

Remembering Vera Alexander

Gordon Kruse

Dr. Vera Alexander, a beloved founding member of PICES, passed away peacefully, surrounded by family members, on May 11, 2023, in Fairbanks, Alaska. She was 90 years old.

Vera was born in 1932 in Budapest, Hungary, where she became enamored with animals, especially horses. With the onset of World War II, her family fled Hungary to England in 1939. As a 7-year-old, Vera trained her dog Tigger to pull a cart, while she sold duck eggs to neighbors during the war. As a teenager she enjoyed riding through the countryside on her pony, *Cobweb*, the very first of many horses she owned during her lifetime. She dropped out of high school at age 16 to work on an English farm, but her interest in agriculture later led her to science. During these years, she also developed a life-long love of music. In fact, in England she earned firsts in music composition at the Berkhamsted School for Girls and passed the Royal Academy of Music (London) piano performance exam. After the war, her family moved to Princeton, New Jersey, U.S.A.



Vera's interests in farming led her to the University of Wisconsin. Why did she pick Wisconsin for school? In a 2015 interview she said *"I didn't want to be on the east coast, I wanted to be as far west and north as I could go, and where there were farms. I wanted to be a farmer, and muck around in the woods!"* At Wisconsin an advisor told her that *"you really need to get your sciences in order to be good at agriculture."* She went on to earn a BS in Biology and a MS in Zoology. During college days, she enjoyed other activities – particularly mountain climbing – and she took several trips with the Wisconsin Hoofers Mountaineering Club to the mountain ranges of the Tetons and the Canadian Rockies. Vera married fellow graduate student and Hooper, Richard (Dick) Dugdale, and had two children, Graham and Elizabeth Dugdale. After repeated research trips to Alaska, Vera and Dick moved to Fairbanks in 1962 while she was working on her Master's degree from Wisconsin. When they arrived in Alaska she said *"I am never leaving"*.

In the 1960s, Vera started at the newly formed Institute of Marine Science (IMS) at the University of Alaska. She participated in research at IMS as she pursued her own research leading to a Ph.D. on the topic of *seasonal succession in nitrogen-limited algal blooms and their relationship to the nitrogen cycle in a lake*. Vera finished her doctoral studies in three years and was the first woman to be awarded a Ph.D. at the University of Alaska in 1965. At the time she earned her degree, women weren't allowed on research ships, though, fortunately, that soon changed. After joining the faculty of IMS, Vera established a vibrant research program and trained graduate students in marine and freshwater research. She was a scientific pioneer in many ways. For example, she was among the first to use the N-15 isotope to study nitrogen fixation in lakes. At the time, it was commonly thought that bacteria were the primary source of fixed nitrogen, but Vera found that most of it was fixed in lakes by blue green algae. Since then, this same process was found in other environments including tundra terrestrial ecosystems, where lichens fix nitrogen. After early interests in marine ecology and particularly the role of sea ice in biological processes in polar seas, she turned her attention to the Bering Sea, where she was intrigued by the production processes leading to large harvestable resources. She discovered that the ice was a critical factor determining spring productivity in the arctic region. Many of her research studies, such as heterotrophy of sea ice algae, or developing suitable techniques to measure ice algal activity, were firsts in marine science.



Vera (PICES Vice-Chair at the time) played Rachmaninoff during the Chair's reception at PICES 10th Anniversary Annual Meeting (October 2001, Craigdarroch Castle, Victoria, Canada).

Vera went on to become the Director of IMS and then became the first Dean of the School of Fisheries and Ocean Sciences at the University of Alaska Fairbanks, serving in this capacity for nearly 20 years until 2004.



Vera with Bob Elsner, long-term planners of the R/V Sikuliaq, at the launch of the vessel in 2012 in Marinette, Wisconsin. Inset: Vera and Bob's initials were welded into the hull of the ship.

Vera was instrumental in the conceptualization and development of the Research Vessel Sikuliaq, one of the most advanced university research vessels in the world, capable of breaking ice up to 2.5 feet thick. In 2012 she had the great honor to christen the ship on the occasion of its inaugural launch, a crowning achievement in her career.

Vera's distinguished scholarship in biological oceanography, leadership in marine science, and influence in marine policy, has been recognized nationally and internationally. She authored over 70 papers that were published in peer-reviewed literature and she received many honors, including elections as a Fellow of the American Association for the Advancement of Science, the Arctic Institute of North America, and the Explorers Club. Vera was honored to receive an honorary Doctorate of Laws degree from Hokkaido University in recognition of her work promoting international scientific cooperation.

Among her many achievements were 16 years of service on the Marine Mammal Commission, 12 years on the International Scientific Steering Committee of the Census of Marine Life, service on the National Research Council Committee as well as Treasurer of the Board of Directors of the Arctic Research Consortium of the U.S. (ARCUS). She also served as chairman of the National Science Foundation's Committee on Ocean Sciences and NOAA's Science Advisory Board and the Ocean Research Advisory panel.

Vera was a champion of PICES from the very beginning of the organization. She is considered one of the founding members of PICES having been extremely active and a staunch advocate for PICES during its formative early years. She served as United States delegate to PICES Governing Council starting with the formation of PICES in 1992 and continuing until 2002.

In addition to encouraging a number of young scientists to become engaged in PICES, she helped shepherd the first major science initiative of PICES; the 10-year investigation

of Climate Change and Carrying Capacity, a program that involved scientists from across the Pacific Rim and was supported through GLOBEC. Vera was PICES Vice Chair during 1998-2002 and Chair during 2002-2006. Vera was the recipient of the prestigious 2013 Wooster Award for a career of sustained excellence in marine science. Her dedication and contributions to PICES are well recognized.

In spring 2023, Vera Alexander received a commendation from the Alaska State Legislature affirming her many remarkable contributions to the history of the university and to the state of Alaska. During her time at UAF, she shattered many glass ceilings, and during March 2023 UAF celebrated Dr. Alexander, along with many other women who have been inspired by her example.

Throughout her life, Vera demonstrated her love for animals including many dogs, cats, and horses. Her close friends will recall her enjoyment of a "wee dram" of fine Scotch whiskey. However, few may know that she was elected as a Fellow in the Academy of Malt Scotch Whisky in 1980. Vera nurtured her love of the piano, demonstrating her talents on the concert stage and as the first accompanist for the Fairbanks (Alaska) Light Opera Theater.

Vera was predeceased by her sister, Catherine Alexander, and her brother, Robin Alexander. She is survived by her son, Graham Dugdale (Elizabeth Benson), and her daughter Zoe Dugdale (Neilan Pierce, Jr.); daughter Elizabeth Alexander and her children Celia Jackson (Rob Wolter, Jr.) and Everett Jackson (Kara Epple); horses Vinur and Vangeur; dog Lady Byrne; cat Arne.



Vera (US national delegate) at the first PICES Governing Council meeting (October 1992, Victoria, Canada). L-R: Dr. J.C. Davis (Canada), Dr. V. Alexander (USA), Dr. L.S. Parsons (Canada), Dr. W. Aron (USA), Dr. H. Hatanaka (Japan), Dr. W.S. Wooster (USA), Prof. Y.K. Xu (China).