
Makoto Kashiwai



“Makoto is always going ahead according to his belief, even if he is on his own. He never notices whether anybody is coming after him. He is surely a great scientific designer but never as smart as his form when riding on his horse.” This is a good introduction to Makoto’s character. It was surely hard to follow him even for his friends. But, everybody knows his sincerity for science, and his foresights were almost right in the long run.

Dr. Makoto Kashiwai was born in Tokyo as the second son of a Protestant minister. Under the influence of the dream of his father's young days, he was brought up to have a mind of devotion, logical thinking, interest in natural science and a quest for the truth. The religious part of his father's desire was taken up by his elder brother.

Makoto first saw the blue sea from the train to a town in Wakayama prefecture where his father was invited to serve in a church, as his former mission was destroyed in a B29 air raid. Swimming in these waters was frequently prohibited by the arrival of hospital ships full of repatriating defeated soldiers returning from the South Pacific islands. But the colorful small fishes in the clear blue water and the bubbles from a helmeted diver repairing the wharf were enough to enchant the heart of the boy-yet a stranger to the blue sea.

The early part of his student days at the Faculty of Fisheries, Kyoto University, was the time of an active student movement against the Japan-U.S. Security Treaty. Those days gave him an attitude of thoughtfulness in confronting history. His spare time and energy were then put into establishing the Kyoto University Cruising Club at Maizuru and the building of an ~8m open-deck ketch, *Puffinus II*, converted from a lifeboat. She had to be pulled by oars when the winds were calm and she was the best teacher about the wind and the sea, teamwork and leadership, and the importance of foresight. Every

summer, Makoto and the members of the Cruising Club (including Dr. Tadashi Inada who recently became reacquainted with Makoto after a 25 year hiatus) cruised to a small island about 10 miles offshore where they dived for turbos and cooked them in their shells on board. One summer, Makoto and his colleagues planned to cruise across Wakasa Bay, a distance of almost 40 miles. The cruise was very dangerous because of the need to sail at night. The morning after her departure, *Puffinus II* was surrounded by a dense fog and she could not find her position. The members had to row toward the presumed direction at only half a mile per hour. After several hours chained to the oars, with a good fortune they finally arrived at their destination. Even in these challenging situations, his colleagues could always find Makoto sitting at the captain's place, smelling the wind and listening to the waves. Makoto and his colleagues still dream of cruising around the world in *Puffinus III*.

Then came the years of the University Revolution and cruises of the *Puffinus II* could not continue. He traded the joy of sailing for the joy of finding answers to questions of what science should be. While Makoto was a doctoral student, he led the reformation of the educational ideas of the Faculty of Fisheries in the movements of the University Revolution. In the tearoom or pubs almost every night during that hot season, he pursued arguments with his colleagues to their logical conclusion on the way to reforming it. He and his colleagues held a special summer course of lectures in cooperation with the authorities to seek what fishery science at the University should be. This is Makoto's way of doing things.

He got married and found a permanent job, first at Ehime University and then at the Kyoto University. As a university assistant he supervised many graduate students, including those left from the selection of Professors and Assistant Professors (e.g. quarterbacks, kickers or blue-band freaks having poor attendance at the Professor's lectures). As the Faculty's research vessel was only available for short day cruises because of working rules, he introduced a small boat, *Shiranami-maru*, which was classified as equipment instead of a facility, and took students and graduate students on overnight cruises while serving as acting-owner/skipper. As the number of his sea-going graduate students increased, he had to lead his research fleet, composed of *Shiranami-maru* and a collection of boats with inboard and/or outboard motors, using hand signals. In order to make it possible to identify himself as the commander of the fleet from a distance, he made it a rule to wear a red cap, and that still rests on his head now.

His scientific interest has always been in the dramatic and dynamic aspects of nature. He was engaged in studies tidal exchange using field, modeling and theoretical



Fig. 1 Makoto at two years of age sitting on his mother's lap. They are a pious Christian family.



Fig. 2 Makoto (right, back row) at 20 years of age, with his mother and brothers in the yard of the Muromachi Church in Kyoto.



Fig. 3 Makoto sitting at the captain's place in the stern side of Piffinus II. The helmsman on the right is Dr. Tadashi Inada.



Fig. 4 Beautiful hand-make ketch, Puffins II at the Bay of Maizuru (1968)

approaches. In his doctoral thesis, the mechanism of tidal exchange was elucidated theoretically, but he also but he also proposed a technique for controlling tidal exchange and tidal residual circulation. When he felt that time had come to leave his cadets to a younger leader and to engage in full-scale marine science, he left university. In 1983, when Makoto moved to the Hokkaido National Fisheries Research Institute (HNFRI) in Kushiro, a new research project awaited him. The project aimed at analyzing the biological production process of Oyashio Current region from both physical and biological aspects. He led the project team, consisting of scientists from various fisheries institutes and universities, with his enthusiasm and insight for science, which laid the foundation for his PICES activities in later years. And for him, this project was a chance to change from a physical oceanographer on coastal fluid dynamics to an interdisciplinary fisheries oceanographer considering the interrelationship between ocean and living resources.

In this project, he mainly focused on the linkage between the dynamics of the Oyashio, as a part of the Western Subarctic Gyre of North Pacific, and primary and secondary production in this region. For evaluating this linkage, he and his colleagues began seasonal monitoring of ocean conditions including nutrient supply and plankton production on a line from Akkeshi, near Kushiro, across the Oyashio Current. This monitoring has been conducted by HNFRI and bore fruit in the works on the life history of copepods and spring bloom by Drs. Atsushi Tsuda and Hiroaki Saito. Now, the time series of data collected on this observation line is essential in comparing the west and east of the North Pacific. As a practical

implementation of the project, he tried to explain the population fluctuation of Japanese sardine by the food productivity in the Oyashio region. In those days, the sardine population was at a historical high level, and large number of sardines migrated into the Oyashio region for feeding in every summer. He and Dr. Tokio Wada, a fisheries biologist at HNFRI, hypothesized that an expansion of the feeding ground in the Oyashio region, i.e. an expansion of carrying capacity in the feeding ground, was essential for sustaining the high population abundance.

In February 1989, Makoto organized a special session at the international symposium on Okhotsk Sea and Sea Ice in Monbetsu, to present the results of the Oyashio project. It was his first opportunity to appear on the international stage. At the symposium, he met Prof. Yutaka Nagata of the University of Tokyo and Dr. Dan Ware of the Pacific Biological Station (PBS), Canada, and those meetings led him to ecosystem modeling work in the Oyashio region and to PICES. In the summer of 1990, Makoto and Dr. Wada visited PBS to begin collaborative work on developing a trophodynamic model in the Oyashio region with Dr. Ware and his colleagues. They also aimed at comparing the fish production systems between the western boundary current region and the upwelling region of the North Pacific. This collaborative work progressed well by funding from the Science and Technology Agency of Japan, and a prototype model for the Oyashio region was developed in 1993. After Dr. Wada moved to another institute, Dr. Orio Yamamura joined the team. The main topic of the collaboration was extended to the analyses and comparison of the changes in carrying capacity and biological production processes with climate variability.

In addition to his active research work, Makoto enjoyed nature around Hokkaido. During the first winter in Kushiro he started cross-country skiing. According to his colleagues, his style and skill are not very refined, in fact, rather tough, like his style in research. Then he got a horse that had retired from local drag horse racing and began horseback riding. In Japan, horseback riding is generally considered a hobby of high society, much like cruising. His riding style, however, with a thin body and a red cap on a sturdy old drag horse was a little far from the traditional image of horseback riding. Nevertheless, he was very satisfied to get a horse in the place of the cruiser of his student days.

When PICES was established by an international convention in 1992, Makoto became deeply involved in PICES' activities with Prof. Nagata and Dr. Ware. At the first PICES Annual Meeting in Victoria, Canada, Dr. Ware was elected as the Chairman of the Science Board. He began to develop a PICES-GLOBEC Plan, the first interdisciplinary scientific activity for PICES, later named "Carrying Capacity and Climate Change in the North Pacific". The research collaboration between HNFRI and PBS provided a background for this plan. In 1993, Makoto was heavily involved in the planning and organization of a PICES-STA joint workshop on Subarctic Gyres in the North Pacific in Nemuro, Hokkaido.

The Japanese Government offered to host the Third Annual Meeting of PICES in Nemuro in 1994. Makoto was appointed as the local contact point for the meeting, and as a result of a "unique circumstances", he became a legend and obtained the great trust of all PICES scientists. A week before the Annual Meeting, a major earthquake



Fig. 5 Makoto riding his lovely drag horse near Kushiro.



Fig. 6 Makoto (the Japanese mafia figure in the foreground) testing his shooting skills (Nanaimo, Canada) as Dr. Dan Ware looks on at the back.



Fig. 7 Makoto bungee jumping for the first time (Nanaimo, Canada). He was awarded a souvenir T-shirt for the successful feat.



Fig. 8 Makoto with Drs. Dan Ware and Tokio Wada at a fish market in Kushiro in the early 1990's.



Fig. 9 Makoto working at the PICES MODEL LTL Workshop.



Fig. 10 Makoto addressing participants at the Welcome Reception of the PICES MODEL Workshop (Nemuro, February, 2000).

attacked Nemuro, and the intended venue for the meeting was heavily damaged. He immediately went to Nemuro to encourage the members of the local supporting committee who were, by that time, at their wit's end, not to give up. He took the lead to find an alternate facility and to re-prepare everything for the meeting. Just as they finished removing the last stack of books from the city library and setting up the tables and chairs, the opening day arrived. Although after-shocks continued intermittently, the meeting progressed on schedule. Rooms were tight and facilities were old, but the local supporting committee and citizens of Nemuro were very hospitable. So, the Third Annual Meeting became an unforgettable experience for all participants.

At PICES III, Makoto convened the PICES-GLOBEC Workshop co-sponsored by the Japanese Fisheries Agency and was appointed a Co-Chairman of PICES-GLOBEC

Plan. Then he was elected as the Chairman of the Science Board, replacing Dr. Ware. Throughout the terms of these chairmanships, he devoted himself to establishing CCC Task Teams and holding workshops for implementing the PICES-GLOBEC Plan. Recently, in the winter of 2000, he organized a workshop in Nemuro on lower trophic level modeling with the MODEL Task Team members. During the workshop, he also led the discussion on how to link the lower trophic model to higher trophic models considered by REX and BASS for initiating the synthesis phase of the PICES-GLOBEC Plan.

The Japanese Government highly regarded his activities in PICES and appointed him as Delegate to PICES in 1998. He made his first remarks as a Delegate at the Opening Session of PICES VIII in Vladivostok. In these remarks, he emphasized the PICES role to promote marine science and international cooperation in the North Pacific and appealed to young scientists to participate in PICES activities. His speech was filled with sincere expectations based on activities by himself and was very impressive.

For Makoto, it is not too much to say that his research life at HNFRI has been with PICES. Due to age limitation, he must retire from HNFRI at the end of March 2001. He will also step down from the position of Japanese Delegate according to the government rules. As the Ninth Annual Meeting in Hakodate was the last meeting for him as the Japanese Delegate, he expected to summarize the comparative works on ecosystem modeling and to address the need to synthesize the PICES-GLOBEC activities. It was such regret, not only for him but also for us, that cancer was detected in his esophagus just before the Annual Meeting so he could not attend because of medical treated in Tokyo. Throughout the meeting, however, we witnessed many discussions about cooperation among

Task Teams and how to link the lower and higher trophic modules in the ecosystem model. His intention at the Nemuro workshop surely bore fruit in Hakodate. In the beginning phase of PICES, we were very lucky to have Dr. Makoto Kashiwai on board.

In April 1999, Makoto and Dr. Tadashi Inada were reunited when Dr. Inada arrived at HNFRI as Director. Makoto told him earnestly that PICES activities are very important for the scientific work of institutes concerned with the North Pacific including foreign organizations. On September 18, 2000, Makoto told Dr. Inada about his cancer and the need for an operation. The Japanese

Government immediately contacted the PICES Secretariat, and within a few days, a beautiful flower basket arrived at Makoto's bed from the staff of the Secretariat with sincere wishes and encouragement. At PICES IX in Hakodate, Dr. Inada acted as the Japanese Delegate on behalf of Makoto and spoke at the Opening Ceremony just as Makoto had intended. Immediately after PICES IX, a T-shirt signed with heartfelt messages to Makoto by many PICES scientists for a speedy recovery was delivered to Makoto by Dr. Wada. Fortunately, the cancer was in an early stage and was removed successfully in the operation. Now he is on the road to a smooth recovery and we can expect to meet his red cap again at PICES X.

This article was written by Dr. Tadashi Inada (left) and Dr. Tokio Wada (right), in appreciation and recognition of Dr. Makoto Kashiwai's outstanding service to the marine ecosystem science in Japan and PICES over many years.



Dr. Tadashi Inada (tinada@hnf.affrc.go.jp) is the Director-General of the Hokkaido National Fisheries Research Institute (HNFRI). When he met Makoto in Maizuru in 1965 as a student of Kyoto University, they enjoyed yachting and discussing about the student movements. They went separate ways in 1972 and reunited at HNFRI in Kushiro in 1999.

Dr. Tokio Wada (wada@s.affrc.go.jp) is a research coordinator of the Fisheries Agency of Japan. Since he met Makoto in 1984, they have worked together on the climatic influence on fish population dynamics, and they also have been involved in numerous PICES activities. Tokio is presently the Co-Chairman of WG16 (Implications of Climate Change to Fisheries Management).

(cont. from page 2)

The PICES-GLOBEC CCCC Program continues its work on integrating and stimulating national GLOBEC research efforts in the North Pacific. The Regional Experiments (REX) Task Team is presently focusing on comparative work on herring in the North Pacific. They just completed a workshop on "Trends in Herring Populations and Trophodynamics" and are planning an expansion of their work to consider trends in size-at-age for a number of fish species in 2001. REX and Basin Scale Studies (BASS) Task Teams are collaborating with MODEL Task Team to begin integrating their work into coupled biophysical models. MODEL has been very successful in beginning the development of a standardized lower trophic level model that can be applied to a variety of regions for intercomparison and coupling with upper trophic level models. The work on validating their NEMURO lower trophic level model will continue in the coming years.

No new Working Groups were formed this year because many new groups were started last year and these are just now beginning their work. Four Working Groups, CO₂ in the North Pacific, Micronekton, Ecology of Harmful Algal

Blooms, and Climate and Fisheries are continuing their analyses. Three Advisory Panels (Continuous Plankton Recorder, Marine Mammal and Bird, and Iron Fertilization Experiment) are playing important roles in advising the PICES scientific community about research design and improvement in particular areas.

The PICES Science Board has approved many exciting topic sessions for our next Annual Meeting, to be held October 2001, in Victoria, British Columbia, Canada. This upcoming meeting will be an anniversary celebration of the first decade of science in PICES. A special Science Board Symposium will celebrate the anniversary with a review of the scientific accomplishments of PICES' first ten years, followed by thought-provoking talks on future scientific directions of PICES.

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