

SO Kawaguchi and the ecology of Antarctic krill

Where did your passion for Antarctica come from? Were you inspired by reading a book, by an explorer, by a professor at the university?

It came from a series of coincidences. It was during my university days when I was heavily involved as an active member of a local ski association, and learning theories of ski dynamics through a text book. The first chapter was about the history of skiing, mentioning Nansen as “the father of ski” who for the first time was able to cross to Greenland by skis. Since I was majoring in biological oceanography, this name rang a bell. He happened to be the very same person who invented the famous “Nansen sampling bottle”, instruments used to take samples of seawater. In addition, I learned that Amunsen’s first trip to the South Pole had been supported by Nansen, Their struggle with ice and snow environments during their polar expeditions was just phenomenal, and really inspired me to go into polar science.

What is your most beautiful memory from your first expedition to Antarctica?

My first introduction to the Antarctic Ocean was an interesting one as a scientist. It was on a commercial krill fishing boat during my days working for a fishing company as a research scientist. I still have a vivid memory of the enormous amount of krill brought up on the deck and loaded into the hold. It astounded me. I was sent on the ship as a biochemist to study Antarctic bacteria which may produce useful bioactive substances, but my first encounter with Antarctic Krill completely changed my future interest and direction.

What is the most important scientific discovery you have made up until now?

One of our most important achievements recently is our success in having a school of krill in our research aquarium in Australia. Krill are highly social animals and always form schools in the wild as sardines do, but it is very hard to have them reproduce the same behavior in an aquarium. Until now there has been only one case in the 1980s just for a short period in a tank setup at Palmar Station on the Antarctic Continent. This is actually the first time this behavior has been observed in an aquarium, outside of the Antarctic continent. Our achievement will open up a variety of possibilities in studying the natural behavior and physiology of krill in captivity. We have also recently succeeded in reproducing krill in our aquarium, which will allow us to study the entire life cycle of krill in detail in captivity without the difficulty of an expedition in the field.

What is your most moving memory of your expeditions in Antarctica?

A brief stop at South Georgia during the CCAMLR-2000 research survey on the total biomass of krill in the Southwest Atlantic is the most beautiful one in my memory. We started the survey with three other nations (Russia, UK, and USA. I was working for Japan at that time) in South Georgia and finished at the Antarctic Peninsula. We spent few days in South Georgia to calibrate the instruments and when we landed on the island, I was astonished by the richness of the wild life, i.e. penguins and seals. The view of a large flock of king penguins sighted on Stromness Bay was just breath-taking. Also I am a great fan of Sir Ernest Shackleton, and therefore visiting South Georgia and seeing the place where he ended his great historic adventure was one of my greatest dreams. I looked up at the beautiful but steep snowy peaks where Shackleton must have crossed and had the impression of reliving a tiny part of his adventure, and from then was even more inspired to do Antarctic research.

What does Antarctica mean to you?

From an emotional perspective, Antarctica makes me feel very small compared to the power of nature. In a more philosophical sense, I regard Antarctica as an ongoing “touchstone” to predict our future. There is no longer any place on the planet which can be truly called “untouched nature”, and Antarctica is no exception either. Despite its pristine appearance, the history of Antarctica itself can be described as the history of over exploitation, i.e. sealing, whaling, and fishing—but it is still far better there than in the other parts of the planet. We must learn from the past and should not make the same mistakes. Conservation of Antarctica is one of the most precious gifts which we can give to our future generations.

How do you see Antarctica twenty years from NOW?

This is a difficult question to answer...

Although Antarctica may remain as a symbol as one of the last natural places on the planet, the melting of ice in certain areas of the continent due to rapid global warming may reduce parts of Antarctica, and the fauna and flora will change accordingly. “Green” will certainly increase. Disturbances caused by the presence of man is also going to get worse (fishing, tourism, even scientists....) How Antarctica may look in the future is totally up to us, “the human beings.” It

will be a real challenge for us to see whether or not we can find a way to regulate ourselves so as to live symbiotically on this planet as a member of the ecosystem.