

# Conservation and Management of Saroma Lake through Aquaculture Cooperative

Aquaculture Cooperative of Saroma Lake  
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## 1. Present condition and the history of Saroma Lake

Saroma Lake is the third biggest lake in Japan and situated in the northeast of Hokkaido. The area is 150km<sup>2</sup> and the coastal line is 90km. The depth is 18m. There are four fishermen's cooperatives (Tokoro, Saroma, Yubetsu and aquaculture of Saroma Lake) and are 440 fisherman houses in Saroma Lake.

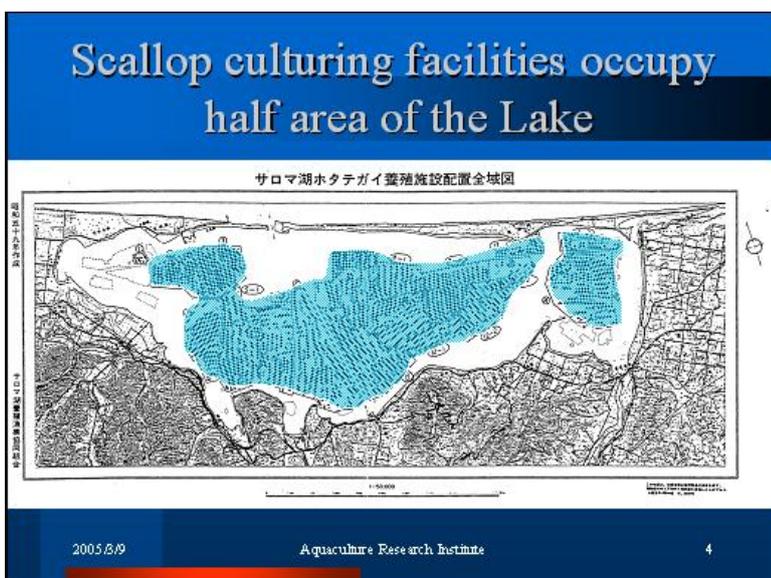


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Saroma Lake and its surrounding area are specified as a semi-national park now. Here is abounding in nature dating back to ancient times. Hokkaido government appointed Wakka wild flower field which located at the east side of Saroma Lake as a

Hokkaido Inheritance. We can see so many flowers blossom from spring to autumn, and also coral grasses can be seen in some place. In winter, eagles, swans and seals also can be seen on the ice.

Ryotaro Shiba, a representative Japanese writer said, "At the time their life dependent on the collection of food, Tokoro must be the richest place in the world." At present, Saroma Lake has very high productivity – more than half of the Lake's surface is used for the culturing of scallops and oysters. Saroma Lake is not only surrounded by nature, it is also greatly indebted to it.

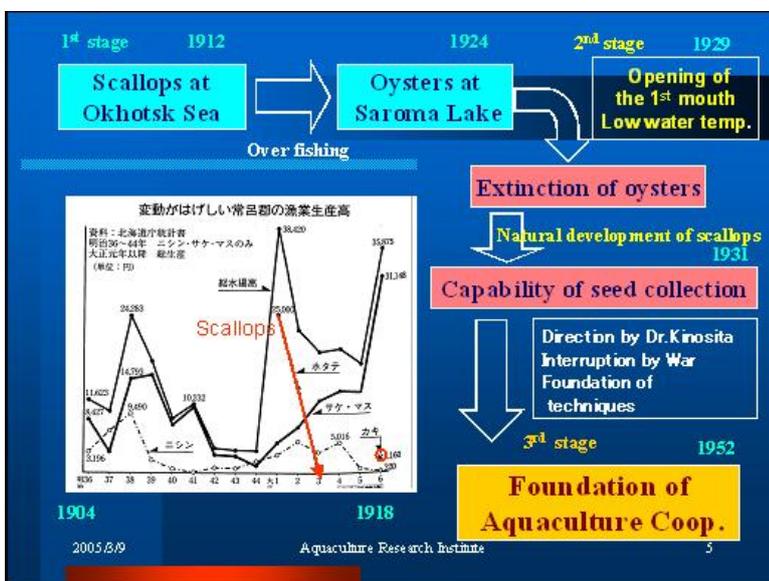


The annual fishery yield of Saroma Lake is approximately 10,000 tons. Eighty percent of the yield consists of cultured shells (scallops and oysters), and the rest is made up of natural inhabitants (shrimp, flatfish etc). The quantity of cultured shells is limited by the allowance level calculated by scientific researchers and is controlled to produce a constant

yield. The ecosystem of Saroma Lake is also made up of the artificial culturing controls.

Roughly speaking, there are two fishing rights in Saroma Lake. One is division fishing right for the culture of scallops and oysters which is managed by Aquaculture cooperation of Saroma Lake. Quotas of culture facilities are laid down for three cooperatives, and each cooperative rent them to each fisherman. The second right is the common fishing right. This is a right for the fishes which is living freely on the bottom or in the water of the lake as of sea-urchin, shrimp and salmon. Cooperative committee for common fishing right is organized by the member of three cooperatives. The seashore of Saroma Lake is divided into three administrations, but the surface of the lake is jointly owned by three cooperatives. Several member of the committee is selected from each cooperatives, they discuss about the managing way as research of resources, method for fishing and the handling of fishes.

The fishery history of Saroma Lake is divided into 3 stages. The first stage is the



natural scallop fishing in Okhotsk Sea at the beginning of 1900's but scallop resources disappeared for the over fishing, after that the oyster fishing prospered in Saroma Lake until 1928. The second stage began from the opening of the first mouth in 1929. The oyster couldn't spawn and extinguished. The third stage began from the foundation of Aquaculture Cooperative in 1952. Through the history of fishing

we've learned an importance of management of fishing. Conservation and management of Saroma Lake has begun from this stage.

Originally there had been an old mouth in the east side of the Lake but it was opened only from spring to autumn. From Meiji (1876- ) to Showa era (1926- ), fishery production around the Lake Saroma changed significantly, and people began to call for more stable fishing yields. In 1929, the first mouth was opened in the western side of the Lake. The opening of the first mouth brought a drastic change in eco-system. Salinity rose and water temperature didn't rise as before. The old mouth has closed and the main fish of the Lake has changed drastically. Before the first mouth was opened, oyster was the main yields for the people of the eastern coast. After the mouth was opened, however, the oyster died out.

To revive the oyster industry, Dr. Kinoshita was sent to Lake Saroma in 1931. He found young scallops while he was carrying out research on oyster culturing and discovered the possibility of scallop culturing. After that, the local fishery cooperative association took charge of collecting seeds, the fishery experiment station provided technical instructions and conducted biological research, and the Hokkaido Prefecture

Government was charged with managing the supply of scallop seeds. Then studies on scallop culturing began.

The fishermen of Saroma Lake discovered many problems as they worked to improve the collection of seeds, establish methods for getting the seeds through the winter and using a suspended culture, and they solved these problems on their own one after another. As a result of these endeavors, we were able to build the foundation for today's 500,000 ton scallop yield in Japan, but subsequently we encountered a number of problems.

In 1976, the massive death of scallop occurred, but the fishermen were able to overcome this after several years through their continued efforts. After the opening of new mouth, the circulation of water on the east side of the Lake worsened and river water began to covers the area every time there was a rainfall. It affected negatively for the scallop culturing. To improve the water quality in the eastern area, the second mouth was constructed between 1973 and 1977.

When the scallop culturing began, the yield for fishermen in Saroma was lower than the average for fishermen of Hokkaido. Through these processes, however, the average yield of fishermen in Saroma achieved a level beyond the average yield for Hokkaido. The annual production of cultured scallops in Saroma Lake is now approximately 7,000 tons. And more importantly, Saroma Lake has become the cradle for scallop seeds cultured in the Sea of Okhotsk, which produces approximately 80,000 tons of scallops each year.

## 2. The establishment of Aquaculture Cooperative and the management of Saroma Lake

In according to the revised Fishery Law, Japanese Government once bought up the fishing rights from fishery cooperatives and reissues them under the new system in 1951. President Shinya of Tokoro Fishery Cooperative proposed the development and the promotion of Saroma Lake by the funds of old fishing rights of Saroma Lake. Fishing Right is the right for fishing in the fixed area and the methods permitted by a prefectural governor.

The fishing right is the most important rights for the fishermen. But 3 fishery cooperatives agreed to the proposal and disposed them. Furthermore, they also agreed to the disposal of the funds for old fishing rights from Government, despite of financial difficulties after the confusion of the war. Aquaculture Cooperative has founded by the fund of disposed fishing rights and concentrated the fishing rights for the management of Saroma Lake.

3 cooperatives set the upper limit of scallop aqua culturing for each fisherman but there was no total limit to the Lake as a whole. In 1971 a massive death of cultured scallops occurred in Miyagi prefecture in north-east district of Honshu. President Funaki of Aquaculture Cooperative argued to research the allowance limit for the culturing of scallops in Saroma Lake. The first research for allowance limit was executed from 1974 to 76. The fishermen decided the allowance limit and executed by themselves.

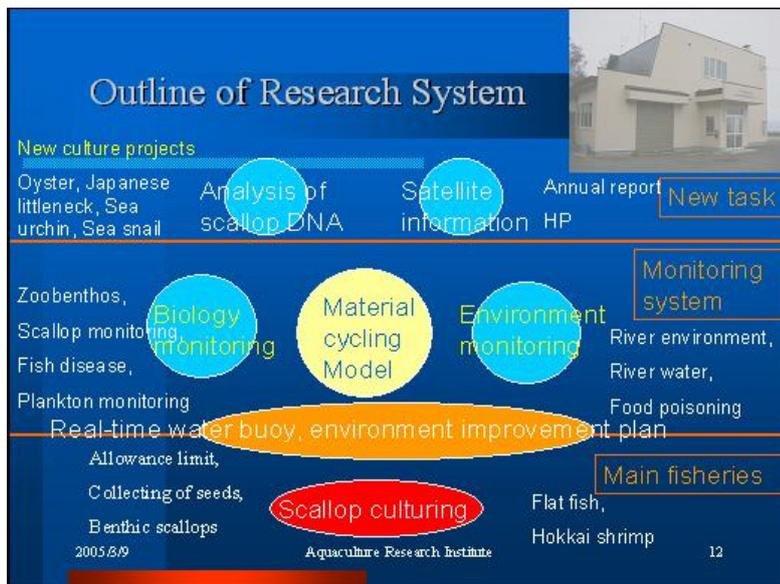
As a result of research, total culturing scallops were limited to 50 million and total scallop seeds were limited to 600million. This number means the reduction of 24% for each

fisherman. In the past, the upper limit for scallop culturing was decided for the time of shipping but this time it was decided for the number of beginning of culture.

The independent check for the allowance limit was executed strictly for a week in 1979 by the member of fishing control committee consists of the representatives of fishermen. In the first check, 80% of the fishermen were against the allowance limit and punished strictly but after they learned the mistake, they didn't come to against the rule gradually. The fundamentals of the cooperation are mutual aids but strict self-judgment is essential on the base.

The researches for the 2nd and the 3rd allowance limit were executed in 1987 and in 1998 and new limit was in force respectively. The research department was added to the Aquaculture Cooperative in 1987 not only for the fishery production but also to promote the management of environment. The management base for the environment and fishery resources of Saroma Lake was founded by the fishermen by themselves.

There are 3 stages in our research system. The fundamental stage is for the main fisheries mainly related to the scallop culturing, allowance limit, seeds collecting and bentic



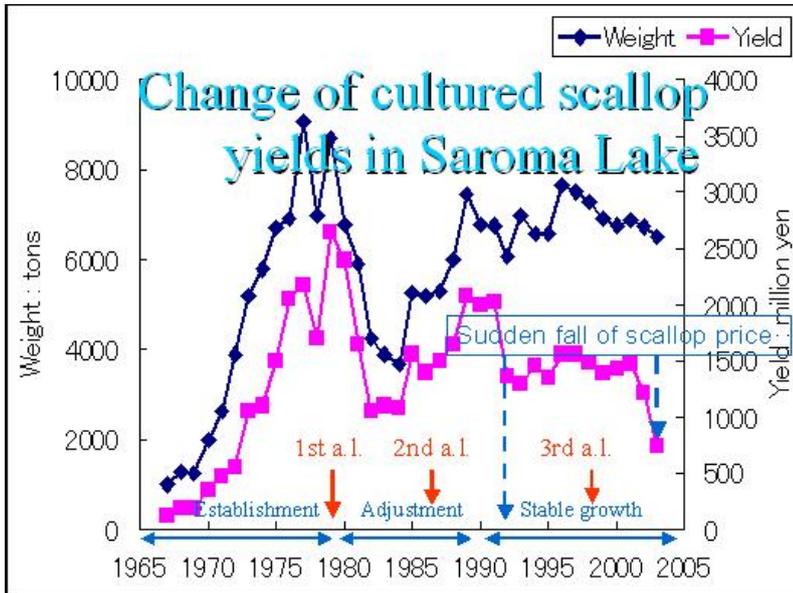
scallops. Besides, flatfish, Hokkai shrimp are also researched. The management stage aims to grasp the ecological conditions of the Lake. We monitor the water quality, biology and the environment of the Lake. The developing stage is the trial for the increasing of future fishery production. Analysis of the DNA of scallops and the utilization of satellite data are attempting. And new culturing projects have also

begun for oysters, Japanese littleneck, sea urchin and sea snail.

As the water-system of Saroma Lake is half-closed, it is easy to be polluted by the river flow-in and shows a tendency of eutrophication. "The Support Committee for the Environmental Conservation of Saroma Lake" started in 2001, has been grasping the flow of materials in/out of Saroma Lake and constructing the cycling model of materials. The specialties of the committee member are marine-biology, water quality, water management, etc. The aim of the model construction is "To establish the stable production system by maintaining the balance of environment and present fishery production". The model will be completed in 2005.

This graph shows a change of cultured scallop yields in Saroma Lake. The history of scallop culturing in Saroma Lake also divided into 3 stages. Establishment stage is from 1965 to 79, the scallop culturing established in this stage and the yields increased

more than 9000tons. 1st research for allowance limit was executed at the end of this stage. Adjustment stage is from 1980 to 90, the massive death occurred in this stage and the 2nd research for allowance limit was executed. Stable growth stage is from 1990 to



the present. Scallop price fell suddenly in 1992 and after that the price didn't recover as high as before. 3rd research for allowance limit was executed in this stage. The yields of cultured scallops are stable about 7000tons every year. But in 2004, the scallop price fell extremely for the over supply. The stabilization of scallop price is the important theme for us.

As a result, we can get stable yields in Saroma Lake at present. It wasn't given from the government but the result of each fisherman to seek the best way for their future. I want to emphasize on that point.

## REFERENCES

1. Shu Mori, 1999. Winds of Saroma Lake. Aquaculture Cooperative of Saroma Lake, Tokoro, Hokkaido.