

A tribute to George William Argus, 1929–2022

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The genus *Salix*, the willows, is widely acknowledged by amateur naturalists and professional botanists alike to be among the most perplexing and challenging genera of flowering plants. There are about 400 species and numerous subspecific kinds of willows worldwide, with about 62 species native to Canada. To attempt an understanding of this complex and diverse group requires patience, intelligence, a clear head, a willingness to work in the field from the Arctic to the subtropics, humility, and a healthy sense of humour. George W. Argus, one of the foremost experts on willows of the world for over 60 years, was such a person, and he left us on 21 October 2022.

George loved the outdoors, camping, collecting plants, and climbing mountains. He successfully climbed Mount McKinley, now Mount Denali, in April 1954 when he was 25 (Figure 1) and was nearly killed by a fall on the descent (Egan 2004; Belyaeva and Chamberlain 2014). It therefore may come as a surprise that he grew up in the most urban of settings, the Flatbush area of Brooklyn in New York City. He was born on 14 April 1929, and spent his childhood living in a Brownstone rowhouse above the German bakery that his father owned and operated, developing street smarts to avoid the toughies in the neighbourhood, and rooting for the Brooklyn Dodgers (before they moved to Los Angeles).

George was an enthusiastic student and originally wanted to be an engineer, attending Valparaiso University in northern Indiana for two years. He had a strong desire for adventure and decided to explore Alaska with a buddy while still a student at Valparaiso. With no particular plan in mind, he borrowed some money from his father, bought a truck, and drove north in 1949 (by himself; his friend decided not to go). Once there, he took a job as a labourer on the Alaska Railroad cutting brush and maintaining

the roadbed. He then found work as a lineman's assistant in the gold mines of central Alaska, doing some paleontology on the side and developing an interest in geology and botany. The rugged beauty and adventure of Alaska appealed to George more than engineering in Indiana, so he switched to a biology and geology program at the University of Alaska Fairbanks, completing his undergraduate degree in 1952. It was in Fairbanks that he developed his interest in botany and systematics. It was also in Alaska that he developed an interest in Mary Smirnov, a California girl whom he met at the university. The two were married



FIGURE 1. George Argus in 1954 at the time when he and his party climbed to the summit of Mount McKinley. Photo: Mary Argus.

in 1955, after he recovered from the fall he suffered on Mount McKinley.

After graduating, George applied for a Master's degree program at the University of Wyoming. His advisor, Dr. John F. Reed, was documenting the flora of Wyoming and casually suggested that George take up a study of the willows of Wyoming as a thesis project. As Mary told us (pers. comm. 29 November 2022), "George wasn't afraid to try anything or to take on any challenge", so the daunting task of tackling this difficult genus was readily accepted. George completed the study in 1957, which led to his first publication on the genus (Argus 1957). Hugh Raup, Director of the Harvard Forest at Harvard University, was well known for his ground-breaking studies of the vegetation of northwestern North America and had published a major treatment of *Salix* of the Hudson Bay and Labrador region (Raup 1943), so George decided to continue his doctoral studies with him, earning a Ph.D. degree in 1961 (Argus 1962).

With his strong interest in Alaskan botany and geology, George made an appropriate addition to the Institute of Northern Studies at the University of Saskatchewan in 1963. The institute had been founded only a few years before (1960) to foster multidisciplinary studies that focus on northern Saskatchewan and other parts of northern North America. Although George was active in the institute, his home base was the Department of Plant Ecology in the College of Agriculture and Bioresources. He remained on the faculty at the university for eight years teaching botany and ecology and serving as Curator of the W.P. Fraser Herbarium. He then spent a year at the University of Oregon as the curator of their plant collection, but the job was not what he hoped it would be, and so he again sought a job back in Canada. Fortunately, there was a position open at the Forest Ecology Institute of the Canadian Forest Service in Ottawa. The institute was headed by Dr. Jag S. Maini, whom George had met while in Saskatoon. George got the job and so his family traded the west coast for eastern Canada. There, he continued his botanical work at the forestry lab on Anderson Road from 1970 until 1972.

In 1972, a position for a Research Botanist became available at the National Museum of Natural Sciences (now the Canadian Museum of Nature [CMN]), and George was clearly the most qualified applicant. He served as a Research Scientist in the CMN's Botany Division from 1972 until his retirement in 1995 in various capacities including Head of the Vascular Plants Section (1984–1991; Figures 2 and 3).

The conservation of rare or endangered plants in Canada was the focus of George's work at the Forestry Service and it continued to be a high priority at the CMN. The Rare Plants of Canada project, which

grew out of this interest, was innovative and thorough, resulting in a series of CMN publications from 1982 until 1995. The project involved a number of collaborators at the CMN, but also specialists in the flora of a particular province or territory. Among his coauthors were David White, Kathleen Pryer, Cheryl McJanet, Paul and Cathy Keddy, Sylvia Edlund, Jacques Cayouette, and Robert V. Maher. In keeping with his interest in rare vascular plants, George was the Canadian representative on the Convention on International Trade in Endangered Species (CITES) for 22 years. He also served for several years as Chair of the Subcommittee on Plants for COSEWIC (Committee on the Status of Endangered Wildlife in Canada).

George continued his taxonomic studies of *Salix* throughout this time, describing new species and discussing problematic groups, as well as publishing regional treatments. The first of George's major *Salix* floras dealt with Alaska and Yukon, begun while he was still in Saskatoon and published as one of the first of the CMN's "Publications in Botany" (Argus 1973a). Other regional willow treatments included Alberta, British Columbia, northern Quebec, Missouri, California, Colorado, and the southeastern United States. His vast knowledge of North American willows was put to good use when he authored a 140-page monograph on *Salix* for the Flora of North America (Argus 2010a). All these floristic and taxonomic treatments involved field work and thorough studies of herbarium specimens. As a result of collecting material for these projects, as well as documenting his many field experiments in the hybridization of willows, George has made the National Herbarium of Canada at the Canadian Museum of Nature (CAN) one of the world's most important centres of study for the genus *Salix*.

George's knowledge of plants was by no means limited to the willows. Soon after George came to the CMN he became involved in Hugh Raup's on-going studies of the flora of northern Canada begun in the 1930s. They collaborated in a study of the ecology, evolution, and endemism of the flowering plants living in the sand dunes around Lake Athabasca requiring several seasons of field work in Alberta (Raup and Argus 1982).

George had an interest in the computerization of herbarium data since his days at the University of Saskatchewan. There, he worked with lichenologist John Sheard of the Department of Biology, College of Arts and Sciences, on capturing herbarium data using the computer techniques being used at that time (Argus and Sheard 1972). In 1984, his attention turned to the use of computers in creating botanical descriptions and identification keys after hearing a lecture given by Dr. Susan Aiken on the subject. Dr. Aiken,

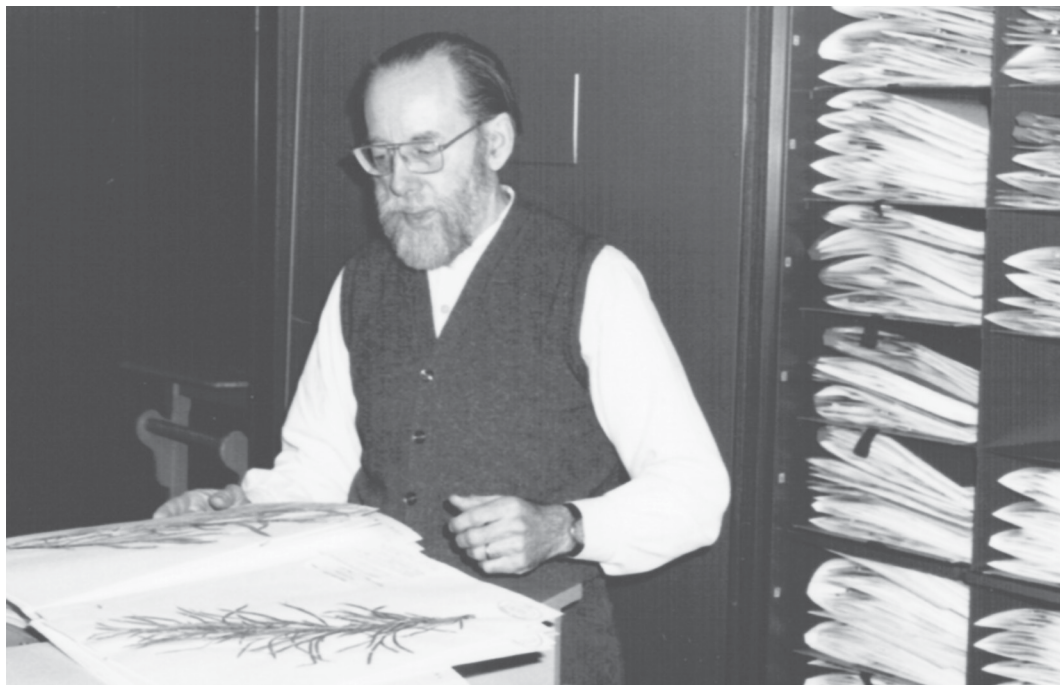


FIGURE 2. George Argus at work in the 1980s in the willows section of the National Herbarium of Canada, Canadian Museum of Nature, Ottawa, Ontario, Canada. Photo: E. Haber.

who had just joined the CMN's Botany Division, had been working with the characterization and identification of grass genera using the new DELTA (DEscription Language for TAXonomy) programs developed in Australia by Mike Dallwitz and Les Watson. With both Aiken and Argus using DELTA in their work, Dallwitz became a frequent visitor at the CMN to fine-tune the INTKEY (INTERactive KEY) and DELTA programs as they applied to preparing descriptions and keys to willows and Arctic plants. George and Susan became the local DELTA experts and helped other botanists at the CMN interested in applying these useful tools to their own groups, including I.M.B. for lichens. Over the years, George gave numerous willow identification workshops using DELTA (Figure 4).

George was an enthusiastic and excellent field botanist, collecting plants throughout North America and even in Siberia with his colleague, Dr. Alexei Skvortsov. George, together with I.M.B., E.H., and phycologist Paul Hamilton, had a memorable CMN excursion in 1977 to four remote, subalpine localities in the mountains of northeastern British Columbia: Wokkpash Lake, Fairy Lake, Robb Lake, and Fern Lake (Figure 5). George was in top form, instructing us all on how to negotiate extremely steep scree slopes with a walking pole (on the up-hill side to keep you vertical). He was also quite adept and resourceful



FIGURE 3. Botanists at the Botany Division of the Canadian Museum of Nature, Ottawa, in April 1986. The occasion celebrated the acquisition of the 500 000th specimen (not a willow) in the National Herbarium of Canada (CAN). From left to right: Erich Haber, Susan Aiken, George Argus (Head, Vascular Plant Section), Michel Poulin, Bob Ireland, and Ernie Brodo. Photo: E. Haber.

at stream crossings even with his willow-basket backpack laden with plants (Figure 6). He showed us how to collect willows, and the advantages and pleasures of adding some rum to your tea before crawling into your sleeping bag (Figure 7).

George Argus had many friends and admirers in Ottawa, throughout North America, and abroad. His

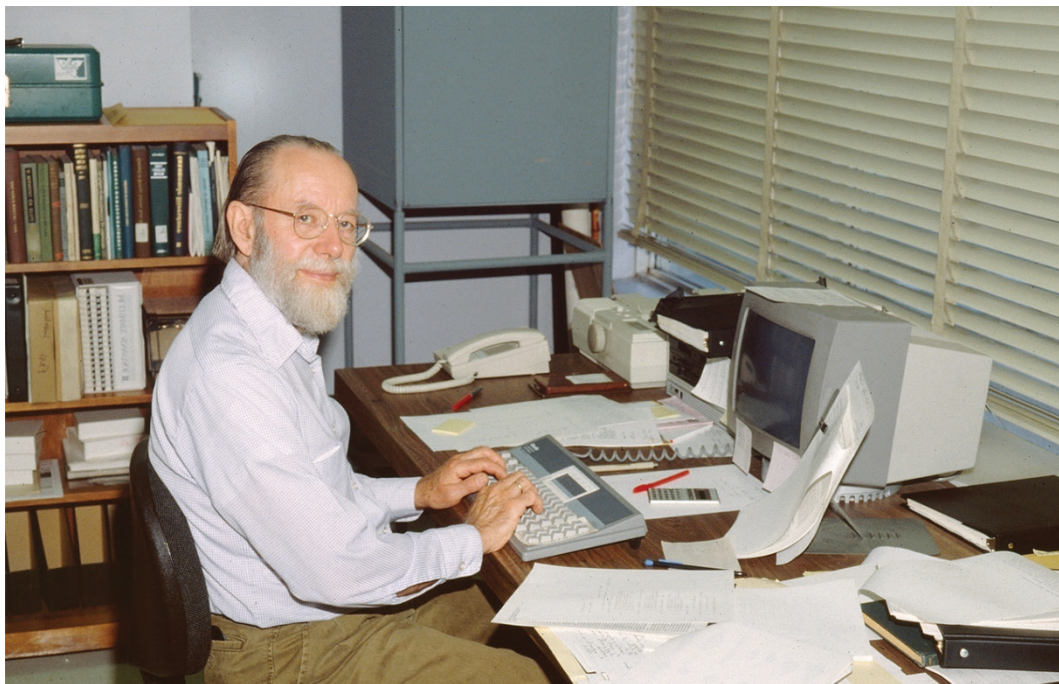


FIGURE 4. George Argus at his computer at the Botany Division in 1992 entering willow data used in the DELTA system identification programs. Photo: E. Haber.



FIGURE 5. Lunch break at 1607 m beside a small alpine lake to the west and above the Wokkpush Lake campsite, northeastern British Columbia (22 July 1977). From the left: George Argus, Paul Hamilton, and Ernie Brodo. Photo: E. Haber.

keen intellect and knowledge made him a valuable member of the CMN's Botany Division, and his wit, humility, and caring nature made him a cherished friend. George had a noticeable stammer when speaking, but that never prevented him from becoming an excellent, effective lecturer and teacher ... or singer. He was a devoted member of the North Grenville Concert Choir. He relished being outdoors, whether walking around his small farm in Burritts Rapids or on a trail in Alaska. He enjoyed canoeing and kayaking, making pottery, playing the banjo, and especially traditional country dancing, actively participating in the Country Dance and Song Society and 12th Night Society of Ottawa. He even sewed his own costumes ... by hand! At various times, together with his wife, Mary, he raised chickens and kept bees and, of course, had a marvelous vegetable garden. He did not like television (and didn't own one) and avoided computers as much as he could, other than using them for the DELTA work. Smart phones? No thank you.

During a visit to the herbarium at Harvard with E.H., George decided to take in an introductory talk on Transcendental Meditation given by the internationally renowned yoga guru, Maharishi Mahesh Yogi. On returning to Ottawa, George enrolled in such a course and practiced meditation for many years. He also participated in Tai Chi lessons during botany coffee breaks. This was taught to a number of us by I.M.B.'s lab assistant, Pak Yau Wong, who practiced Tai Chi every morning before his start of the day.

In the course of his professional career, George was awarded many scholarships, grants, and fellowships. He also received several major honours for professional contributions in science and conservation. George's systematic work on willows was recognized when he received the Gleason Award of the New York Botanical Garden "for an outstanding recent publication in plant systematics" for his monograph, *The genus Salix in the southeastern United States* (Argus 1986a). Three other awards reflect George's contributions to the conservation of rare and endangered plants. In 1983, he, together with David J. White, received the Conservation Award of the Federation of Ontario Naturalists. It was "awarded to individuals within the public service in recognition of a valuable contribution to and support for environmental issues". This was with respect to the Atlas of the Rare Vascular Plants of Ontario. The George Lawson Medal from the Canadian Botanical Association was awarded for an outstanding scientific achievement with respect to the Rare and Endangered Plants Program at the CMN in 1991. In 2008, he received the Goldie Award from the Field Botanists of Ontario, again for his role in the Rare and Endangered Plants Program.

When in 1995 the Botany Division moved from its



FIGURE 6. George Argus with his traditional willow backpack fording a mountain stream. He used this backpack to carry the day's collections of plants stored in plastic bags. Photo was taken at one of the four sites the field party explored in northeastern British Columbia in 1977. Photo: E. Haber.

quarters in Ottawa to new facilities across the Ottawa River in Aylmer, Quebec, 30 minutes farther by car from his farm in Burritts Rapids, George thought it would be a good time to retire (Figure 8). Some unfinished projects and studies nevertheless brought George to the herbarium in Aylmer from time to time, but after several years, even these visits became less and less frequent. The last few years of George's life were spent quietly, first in a retirement home with Mary and finally in long term care facilities.



FIGURE 7. A quiet moment in camp at the end of a long day in 1977 along the south shore of Fern Lake at 1371 m, in north-eastern British Columbia. Dinner was often followed by a good cup of tea re-enforced with a soothing touch of rum (note bottle on table). From left: George Argus, Erich Haber, and Paul Hamilton. Photo: E. Haber.

George and Mary Argus were married for over 60 years and had five children: Michael, Eric, John, Martin, and Rebecca. Michael tragically died in an accident in 1986. George also had a younger brother, Roland, and sister, Joan.

With the death of George Argus, the world has lost more than one of its greatest experts of willow taxonomy; it has lost a great human being.

Acknowledgements

In writing this tribute, we made frequent use of George's detailed *curriculum vitae*, prepared in 2012, as well as a well-written and informative biography written by Irina Belyaeva and Keith Chamberlain in celebration of George's 85th birthday (Belyaeva and Chamberlain 2014). Mary Argus was immensely helpful in providing details of George's early life in Alaska, and for checking the drafts for accuracy. Susan Aiken generously provided us with the story behind the adoption of DELTA by botanists at the Canadian Museum of Nature, and John Sheard checked and improved our comments on the Saskatoon days. We also acknowledge the help of Stephen Haber in scanning text and photographs and solving other digital problems.



FIGURE 8. George Argus at his retirement party in 1995, held at the Brodo's residence in Ottawa, attended by family, friends, and professional colleagues. Photo: E. Haber.

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