The *Oshoro Maru*: A short history of Hokkaido University's workhorse in the North Pacific

John R. Bower
Faculty of Fisheries
Hokkaido University
3-1-1 Minato-cho,
Hakodate, Hokkaido,
JAPAN 041-8611
E-mail: akaika@pop.fish.hokudai.ac.jp

*Dr. John Bower began his fisheries career in 1986 as an NMFS observer aboard several South Korean trawlers in the Bering Sea. During 1987-89, he was a Peace Corps Volunteer in the Philippines, where he first became interested in cephalopods. John completed graduate degrees at the University of Hawaii (Department of Oceanography) and the Hokkaido University (Faculty of Fisheries) studying two nektonic squids (*Ommastrephes bartrami *and* Todarodes pacificus*), and became an assistant professor at the Hokkaido University in 1999. He now spends his summers aboard the Oshoro Maru studying the distribution and abundance of cephalopod paralarvae in the North Pacific*.

Setting out

LOCATION: Central Dock, Hakodate, Japan
DATE: June 3, 2000
TIME: 1000 hours

The freshly painted *Oshoro Maru IV* sits moored to the dock, where a crowd of more than one hundred has gathered to bade the ship farewell. Customs officials have finished stamping passports and assorted documents. The dean of the Faculty of Fisheries at Hokkaido University has finished his farewell speech to the ship's cadets. It is time to depart. After the last visitor disembarks, the gangplank is removed, and members of the university's cheering club dressed in black and wearing headbands begin to pound on giant drums. Crewmen and cadets gather at the ship's railing, where they wave to the crowd and hold on to colorful streamers, which flutter in the wind. As the ship eases forward, the chief officer's young daughters run alongside it to the end of the dock.

"Bye-bye, otoosan [father]! Bye-bye!"

"The next time I see them, they'll be bigger."

He waves one last time from the bridge.

So begins the 48th annual cruise of the *Oshoro Maru* to the North Pacific.

Oshoro Maru I

The first *Oshoro Maru* was built in 1909, to train students in the newly opened Department of Fisheries at the Tohoku Imperial University, a predecessor of the Hokkaido University. The 31-meter wooden topsail schooner was modeled after those used in the Gloucester cod fishery and named for a bay located 10 km west of Otaru, Hokkaido. The bay, then an important fishing ground for Pacific herring, was the ship's first home port, but maneuvering the ship in the small bay proved difficult, so her home port was soon moved to Otaru. The schooner was converted to a brigantine (Fig. 1) in 1910 and equipped with a 63-horsepower engine in 1913.

The ship's main training area was the Sea of Okhotsk, where students were taught how to fish Pacific cod, king crab and salmon. Salmon were first caught using stationary nets in inshore waters, but the Russian government soon restricted this inshore fishing, so the ship was forced to move offshore. In 1915, under the direction of Professor Kumao Kuroda, the ship began testing the use of drift gillnets to catch salmon in the western Sea of Okhotsk. The success of this new fishing method led to the birth of the Japanese salmon drift gillnet fishery.

Fig. 1 The Oshoro Maru I *as a brigantine circa 1925*.

In August 1926, the *Oshoro Maru I* finished her 26th and final cruise for the fisheries department after sailing nearly 50,000 miles and carrying more than 200 students. The

ship was then renamed the *Giyu-wani Maru* and operated by a youth group until 1938, when she was dismantled after running aground near Cape Daio on Honshu Island. Today, a gold-, diamond- and ruby-adorned model of the *Oshoro Maru I* is displayed at the Kobe Maritime Museum.

Oshoro Maru II

In 1927, the *Oshoro Maru I* was replaced by the *Oshoro Maru II*, a 42-meter steel barkentine with a 500-horsepower diesel engine and a complement of 59 (Fig. 2). Training voyages continued in the Sea of Okhotsk and expanded in 1931 to include trawl surveys in the East China Sea. These voyages continued until World War II, when the ship's sailing equipment was removed, and the ship was used by the Japanese Merchant Marine to transport coke between Hokkaido and Honshu Islands. She was strafed in an air raid by U.S. planes on Hakodate during July 14-16, 1945, but escaped with little damage.

In May 1949, the *Oshoro Maru II*'s fishing equipment was reinstalled, and training cruises resumed off Japan's Pacific coast. In 1952, she became the mothership of the submersible *Kuroshio*, which was used during Professor Naoichi Inoue's research on "marine snow". This submersible was also used in seafloor surveys conducted before the construction of the 54-km undersea Seikan Tunnel, which now connects Hokkaido and Honshu Islands. Also in 1952, the ship was lengthened to 47 meters (Fig. 3), her engine was replaced, and radar equipment was installed; these renovations broadened the ship's sampling range.

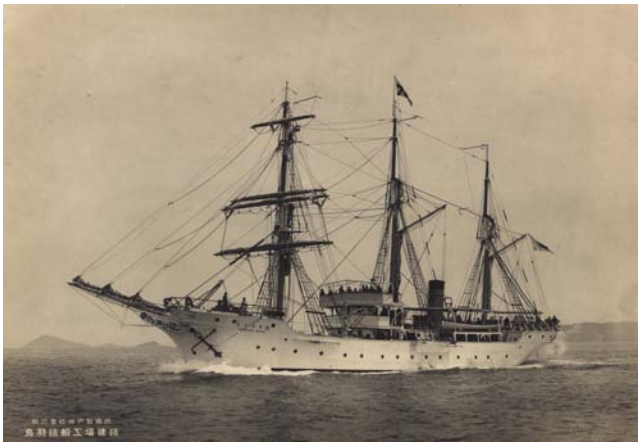

Fig. 2 The Oshoro Maru II *as a barkentine before World War II.*

North Pacific

The *Oshoro Maru II* began summer sampling in the North Pacific in 1953, as one of Japan's research ships for the International North Pacific Fisheries Commission. Salmon, plankton and hydrographic data were collected in the Northwest Pacific and southern Bering Sea, but cruise participants suffered many hardships. Meals consisted mainly of potatoes, since rice provisions were low in the postwar years, and the ship's radar broke down. The cruise ended tragically when a crewman was killed in an air-tank explosion in the ship's galley.

In 1954, the ship traveled as far as Bristol Bay, where it tied up to a Japanese crab-cannery boat for several hours to let the students observe the processing operations. The visit also allowed crewmen the rare opportunity to bathe. The *Oshoro Maru II* could carry only 126 cubic meters of freshwater, so during the 50-day cruises with no port calls, the use of freshwater was strictly controlled. Baths were forbidden, and each crewman was allowed to use only enough water to wash his face in the morning. The only chance they had to bathe was during visits to a cannery boat that had a bath.

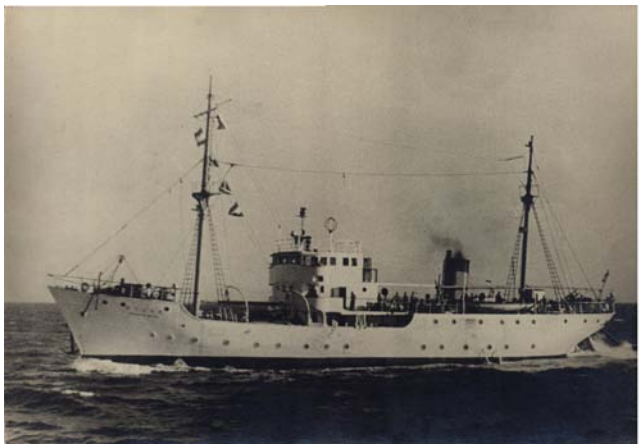

Fig. 3 The newly renovated Oshoro Maru II *in 1952*.

In 1955, the North Pacific sampling program expanded greatly under the direction of Professor Shigeru Motoda, to include meteorological observations, seawater analysis, fish-larvae net tows, dredging and sea surface temperature measurements. Also in 1955, the ship made her first foreign port call during the North Pacific cruise to Seattle (Fig. 4). This was the first visit by a Japanese government ship to the U.S. since the end of World War II. During the ship's visit, the University of Washington's president, Henry Schmitz, held a formal party at his residence for the officers and crew, and a 20-car caravan took the crewmen to climb Mt. Rainier, which they renamed "Mt. Tacoma Fuji". Since 1955, the *Oshoro Maru II*, *III* and *IV* have made 85 port calls to 16 ports during the North Pacific cruises (Table 1). These visits have become an important part of the cruises, allowing the ship to resupply its freshwater and fuel reserves, and giving the scientists and students a chance to visit local fisheries laboratories and universities. The visits also allow the ship's officers and crew to try out new golf courses.

The *Oshoro Maru II* was used for the summer North Pacific cruises through 1961. Besides these cruises, she also participated in the International Geophysical Year

(1957-58) surveys, and in observations on the 1958 solar eclipse at Suwarrow Atoll in the Cook Islands. During her final cruise in the winter of 1961 to Saigon, the weakening hull began to leak seawater. In 35 years of service, the ship traveled 303,000 miles and was used to train 1,648 students.

Fig. 4 Reception aboard the Oshoro Maru II *during the 1955 port call to Seattle. From left to right: Professor Shigeru Motoda, Captain Takeji Fujii, Yoshikazu Tsuji (a 1912 graduate of the Department of Fisheries), Assistant Professor Kenji Katoh, Chief Officer Shigeo Abe, and Chief Engineer Shoichi Tomisawa.*

Oshoro Maru III and IV

In 1962, the *Oshoro Maru II* was replaced by the *Oshoro Maru III*, a 67-m 1,180-ton stern trawler equipped with a 2,000-horsepower engine and a variable-pitch propeller (Fig. 5). The ship's complement numbered 106, including 60 students, 40 crew, and 6 scientists. Her first voyage was to the Indian Ocean to participate in the International Indian Ocean Expedition. She made her first North Pacific cruise in May 1963, and began carrying aboard foreign scientists during these cruises in 1968; a total of 86 U.S. and 5 Canadian scientists have since participated (Table 2). During her 1972 North Pacific cruise, the ship ventured into the Chukchi Sea as far north as 72°00'N, which set the record for the northernmost cruise by a Japanese ship.

During the 1953-77 North Pacific cruises, the main sampling areas were the Bering Sea and Northwest Pacific, and the core of the sampling program included hydrographic, plankton, fish-larva and salmon drift gillnet sampling. In 1978, the sampling area expanded to include the Subarctic Current and Subarctic Boundary, and the 180° transect through this region has been sampled every year since. Data have been collected on various nekton from this region, including neon flying squid, Pacific pomfret, Pacific saury, and albacore. These and other data from the North Pacific cruises have been published annually since 1957 in the Faculty of Fisheries' "*Data Record of Oceanographic Observations and Exploratory Fishing"*. The *Oshoro Maru III* completed her final cruise in 1983, after sailing nearly 530,000 nautical miles, and carrying 3263 students and 850 scientists, including 144 from foreign countries. In 1984, she was replaced by the 1,383-ton *Oshoro Maru IV*, a 73-m stern trawler equipped with a 3,200 horsepower engine (Fig. 6). This ship continues to be used today.

Fig. 5 The Oshoro Maru III.

Fig. 6 The Oshoro Maru IV.

End of the cadet training program

The Faculty of Fisheries at the Hokkaido University offers a one-year postgraduate course in ship and fishery operations. Cadets in this course receive classroom instruction in navigation, ship maneuvering and maritime law, followed by at-sea training aboard the *Oshoro Maru* during the North Pacific cruise. Since 1953, 795 cadets have participated in these cruises. Similar courses are also offered at three other universities in Japan (Tokyo University of Fisheries, Kagoshima University, and Nagasaki University), but due to declining enrollment, in 2002, these four courses will merge into one taught in

Tokyo. As a result, the cadet class graduating in March 2002 will be the Hokkaido University's last.

Funding for the *Oshoro Maru*'s North Pacific cruises comes from the Japanese Ministry of Education. It is now unclear how the closing of the cadet program will affect future funding, but since the main purpose of these cruises is to train cadets, future funding is expected to decrease. However, Hokkaido University scientists remain hopeful that these cruises and the cooperative research programs with U.S. and Canadian institutions will be able to continue.

The return home

LOCATION: Central Dock, Hakodate

DATE: 19 August 2000
TIME: 0700 hours:

The *Oshoro Maru* quietly finishes her 11-week journey by slowly approaching the dock. With her fuel and freshwater reserves low, the ship rides much higher in the water than she did in June. It is early on a Saturday morning, too early for a large welcoming party. The first to board are two customs agents, who, after an hour of checking passports and dealing with other formalities, allow the crew and cadets to disembark. The 48th annual cruise of the *Oshoro Maru* to the North Pacific has ended. The unloading of nets and frozen samples can wait until Monday. It is now time for the chief officer to see how big his daughters have grown.

Table 1. Ports visited by the Oshoro Maru *during the North Pacific cruises. Years are shown in parentheses.*

Adak	('69, '77, '78, '79, '80)	Newport, Oregon	('85)
Dutch Harbor	('73, '74 (2X), '86, '88, '89, '90 (2X), '91(2X), '92, '93, '94 (2X), '95 (2X), '96, '97, '98 (2X), '99 (2X), '00)	Nome	('72, '83)
		St. Paul Island	('74)
		Seattle	('55, '60, '70, '81, '87, '93, '98)
Honolulu	('84)	Seward	('66, '77, '79, '81, '83, '84, '86, '90, '94, '97)
Juneau	('60, '64, '68, '73, '80, '84, '92, '96, '99)		
Ketchikan	('88)	Sitka	('82)
Kodiak	('65, '67, '68, '69, '70, '71, '72, '75, '76, '78, '80, '82, '83, '85, '87, '91, '95, '97, '00)	Valdez	('96)
		Vancouver	('67, '89)
Nanaimo	('67)	Victoria	('00)

Table 2. Names and affiliations of foreign participants in the Oshoro Maru *North Pacific cruises*

David G. Ainley, PRBO	Tina Wyllie Echeverria, UA	Tsuneo Nishiyama, UA
Kerim Y. Aydin, UW	Yoji Endo, UA	Tammy C. Norgard, DFO
Christine Baier, UW	David L. Eslinger, UA	Dorinda Osterman, WHOI
Jack E. Bailey, NMFS	James A. Finn, UH	William G. Pearcy, OSU
Willard E. Barber, UA	Joanna Flanders, NMFS	Jon Peterson, NMFS
Isabelle Beaudet, DFO	Naoki Fujitani, WHOI	J.C. Quast, BCF
Evelyn D. Biggs, NMFS	Moira Galbraith, DFO	James A. Raymond, ADF&G, UA
Bruce D. Bolding, OSU	James W. Glock, NPFMC	G. M. Reid, BCF
Jennifer L. Boldt, UA	John J. Goering, UA	Robert Reid, NMFS
Christopher Bouchet, NMFS	Elizabeth Hacker, NMFS	Wendy Roberts, NMFS
Jim H. Branson, NPFMC	Raymond S. Hadley, UA	William C. Rugen, NMFS
Steve Branson	Tsutomu Haryu, UA	Raymond Sambrotto, UA
Richard D. Brodeur, NMFS, OSU	Kazuo Hirano, UA	Timothy M. Sands
Chris Bublitz, UA	Saang-Yoon Hyun, UW	John Skidmore, NMFS
Morgan Busby, NMFS	Herbert W. Janicke, NMFS	William W. Smoker, UA
Richard Carlson, BCF	Arthur Kendall, NMFS	Stella Spring, NMFS
Lie-Feng Chen, UA	Tom Kinder, UW	Matthew Stafford, ODU
Lorenzo Ciannelli, NMFS	John T. Konecki, UW	Richard Straty, BCF, NMFS
Jay B. Clark, NMFS	Joyce H. Landingham, NMFS	Hiroya Sugisaki, NMFS
Kurt Clemente, ODU	Sang-Sun Lee, UA	Kozo Takahashi, WHOI
L.K. Coachman, UW	Denby S. Lloyd, NPFMC	Sarah Thornton, UA
Lewis Consiglieri, NMFS	Ole A. Mathiesen, UA	Richard B. Tripp, UW
Glenn F. Cota, ODU	Judy McDonald, UA	Terrence Wahl, PSG, WWU
Kenneth Coyle, UA	Lawrence J. Miller, UA	Robert V. Walker, UW
Pamela S. Croom, UA	Douglas F. Moore, DFO	Mark Willette, UA
Michael L. Dahlberg, NMFS	D. Mountain, UW	Matthew T. Wilson, NMFS
Clark Darnell, UW	Josephine Munson, NMFS	David E. Withrow, NMFS
Robert H. Day, UA	Marcia May Muto, NMFS	F.F. Wright, UA
Anthony R. DeGange, USFWS	Katherine W. Myers, UW	Shinn Pyng Yeh, UA
Donald R. Deibel, MUN	Jeffrey M. Napp, NMFS	
John P. Doyle, UA	J. Nishimoto, BCF	

Note: ADF&G: Alaska Department of Fish and Game; BCF: Bureau of Commercial Fisheries; DFO: Department of Fisheries and Oceans; MUN: Memorial University of Newfoundland; NMFS: National Marine Fisheries Service; NPFMC: North Pacific Fishery Management Council; ODU: Old Dominion University; OSU: Oregon State University; PRBO: Point Reyes Bird Observatory; PSG: Pacific Seabird Group; UA: University of Alaska; UH: University of Hawaii; USFWS: U.S. Fish and Wildlife Service; UW: University of Washington; WHOI: Woods Hole Oceanographic Institution; WWU: Western Washington University.