Vera Alexander

Dr. Vera Alexander is a biological oceanographer. She has contributed widely to our understanding of the ecology and the role of sea ice in biological processes in polar seas. Vera's journey through life, which led her to Alaska, began in Budapest, Hungary, where she spent winters in town and summers in a small country village, Nograd Veroce. Country life offered a fine opportunity to become attached to animals, especially horses, which characterizes her life style today.

In early childhood, Vera (left) with her sister in Budapest.

A move to a small town in Hertfordshire offered many happy days spent roaming the forests of England with her dog, Tigger, and later with her jumping pony, Cobweb 1. Then, following graduation from a rather starchy all-girls' school, it seemed time to give up on education for a while, and she and Cobweb moved to a farm in Suffolk for a year of intense farm work and riding. Then, when the opportunity to go to the United States and begin college came up, the resolve to give up scholarships weakened, since the University of Wisconsin seemed a sufficiently exciting place. The years there were very enjoyable, and switching majors from agriculture to chemistry to zoology resulted ultimately in a focus on aquatic systems. She received her M.S. degree in 1962. During these college days, the major recreational activity was mountain climbing, and several trips with the Wisconsin Hoofers Mountaineering Club to the Tetons and Canadian Rockies were undertaken.

I (John Kelley) first met Vera in the mid-1960s shortly after she joined the newly formed Institute of Marine Science (IMS) as its first graduate student. The concept of a marine sciences institute was developed by Dr. K. M. Rae and Dr. Donald Hood in the early 1960s at the Texas A&M University, and implemented at the University of Alaska campus in Fairbanks. Vera was able to participate in planning and research at IMS in those exciting years as she pursued her own research leading to a Ph.D. degree on the seasonal succession in nitrogen-limited algal blooms, and this relationship to the nitrogen cycle of a lake. She finished her doctoral studies in three years and was the first woman to be awarded a Ph.D. (one of the first of two marine science Ph.D. awardees) at the University of Alaska in 1965. Dr. Alexander might have developed her

professional life elsewhere, but she fell in love with Alaska and was appointed to the faculty of IMS as an assistant professor where she remained throughout her career. As she became well known and respected in her field, she was invited to pursue her interests as a visiting professor at the University of Turku, Finland, and at the National Institute of Polar Research, Tokyo, Japan. Long-term friendships with Finnish colleagues developed while working on the circumpolar tundra during the International Biological Program. Many hours were spent with vodka, saunas, and skiing across the hills in Lappland.

A koto lesson from Fukuchi-sensei at Utsunomiya.

Experience on Wisconsin's Lake Mendota and a reservoir in Pennsylvania involved the first actual measurements of nitrogen fixation rates in aquatic systems, using N-15 as a label. This experience served her well as she added this to her interests and studies of biological oceanography of high-latitude sea ice impacted areas with emphasis on ice biology, primary production and nitrogen dynamics, as well as high-latitude limnology.

During the 15 years after joining the faculty of the IMS, she enthusiastically conducted research and trained graduate students in marine and freshwater research. She took part in the International Biological Programme (IBP) Tundra Biome study at Barrow, Alaska, and continued her studies on arctic lakes during the years after IBP. One of those pioneering research was carried out at Toolik Lake, a major tundra lake located a short distance north of the Brooks mountain range. Dr. Alexander set up her research station in a small trailer located at an abandoned construction site associated with the building of the Trans Alaska Pipeline. Toolik Lake eventually attracted other scientists and became a major ecological research site designated as a Long Term Ecological Research (LTER) site by the National Science Foundation.

Vera had broad research interests at sea and on land. At one time during the International Biological Program, comparative studies were conducted on terrestrial nitrogen fixation rates in the high alpine tundra of the Alaska Range and the wet tundra in the Barrow area. The IMS Director, Dr. Donald Hood, instructed her to give a research seminar on a marine topic. After considerable thought, the title that emerged was “Oceanography of the High Alpine Tundra”. It was well received by all. Although her early interests were in marine ecology and especially the role of sea ice in biological processes in polar seas (Arctic and Antarctic), she ultimately turned her attention to the Bering Sea, where she became impressed with the extremely efficient production processes which lead to huge harvestable resources.

An account is still remembered how Vera integrated the NARL steam room. In the early 1970s, the Naval Arctic Research Laboratory (NARL) in Barrow was a hotbed of activity for the IBP Tundra Biome program. It was a different world then. NARL had a brand new H-shaped building that housed research labs in one long wing, administrative and public facilities in the shorter center section and sleeping rooms in the far wing. Only men were allowed to stay in the new building, which had flush toilets. Women were relegated to Quonset huts and other primitive buildings. NARL had a steam bath that was for men only. The male scientists and employees of the contractor running the facility could relax to their heart’s content. Some of the women researchers wanted to break the gender barrier in the steam room, but didn’t want to give any of the guys a heart attack or get them thrown out of camp. At the time, mixed nude saunas were common in Fairbanks, so the off-limits policy was especially rankling to those from the University of Alaska. Vera and a couple other women found the right moment to invade the steam room when some National Science Foundation (NSF) visitors came for a site visit. Surely, if they took part, the local conspirators couldn’t get in trouble! One of the scientists stood guard (heart attack prevention) and Vera and the others (including some from NSF) successfully accomplished their mission. Surreptitious use of the steam room continued that year, and eventually a co-ed sauna was built.

Mother Vera with daughter, Elizabeth, and son, Graham in the birch forest of Alaska.

Dr. Alexander has a strong national and international reputation. She is Dean of the School of Fisheries and Ocean Sciences (SFOS), Director of the Coastal Marine Institute at the SFOS, and serves as University of Alaska marine representative to the National Association of Land and Sea Grant colleges. She served on the National Research Council Committee and as Treasurer on the Board of Directors of the Arctic Research Consortium of the U.S. (ARCUS). She has also served as chairman of the National Science Foundation's Committee on Ocean Sciences and is serving on the NOAA Science Advisory Board and the Ocean Research Advisory panel, and as Pollock Conservation Cooperative Research Center Director. She is a presidential appointee to the U.S. Marine Mammal Commission and one of the two United States delegates to PICES. She was elected as PICES Vice-Chairman in 1998, and re-elected for this position in 2000.

In recognition of her accomplishments the Hokkaido University awarded her an honorary Doctor of Laws degree in 2000.

In the Dean's chair at IMS, Fairbanks.

Posing with an honorary Doctor of Laws from Hokkaido University with president, Dr. Norihito Tambo (on Vera's right), and senior university dignitaries.

Research and research administration have dominated Dr. Alexander's professional life. However, she has another well-developed talent nurtured during her early years as a student in England. It was in Fairbanks that Vera was encouraged to reawaken her interest in the piano. That opportunity arose when the newly formed Fairbanks Light Opera Theater (FLOT) needed an accompanist. That led to master classes at the University of Alaska and many public recitals in Alaska and Japan. She was invited to perform during the opening ceremonies of the first International Symposium on the Okhotsk Sea and Sea Ice in Mombetsu, Hokkaido, Japan, in 1986, and again in 1991.

The Mombetsu duo: Vera at the grand piano with Willy Weeks on bass.

It must be genetic: Vera and granddaughter Celia interpret the dynamics of Rachmaninoff.

Although Dr. Alexander maintains a very robust professional schedule, she participates actively in community and many professional organizations. She was elected fellow of the American Association for the Advancement of Science (AAAS) in 1990, and is a Fellow of the Arctic Institute of North America. As a result of her extensive field research activities, she was elected as a fellow of The Explorers Club (New York) and served as chapter chairman in Alaska.

She is also active in College Rotary Club and recently served as its president. On the lighter side she was also elected as a Fellow in the Academy of Malt Scotch Whisky in 1980. Today, her household consists of three cats, a dog (again, Tigger), a 40-year old horse, which had been daughter Elizabeth's show jumper many years ago, a young Morgan mare, and a Shetland pony adopted as a yearling from the disbanded Kodiak Near Island herd.

Dr. Alexander's strong commitment to PICES is well recognized. She has consistently promoted research addressed to fisheries and ocean sciences of the North Pacific Ocean and Bering Sea.

Vera's biography was written for PICES Press by **Dr. John Kelley** who is a Professor of Marine Science in the Institute of Marine Science, School of Fisheries and Ocean Sciences at the University of Alaska Fairbanks (UAF). He has been at the UAF for 32 years where he conducted research on carbon dioxide and other trace gases in the Arctic land and seas. Current interests are in fisheries acoustics and contaminants in marine organisms. He also served as Program Manager in the Office of Polar Programs, NSF, Direct of the USN/ONR Naval Arctic Research Laboratory and Director of the NSF Polar Ice coring Office.

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That decade was crucial for Mexican marine sciences: shrimp and abalone landings were declining, sardines were found in sizeable amounts in the Gulf, several academic and research institutions were created, and a 200 mile EEZ was adopted. An active cooperation that had been initiated by the INP and CalCOFI, and lasted several years, was jeopardized when fisheries and scientific boats entering the EEZ faced increasing problems. CalCOFI basically withdrew from the Mexican part of their grid. Although the national institutions were yet too young to effectively cover such absence, they developed strong academic relations with them.

The shrimp fishery problems were dealt with, finding a gross overinvestment problem, regulating mesh sizes and managing closed seasons to permit shrimp growth. Aquaculture for both shrimp and abalone was initiated and wide geographic projects were begun at the same time that local areas were studied. The real involvement of Mexican marine scientists in the western coast of the Peninsula began in the 1980s.

During these 20 years, we coped with issues learned mostly by the CalCOFI people and found many more. Our area turned out to be far more complicated than expected, because we have both temperate and tropical species. We learned the complexity of the California Current and of the Gulf, both areas of temperate/tropical mixing, dynamically changing along the year. It has become clear that the seasonal intrusion of tropical water is associated with low productivity, isolating massive populations like sardines in small, persistently high productivity areas. The coupling of the yearly sardine cycle to seasonal and interannual variations of the environment, particularly in the Gulf, has been possible after the effective cooperation of biologists and oceanographers.

Environmental variation between years has also been understood, and we now know that all our research effort developed during a warm period. The effects of these changes are being actively studied and are beginning to be taken in account for resource management.

By the time equilibrium yield models were becoming inadequate to understand fisheries in developed countries, Mexican scientists had caught up and were looking at alternate approaches including other population models, incorporating the effects of environmental change, and turning into ecosystem analysis. This process has resulted in about 10 institutions employing about 350 Ph. D. and 150 M. Sc. students from which 760 Master and about 85 Doctors have obtained their degrees.