

## 水産

# Nelson Marlborough Institute of Technology (ニュージーランド)

NMIT's lecture is on fish—specifically, the king salmon, otherwise known as the Chinook salmon.

### Video 1: Salmon Biology

Salmon travel great distances at different times during their lives. For example, salmon born in the rivers of Japan spend several months in fresh water and migrate to the ocean. They then spend about four years in oceans far away such as the Bering Sea, or the Gulf of Alaska. Eventually, they return to the rivers where they first hatched and spawn there.

There are several different types of salmon in the world. Most salmon are classified into two main groups depending on the region they live in. Salmon that live in the Pacific Ocean are called Pacific salmon. Salmon living in the Atlantic Ocean are called Atlantic salmon. Among the many types of Pacific salmon, there are seven major species.

Originally, salmon lived only in the Northern hemisphere. However, starting in the 1860s, for about 50 years, they were brought to New Zealand from countries like Great Britain and the United States for recreational fishing. People released various types of salmon into the rivers of New Zealand. They hoped that the salmon would return from the oceans when they matured. Many did not come back. However, the king salmon returned to New Zealand and settled in the rivers of the South Island where it continues to live to this day.

### Video 2: King Salmon

Why is this fish called "king salmon?" If you compare its size with salmon found in Japan, the answer becomes clear. This is the dog salmon commonly found in Japan. Its body is 60 to 80 cm in length and it weighs about 5 kg. And this is the king salmon. A large king salmon will reach a length of over 1 m and can weigh 18 kg. Because the king salmon is one of the largest of the Pacific Salmon, it is called "king."

But it is not "king" just because of its size. Its rich and savory taste is valued by the world's top restaurants and chefs. Its flesh is bright pink. Also, in recent

years, research has shown that salmon meat has various unique properties. It is rich in a substance called astaxanthin. This is an antioxidant that prevents the oxidation of cells. It supports and heals the functions of the brain, eyes, and muscles. Also, of all the Pacific salmon, the king salmon has the highest level of a substance called omega-3. Omega-3 makes human cell membranes more flexible. When it is incorporated into red blood cells, cells increase in flexibility, and blood flow improves throughout the body. So even in its nutritional value, astaxanthin and omega-3 make this salmon the real “king.”

### **Video 3: Wild Salmon Now**

In recent years, the population of wild salmon has been declining around the world. This is because its habitats are being destroyed. Climate change has increased water temperatures and caused water levels to rise. This means more floods that carry gravel, mud and grasses and destroy salmon spawning areas. In addition, because of human activities on rivers, for example dams and mining, salmon cannot swim upstream. Overfishing is also adding to the decline of salmon numbers.

### **Video 4: Salmon Aquaculture**

At the same time, the global population continues to grow at a rapid rate. We are now examining how our food supply can be secured. There are different strategies for increasing the food supply. Among them, salmon aquaculture has gained a lot of attention.

We need less feed to raise salmon than we need to raise terrestrial meats. 1.7 kg of food produces 1 kg of salmon. 5 kg of food produces 1 kg of pork. And 1 kg of beef requires close to 8 kg of food. Salmon farming is also one of the least-polluting types of farming, with low levels of CO<sub>2</sub> emissions and nitrogen waste. With wild salmon, it can be difficult to control diseases and parasites. It is much easier to do so with farmed salmon. This makes it possible to safely eat raw salmon. Unlike in fishing, nothing is wasted in aquaculture. People can cultivate the amount they need when they need it. Salmon aquaculture is expected to play a significant role in sustaining food security.