Organization of Aomori Prefectural Industrial Technology Research Center

- Four Department and thirteen Institute

AITC Headquarters

Department of Industry
- Industry Research Institute, Hirosaki Industry Research Institute, Hchiohe Industry Research Institute

Department of Agriculture
- Agriculture Research Institute, Vegetable Research Institute, Apple Research Institute, Livestock Research Institute, Forestry and Forest Products Research Institute

Department of Fisheries
- Fisheries Research Institute, Inland water Fisheries Research Institute

Department of Food Processing
- Food Processing Research Institute, Shimokita Food Research Institute, Agriculture Products Processing Research Institute
Organization of Fisheries Research Institute

- Director
  - Research Planning Manager
  - General Affair section
  - Fisheries Resources management Section
  - Fisheries Ground Environment Section
  - Scallop section
  - Fisheries Resources Enhancement Section

- Vessel
  - Kaiun-maru
  - Seiho-maru
  - Natsudomari
Fisheries Resources Management Section

- Development of fisheries resources management methods for the effective and continuous using of marine resources
- Prediction of fishery condition and marine condition

Ear stone of flounder

Trawl research

Image of fishery finder

Rockfishes crowding around a man-made fishing reef
Fisheries Ground Environment Section

- Analysis and assessment of fishery environment and water quality
- Information service on fishery environment
- Monitoring and study on toxin producing phytoplankton

Automatic Marin Environment Observation Buoy

Nutrient Analysis

Research of Squid

DSP causative plankton
Scallop section

- Survey about maturation and larva of scallop
- Development of scallop culture techniques
- Information service about seed collection and culture management
- Development of Ark shell culture techniques
Fisheries Resources Enhancement Section

- Development of mass production of fishes and seaweed seeds
- Development of release techniques of artificial fish seeds
- Development of enhancement techniques of marine resources

Seed production of fishes

Artificial fertilization of flatfish

Indoor management of seaweeds

Scuba investigation
1 Location of Aomori prefecture
2 Marine environment in Aomori

Japan Sea

Tugaru Strait

Oyashio Cold Current

Tsugaru Warm Current

Mutsu Bay

Pacific Ocean

Japan Warm Current

Fisheries Research Institute

Aomori Prefecture
Fig. Fisheries production in Japan (2008)
Fig. Fisheries production of main marine species in Aomori (metric tonnes)
Fig. Change in annual production of Japanese Scallop in Japan
Figure: Image of scallop

Japanese Scallop
(*Patiniopecten yessoensis*)

Sailboat
The shape of scallop is like a sailboat when shells are opened.

European Great Scallop
(*Pecten maximus*)

Venus birth
Venus is standing on the shell.
Fig. Amount of Scallop Products Exported from Japan (Kilograms)
Fig. Scallop Production in the World
Scallop Culture in Aomoi

- Area of Mutsu Bay: 1,660km²
- Coastline of Mutsu Bay: 246km
- Area of scallop culture: 500km² (dotted line)

Fig. Scallop culture in Mutsu Bay
(1) **Bottom culture of scallop**

- Seeds released in autumn or spring
- Rearing on the sea bed for one or two years after release
(2) Hanging culture of scallop (Long line system)
Spat Collector
(Onion bag)

Pearl net

Lantern net

Ear hanging
Fig. Basic Process of Scallop culture in Mutsu Bay
Fig. Monitoring of Environment condition In Mutsu Bay

- East Bay Buoy
- Aomori Bay Buoy
- Tairadate Buoy
- Fisheries research Institute
Fig. Changes in temperature in Mutsu bay
Fig. Changes in Gonad Index of Scallops
Fig. Maturation of Japanese scallops

Male (White cream color)

Female (Reddish orange or pinkish color)
Scallops have long been a very popular marine product in Japan, enjoyed both in processed form as well as raw. Due to their attractive appearance, scallops are frequently served on official occasions in Japan including banquets of the Japanese Imperial Court. The muscle of the scallop contains many umami ("savory") flavor components that make it ideal for use in XO sauces (spicy seafood sauce) and high-end oyster sauces used in Chinese cooking.

Japan produces approximately 500,000 tons of scallops per year, making it the world's second largest producer of scallops. Scallops are one of the top fishery products in Japan measured by volume of harvest. Japanese scallops, whether frozen, boiled or dried, are exported to many countries such as France, United States, China and Hong Kong, where they are typically used in French or Chinese cuisine as well as being prepared at home by consumers.

The substantial volume of scallop exports is supported by stable, year-round supplies of scallops that are realized through improvements in the breeding technique of scallop seedlings and other production methods. These advancements have enabled the Japanese scallop industry to engage in large scale production of scallop seedlings and achieve planned productivity of scallops.

**Voice from the Coast**

The two major scallop-producing regions in Japan are the coastal waters of Hokkaido and Mutsu Bay in Aomori Prefecture. These two areas have produced stable supplies of scallops in recent years, with Hokkaido producing more than 350,000 tons of scallops annually and Aomori Prefecture producing more than 60,000 tons each year. Hokkaido scallops are usually large and around 30 counts per kilogram, while scallops harvested from Mutsu Bay are much smaller and are called "baby scallops." These baby scallops are typically around 80-100 counts per kilogram and are marketed for home cooking. They are popular among consumers due to their ease of preparation in items such as salads, paella and stews. Consumers appreciate baby scallops for their excellent flavor and reasonable price. While scallops were traditionally prized as a luxury food, we hope that scallops will become a regular ingredient for home cooking.

- Baby scallops are popular ingredients for home cooking.
- Dried Japanese scallops contain many umami ("savory") flavor components.

**SCALLOP**

*Hotate*

**Planned Productivity: a key to world’s second largest scallop output**

- **Amount of catch**
  - 287,486 tons (2005)
- **Amount of aquaculture**
  - 203,962 tons (2005)
- **Main landing place**
  - Hokkaido, Aomori