in the WCPO is estimated at 74,993 tons, while the catch in recent years largely exceeded that level.

It should be concluded that, even assuming that the recruitment has been high in recent years, the recent catch level cannot be sustained for a long period of time. The Western and Central Pacific Fisheries Commission (WCPFC) decided to develop within 2013 a plan to dissolve overfishing and recover the stock in the five year period from 2013 to 2017.

Pacific bluefin tuna

The catch of this species in the recent five years stayed between about 18,000 tons and 25,000 tons. The stock is on a declining trend. The parent biomass in 2010 is close to the lowest level vis-a-vis the 1952-2010 biomass. There is expectation that the stock will increase in a medium- and long-term range if the management measures of relevant regional fisheries management organizations--WCPFC and the Inter-American Tropical Tuna Commission (IATTC)--are strictly implemented.

Western Atlantic bluefin tuna

The world's catch of this species in recent years stands between 1,600 tons and 2,000 tons. The stock trend indicates that the parent biomass is at a low level but tends to increase. The number of recruitment has been stable at a low level. If the International Commission for the Conservation of Atlantic Tunas (ICCAT) maintains the quota of 1,750 tons, which it adopted at its 2012 annual meeting, the 2003 excellent year class will support the parent biomass, providing a prospect for the increase of

the stock in the future.

Southern bluefin tuna

The world's catch of this species in recent years stands between 9,296 tons and 11,395 tons. The parent biomass remained unchanged in recent years. The number of immature fish is increasing and the possibility for future increase of parent biomass is high.

CITES

CITES decides to include sharks in Appendix II--Voice of opposition not heard

At its 16th meeting of the Conference of Parties held in Bangkok March 3-14, the Convention on International Trade on Endangered Species of Wild Fauna and Flora (CITES) decided to include Oceanic Whitetip Shark, three species each of Hammerhead Shark and Porbeagle in its Appendix II requiring exporting country's certificate in international trade.

The proposals for inclusion of those species were adopted despite the opposition from some members that (1) it is appropriate to leave their management to regional fisheries management organizations (RFMOs) because management measures have already been in place at relevant RFMOs and (2) there is no evidence that shows current international trade is affecting the species.

During the meeting, several Contracting Parties tabled proposals intending to limit the use of the secret ballot system. But all these proposals were rejected and the current system was maintained, allowing small countries hold fast their will without succumbing to the pressures from powerful countries and environmental NGOs.

The next CITES meeting will be held in South Africa in 2016.

Dr. Miyake's Tuna Chat

Four revolutions in tuna fisheries

Dr. Makoto Miyake

Visiting Researcher at the National Research Institute of Far Seas Fisheries

As we are all well aware, fisheries industry has evolved, continuously seeking higher fishing efficiency whilst maximizing profit. Such an evolutionary progress has been achieved by the constant efforts of fishers and technological people. In the recent history of tuna fisheries, there were several milestones in their development

The first turning point refers to development of purse seiners. It occurred in the eastern Pacific Ocean in the

1960s. Off the US west coast, baitboat (pole-and-line) fishing had been harvesting tropical tunas until that point. In the late 1950s, hydraulic power block was invented, which generated development of the modern purse seiners in the early 1960s. Because of its very high efficiency, purse seiners rapidly replaced baitboats. The further development of purse seiners was accelerated with the increase of their fish holding capacity and with the start of setting nets on dolphin-associated tuna schools. As a result, the harvest level, as well as catch per unit of effort, jumped up.

The second important development is the conversion of the distant water longline fleet to a "sashimi" fleet. It occurred just around the same time in the 1960s. The invention of the super freezer (of a temperature below minus 40 degrees in centigrade) made it possible to provide tuna caught and frozen by the longliners to the "sashimi" market. Accordingly, almost all the distant water longliners started fishing tuna for the sashimi market, instead of fishing tuna for the canning industry. This change brought a very significant increase in the unit value of the catches and hence profit of the longliners.

The third milestone is the development of deep longlines. In the 1970s, longliners started to set lines at a much deeper layer than the traditional depth, targeting large bigeye tuna, which have higher unit value in the "sashimi" market. This is not as revolutionary as the other developments but it did change the longline operating procedures completely, including the use of at-sea transshippers.

The fourth revolution is the adoption of fish aggregating device (FAD) in the early 1990s. This technique was developed from fishing on tuna schools associated with natural floating objects. This fishing method evolved very rapidly, together with high technological innovations (e.g. sonars, satellite positioning, etc.) making purse seiners super-efficient, and markedly changed the catch compositions in regards to species and size of fish.

It is interesting to note that these four major changes increased the profits of these fisheries to a great extent. However, the two revolutions in purse seine fishery increased its efficiency but not values (per unit of weight) and increased an impact on the tuna stocks. The other two revolutions in longline fishery have not increased its efficiency but the value of its products and contributed for higher utilization of the tuna resources.

We should remember that the changes in fisheries are not limited to the improvements of profitability and/or efficiency but that there are many factors which reduce them. They are, for example, fishery regulatory measures, adoption of mitigation methods of by-catches and ban of drift gillnets. The fishery is maintained through a balance of these opposite impacts on the profit of fishers

What would be the next revolution? Hopefully, that would be the one to improve values of products. Is tuna farming the next revolution?



Jiro's Critical Eye

Contribution of Nagasaki spawning facility to PBF conservation and management

Dr. Jiro Suzuki, Tuna Biologist

The construction of a land facility aiming at mass production of Pacific bluefin tuna is in the final stage in Nagasaki, Japan. This facility run by the National Fisheries Research Agency of Japan will begin operation in the middle of this year for producing 100,000 juvenile bluefin annually, through complete aquaculture, to be used for tuna farming.



The complete aquaculture means that the complete life cycle from egg to adult is successfully repeated for several generations under artificial conditions, like domestic animals.

In my view, there are multiple objectives for the construction. First, stable provision of the seedling in large amount to tuna farmers in Japan. In fact, the tuna farmers have been suffering from big fluctuation of availability of wild seedling. Second, this facility provides invaluable opportunities to conduct scientific experiments to improve knowledge of various key aquaculture aspects including finding better strains. Third, reduction of fishing pressure to juveniles among the wild bluefin population. Four, stabilization and restocking of the stock when it becomes necessary.

The third and fourth objectives have important implications for the management of the Pacific bluefin tuna. Recent stock assessment of the Pacific bluefin indicates that the adult fish population is in the lowest level in the last 60 years but reduction of taking juveniles toward appropriate level would rebuild the adult stock to a healthy level. Presently, out of the total 650,000 seed juveniles used for tuna aquaculture (3-4months old), around a 25% (150,000 fish) is produced by the complete aquaculture and the rest are taken from the wild stock. Further, the level of mass production of seedling by this facility would contribute much to recover the stock (The stock assessment of the west Atlantic bluefin tuna indicates that the level of recruitment of age one fish is about the same or less than 150,000 fish.)

New OPRT Member

Cook Islands joins OPRT as 25th full member

The OPRT Board meeting held on Feb. 20th approved the application submitted by Cook Islands Commercial Fishing Association Inc. (CICFA) to be a full member of OPRT.

CICFA represents the tuna fishing industry in Cook Islands. It is recognized by the Government of the Cook Islands as the appropriate body to join OPRT to promote responsible tuna fisheries for ensuring conservation and sustainable use of tuna resources.

OPRT welcomes CICFA as a new member--actually the 7th member representing industry in the South Pacific islands--and hopes it will help OPRT to reduce the gap between advanced tuna fishing nations and the island nations in dealing with the issue of overfishing capacity in the Western and Central Pacific Ocean.

Editorial

RFMOs' efforts needed to effectively control FADs

"Aware that approximately half of the global tuna catch comes from fisheries that employ Fish Aggregating Devices (FADs), but the information on the exact number of FADs deployed and their locations is generally not shared with fisheries scientists and managers"

"Concerned about the impacts from the unconstrained use of FADs including, inter alia, large increases in fishing mortality of juvenile Yellowfin and Bigeye, differences in sizes and ages of target catch compared with free-school caught tuna, increased difficulty of properly assessing the status of individual tuna populations..."

Above statements are excerpts from the preamble of the resolution adopted by the IUCN in the World Conservation Congress (WCC) held in the Republic Korea, 6-15 September, 2012. It explains the fundamental problem concerning the use of FADs to catch tunas. The resolution called on Tuna Regional Fisheries Management Organizations (RFMOs) to establish harvest control rules. It further called on tuna RFMOs and governments to take steps to improve the traceability of tuna catch, as well as to minimize illegal, unregulated and unreported tuna fishing. It goes without saying that the tuna RFMOs and their member governments, being responsible for ensuring sustainable tuna resources and fisheries, should establish rules to control FAD use.

The present situation in the Western and Central Pacific Ocean in terms of FAD use seems to be posing a serious and real problem causing overfishing. Namely, the total fishing days by using FADs increased to 21,500 days in 2011 from 13,032 in 2010 in the region against the introduction of a 3-month period banning the use of FADs. The measures were apparently not effective. The Western and Central Pacific Fisheries Commission (WCPFC) and its member governments are required to give serious attention to such a fact and make their best efforts to introduce more effective measures. Sustainable tuna fisheries in the region would become just a dream unless virtually effective measures are implemented. Differences in interests between advanced nations and developing nations should be overridden in dealing with this problem.