FISHERIES NEWS

The Seaside Flavor of Higashidoori

January-March 2018

Masu Salmon Fishing

Masu salmon is also called spring salmon. The author introduces its fishing.

Freshness Keeping of Masu Salmon

The author shows how to keep Masu salmon fresh on a fishing boat.

Sea Squirt Seed Collection

Sea squirt seeds were collected to distribute to a fishermen's group.

Kelp Reproduction

The author introduces the biology and procedures for producing kelp seedlings.

Keeping Squid Fresh

Keeping Squid fresh? Its process and squid nervous system.

Weird Sea Creature

A weird sea creature was collected. What did it look like??

Masu Salmon Fishing ~What is "Hera-biki"?~

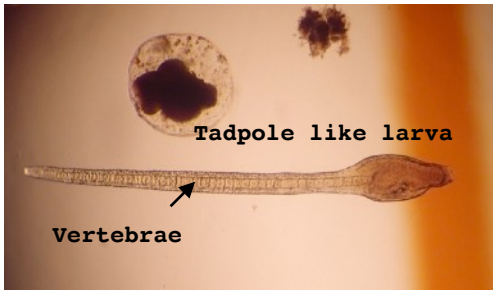
I accompanied "Hera-biki fishing" of Masu salmon this February. A Masu salmon smolt travels to the Sea of Okhotsk in spring and grows there in summer. The fish grows big in the Sea of Okhotsk and migrates down to the warm Tsugaru Strait and the Sea of Japan to spend winter. The Tsugaru Strait is known to be a good fishing spot of Masu salmon, and fishermen along the strait catch the fish by a set-net, "Masu-nata" fishing or "Hera-biki" fishing. The author introduces "Hera-biki" fishing in this article. "Hera-biki" fishing is like flying a chain kite. A smooth and streamlined lip device "Hera" dives deep into the ocean catching a water flow. Around 10 lures are attached to a main line and 7 "Hera" devices. The 7 "Hera" devices deliver the lures to a target depth where the salmon lives. The device "Hera" is surprisingly light, however, it dives to around 80m depth depending on the size. The lure is also light and attracts the fish by drifting in the water column. The fisherman hauled the fishing gear back and forth at his favorite spot, and waited for the bells on the rod to ring. The fisherman stoped his boat and retrieved the gear slowly onto the boat. We have to retrieve very carefully so we do not tangle the lines. This fishing needs a carefulness in every part of movements during casting and retrieving. The author was too afraid to try it, and just stood behind him and took a picture of the fishing. It was his first day of Masu salmon fishing in 2018. Although he said you could not expect any fortune before we set out, we were very lucky to catch 17 fish. It was absolutely a good catch. The author wants to try it someday. It was the most interesting fishing method the author has ever seen. The author learned many things about Masu salmon from him. After all the author realized that he dislikes staying in a office all day long, and loves being out on the water.

Lures and "Hera"s

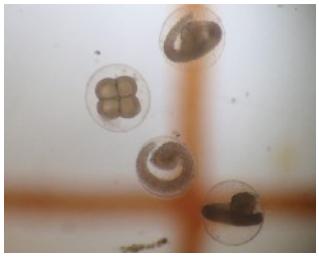
Keeping Masu Salmon Fresh~Why is "Katsu-zime" important?~

Beside the fisherman who was fishing Masu salmon, the author gathered pictures of the whole process of freshness keeping of Masu salmon (Katsu-zime and blood draining) to make a freshness keeping manual. Mr. Miyabe, researcher from Shimokita Food Reserch Institute who is a bad sailor, demonstrated the process on the board while showing his very pale face. After Masu salmon was brought on board, we stored the fish in a tank until "Katsu-zime" was applied. Then the Masu salmon was place on a cushion to prevent internal bleeding during "Katsu-zime" process, and a sharpened knife stabbed and cut a spinal cord and gills. The fish acted violently at first and became immobile when the spinal cord was cut perfectly. Then an artery at its tail was cut. Blood seeped from the tail. After "Katsu-zime" process was done properly, we placed the fish into the ice seawater to drain blood. A recent study suggests that blood can be drained effectively in cold seawater between 0-9 ℃. It took about 1.5 hours to drain blood perfectly. Therefore the researcher suggested that we can store the fish in the tank until we come back from a set net fishing. But, for the "Masu-nata" and "Hera-biki" fishing, we'd better take out the fish from the tank and store in an ice seawater around 0 ℃. We took out the fish from the tank after 1.5 hours of blood draining process and placed in an ice seawater to preserve the fish around 0 ℃. The researcher recommended changing the bloody seawater once in a while or using flowing seawater (< 9 ℃). We placed the fish in a box with a crashed ice partitioned by an urethan sheet to prevent the fish from touching with ice. Furthermore the fish was wrapped by a plastic sheet to keep the fish moist. The researcher recommended removing internal organs and covering the whole body of fish with ice. If we process the fish in this manner, we can keep glittering scales, which beauty is valuable at the market, and bring out the beautiful meat with the bright orange color which represents Masu salmon.

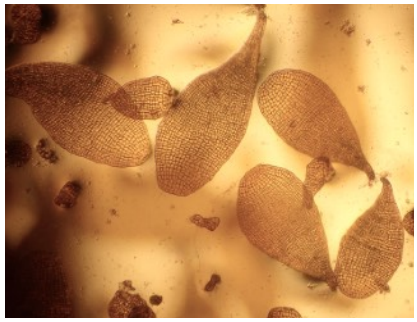
Sea Squirt Seed Collection~What does Sea Squirt Seed look like?~



Sea squirt inhabits rocks in the ocean. It does not look like vertebrates like us. However you may not believe it, it is a species of protochordates which is said to be our ancestor. It has a vertebrae during its certain life stage after hatching. A sea squirt spawns several times around the spring tide from the middle of November to the end of January. A sea squirt is a hermaphrodite and its gonad shows stripes with a white testis and greenish brown ovary. A sea squirt starts spawning around the spring tide in a tank in which water temperature has been kept around 10 ℃. It is mysterious that a sea squirt can recognize the spring tide even when it is reared in a tank. Sudden rise in water temperature also stimulates spawning. Its eggs and sperms are released slowly or gushed out from its excurrent siphon. Fertilized eggs drifting in the water column are collected in an egg collection tank. The number of fertilized eggs are counted, and eggs are poured into a seed collection tank which holds a certain number of seedling ropes calculated from the number of eggs. Eggs undergo cleavage, and tadpole like larvae hatch out 2 days later. The tadpole like larvae have a vertebrae at its tail and swim or drift in the water column. Its head attaches to the seedling rope and its tail part is absorbed and disappears within a few days. The larvae grow up on the rope and metamorphose into tiny sea squirts. The baby sea squirts are reared in a tank for a month and moved into the ocean afterwards. They come to look like a sea squirt as we see them at a supermarket in August.



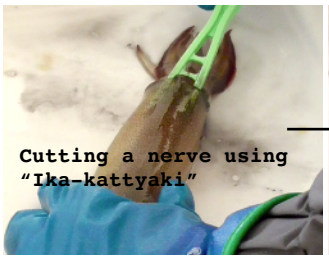
Biology of Kelp ~Seedling production~

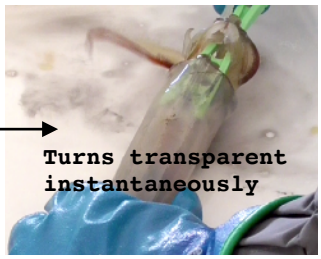


Kelp has received a good reputation in its taste among edible seaweeds for a long time, and it has been an important food source for sea urchin and abalone. Since kelp has also been an important fisheries resource in this village, fishermen have deployed a kelp culture set called "Tate-nawa" into the ocean to increase its biomass. However people may not know much about its reproduction and seed production in a tank, therefore the author introduces these in this article for deepening the understanding of kelp. From October, brown algae species including kelp develop a chocolate brown patch called "sorus" which holds zoospores on the surface of kelp. We collect the kelp which sorus developed widely, wash it with UV sterilized water and dry it in the shade for a few hours. After drying we wrap it with paper and leave it for one night. Next morning we unwrap and soak the kelp in cold UV sterilized water. This process stimulates the kelp to release many zoospores. After just an hour, the water turns light brown with zoospores. We pour a certain amount of this zoospore water into a 30L tank holding UV sterilized water, and place seedling frames which have a string coiled neatly inside them. Zoospores drift in the water and attach onto the string within one night. We start providing light and nutrient from the next day of zoospore collection. We change the water, provide a certain amount of nutrients, and adjust the intensity of the light and aeration weekly. The zoospores sprout and grow up on the string. The string turns into dark brown after a month of culturing. We can see tiny kelp seedlings about 1 mm long under a microscope. The cultured kelp seedlings are wrapped around a rope and thrown into the ocean to increase the biomass. It is said that a kelp stock is abundant in a year when winter is very cold. We anticipate a good catch of kelp this year since we have had a very cold winter in 2018.

Keeping Spear Squid Fresh ~What is "Ika-Kattyaki"??~

A keeping squid fresh workshop was held at Shiranuka Fishing Port on January 31. Mr. Miyabe, as mentioned in a Masu salmon article, lectured a process to keep freshness of squid. You may be surprised by hearing "Katsu-zime" of squid. A squid also has a sophisticated nervous system. Owing to the nervous system, it can change its color instantaneously depending on surroundings. In this workshop, we learned "Katsu-zime"of squid by using a device called "Ika-kattyaki" which was invented by an emeritus professor from the School of Fisheries Sciences, Hokkaido University from which the author graduated. A squid has a pair of nerves called "giant axon" at its joint between the head and the body. Once the nerves are cut by the device, its body turns transparent and immobile instantaneously because the signal from brain which controls its body movement and color is shut down. By cutting the nerves, we can delay the decomposition of components which indicates freshness, and keep the freshness of its body parts for longer periods. We can also keep the freshness of its head by cutting a pair of nerves which extend toward each tentacle from brain. The color of the squid turns white and the freshness of squid deteriorates faster when it touches ice and other squids directly in a box. Therefore it is recommended using a special tray called "Ika tray". The tray has 8-10 partitions depending on makers to place each squid in a partition. It is said that the freshness of "Katsu-zime" squid is kept much longer in the tray than in a normal box. The author thinks that this technique will spread among fishermen once a market for "Katsu-zime" squid is established.





Column "Weird Sea Creature, Pyrosomes"

The author received a picture of unknown sea creature that looks like a transparent sea cucumber which a fisherman in Noushi captured from a Greenling trap on February 2. It did look like a transparent sea cucumber at first sight, however, it looked weird once I looked at the picture carefully. I forwarded the picture of this weird sea creature to Asamushi Aquarium like before when the pure white sea cucumber was collected last October. The next morning, Mr. Kushibiki at the aquarium replied to the author that this sea creature might be a type of Pyrosomes. The author went to touch it that morning, and it was rather hard, as opposed to soft like a sea cucumber, and immobile. It was also light and seemed suspend in the water column. It became clear that it is a type of plankton. Mr. Kushibiki who is very enthusiastic about sea creatures drove 2 hours from snowy Aomori city to get this weird sea creature for his interest in rearing in the aquarium. He said that it was to be exhibited if it was still alive. The author searched for the information about it, and found that this sea creature inhabits warm and tropical waters. A large number of this sea creature were found and caused big trouble to fishing industries in the North Pacific last year. Unlike a white sea cucumber collected last year, this creature seems to bring nothing but trouble. This sea cucumber like creature is not an individual but an assemblage of small individuals of pyrosomes. Some of the pyrosomes coexist with luminous bacteria, and they glow in the ocean. The biology of the pyrosomes is still unknown. The author caught a glimpse of mysterious and fascinating underwater world of marine organisms. He also hopes that this weird sea creature is exhibited at the aquarium to convey the mysterious and fascinating world of marine organisms. The author was fascinated by this mysterious marine organism.