

Professor Mary Gibby Ph.D., OBE, FLS, FRSE, PPBPS (1949–2024)

Mary Gibby was a remarkable person and a leading botanist of her generation. During her long and distinguished career, she focused on ferns, the genus *Pelargonium*, plant conservation, and supporting the next generation of botanical researchers. Equally at home in the laboratory with her microscope or in the hills of Scotland or mountains of Yunnan, Mary was also a sound strategic thinker and a talented manager of scientists. She was a former president of the British Pteridological Society and, until her death, editor of its international research journal, the *Fern Gazette*. For her many achievements Mary was elected Fellow of the Royal Society of Edinburgh in 2004 and was appointed an Officer of the Most Excellent Order of the British Empire (OBE) in 2010. Born on 27 February 1949, Mary died on 17 July 2024 during fieldwork in the Italian Alps with her husband, Professor Janis Antonovics, FRS.

Born in Doncaster, South Yorkshire, where her father was a teacher, as a child Mary moved with her family to the village of Greysouthen on the edge of the Lake District, where she grew up and acquired a lifelong love of mountains and nature.

Mary read botany at the University of Leeds under Professors Irene Manton and John Lovis, securing first-class honours in 1971. Under the supervision of Stanley Walker at the University of Liverpool, she studied for a Ph.D. on biosystematics and cytogenetics in the fern genus *Dryopteris*. In North America, Macaronesia and Europe the large genus is complex, with many species that are morphologically very similar. Mary made full use of the wide network of pteridologists of the Leeds and Liverpool schools, and of botanical garden collections and herbaria, and was able to hybridise diploid and tetraploid species to observe chromosome behaviour at meiosis. Knowing the origin of her artificially created hybrids, Mary understood that failure of chromosome pairing in triploids indicated that the diploid and tetraploid taxa were unrelated. Pairing in the triploid hybrid would confirm one of the ancestors of the tetraploid. The cytogenetic techniques involved had been developed and perfected by Irene Manton and her school in the 1940s, 50s and 60s, and represented state-of-the-art experimental taxonomy and biosystematics of the time. Given the difficulty of obtaining nuclear gene sequence data in these highly polyploid species, Mary's results remain important today in the classification and identification of *Dryopteris* species.

As an undergraduate Mary spent a summer internship at the Natural History Museum, London (NHM), and in 1975, during the completion of her Ph.D., joined the staff of its botany department. At that time the NHM was still predominantly populated by male scientists (often without Ph.D.s) and focused on descriptive taxonomy and morphology. At one interview Mary recalled being asked whether, if appointed, she would prefer to be called Mrs or Miss? Her swift reply was: 'Doctor will do'.

Once at the NHM, and following her Leeds and Liverpool training, she chose to do much of her research at the Chelsea Physic Garden where, as a cytologist, she could be among

a living collection of her ferns and other interesting plants. Her laboratory there gave the Physic Garden an active role in research at a time when it was not regularly open to the public, and Mary undoubtedly influenced the curatorial thinking and the development of its collections. Her work on *Dryopteris* of the northern hemisphere continued into the late eighties. At the same time, while she was embedded in the Chelsea Physic Garden community, her research interests diversified, and she started to work on the cytology of the flowering plant genus *Pelargonium* (Figure 1), pursuing an interest stimulated by Virginia Nightingale, a horticulturalist there with a particular interest in the genus. The Physic Garden was a historically apt place to house a diverse collection of *Pelargonium* species, as species in the genus had first been hybridised there by the head gardener, Philip Miller, some 250 years earlier.

Inspired by attending a conference in the United States in 1991, Mary became interested in the application of newly emerging molecular methods to biosystematic, taxonomic and phylogeographical questions. Over subsequent years, her work focused on three groups: the genus *Pelargonium*, the filmy fern *Trichomanes speciosum*, and European/Macaronesian *Asplenium*. In all three groups, her teams combined fieldwork, morphology, cytology and



Figure 1. Professor Gibby collecting *Pelargonium multibracteatum* Hochst. from the Sumara Pass in Yemen, 4 February 2007. Photograph: Leigh Morris.

molecular methods, including enzyme electrophoresis and chloroplast DNA (cpDNA) sequencing. Through Mary's work with her extensive network of botanists in South Africa, the UK and Europe, the new technologies empowered the analysis of biogeographical patterns and phylogenetic relationships, and enabled the support or rejection of hypotheses based purely on morphological and/or cytological comparisons.

The Botany Department at the NHM had a strong fern team including Mary's colleagues Alison Paul, Josephine Camus and Clive Jermy, whose work spanned both curation and research. When one of the authors (S.B.) became Keeper of Botany in 1990, molecular laboratories were, under Mary's leadership, established for the Department in the east and central towers of the Museum's Waterhouse Building, while the living plant collections continued to be grown at the Physic Garden. Mary would travel between the two on her folding Brompton bike. She built up a molecular team to work on ferns; this included Dr Fred Rumsey, an eminent field botanist; the late Dr John Barrett, a theoretical plant geneticist at the University of Cambridge, then Mary's husband; Steve Russell, who supervised the laboratories; and one of the authors (J.V.). The team was later joined by Dr Harald Schneider, now Professor at Xishuangbanna Tropical Botanical Garden in Yunnan, China. There were also many post-doctoral researchers and Ph.D. students who joined the team at different stages; many have since established successful research careers and teams of their own. Mary was pivotal in the development of many scientists' careers, including that of J.V., for which he will be eternally grateful.

At the NHM Mary's fern team concentrated on two programmes: the genus *Asplenium* and the rare *Trichomanes speciosum*. Sporophytes of *Trichomanes* are relatively common in the laurel forests of Macaronesia but rarer on the extreme Atlantic fringes of Europe and northern Africa. However, *Trichomanes speciosum* has an independent gametophyte generation that can reproduce and spread vegetatively. The gametophytes are long lived and remain sheltered deep in rock crevices, being much more cryptic than the sporophytes. Because researchers knew what to look for, gametophytes were discovered hundreds of kilometres away from extant sporophytes, first in the UK and later in continental Europe. Under the leadership of Fred Rumsey, the ecology, conservation status and phylogeography of *Trichomanes speciosum*, in both life-cycle stages, were documented in a series of innovative papers.

The biosystematics of European *Asplenium* had been well established using morphological comparison and cytology, but allozyme electrophoresis and cpDNA analysis allowed a more detailed analysis of evolutionary patterns and processes within the genus. The maternal inheritance of chloroplasts was established, and it was discovered that there is a strong, unidirectional bias in hybrid formation, due to different in- or outbreeding preferences of the taxa involved. Using cpDNA and allozymes, researchers could unravel complex diploid-to-octoploid relationships (e.g. in *Asplenium ceterach*) and establish phylogeographical patterns and evolutionary processes in relation

to climate change. The first phylogeny of *Asplenium*, the most speciose fern genus, was published in 2004. Under Mary's leadership, the team became one of the largest research groups on ferns worldwide.

In addition to her prolific and diverse scientific career, Mary was also a distinguished scientific leader. Following her role as Associate Keeper of the NHM Botany Department, which started in 1997, she was appointed Director of Science at the Royal Botanic Garden Edinburgh (RBGE) in 2000. S.B. had been appointed Regius Keeper (Director) of RBGE the previous year and was delighted that a competitive and international process resulted in Mary, a former colleague, joining him. The experience gained at the NHM and Chelsea Physic Garden stood Mary in good stead as she began the transformation of science at RBGE, careful at all times to foster close integration between scientists and horticulturists. Mary also strengthened institutional relationships with the University of Edinburgh, the Scottish Crop Research Institute (now part of the James Hutton Institute) and Scottish Natural Heritage (SNH, now NatureScot). As a member of the Action Plan and Science Group of SNH, she was much involved in developing early versions of Scotland's Biodiversity Strategy and hosting the Scottish Biodiversity Forum conference, which on several occasions was held at RBGE.

In 2001, Mary gave a presentation to the House of Lords Science and Technology Committee as part of a review of the state of systematics in the UK. The subsequent report by Baroness Walmsley, *What on Earth? The Threat to the Science Underpinning Conservation*, reflected the importance of precise taxonomy in biodiversity conservation and supported the case put by Mary that RBGE should be granted analogue status by the research councils, thus allowing its scientific staff access to research council funding.

Mary led the development of a programme to conserve Scottish rare plants, which brought threatened species into the public eye and began the restoration of several species into the wild. As Director of Science at RBGE Mary travelled widely, making official visits to strengthen collaborations in China, Belize, Bhutan, Indonesia, Singapore and Soqotra, among other places. On a visit to Bogor Botanical Gardens, Indonesia, one of us (S.B.) recalls Mary's delight at being surrounded by a group of enthusiastic early-career female researchers and sharing her expertise with them. In China in 2002, she made many lasting friendships representing RBGE at the formal opening of the Jade Dragon Field Station and Lijiang Alpine Botanical Garden, a joint initiative with the Kunming Institute of Botany, Chinese Academy of Sciences.

Mary was central to the restoration project for the Victorian fernery at Benmore Botanic Garden, part of RBGE, in western Scotland ([Figure 2](#)). Built in the 1870s, at the height of the Victorian fern craze, the fernery roof had collapsed a century earlier, but its walls remained as a listed building. A fundraising appeal and support from the National Lottery Heritage Fund enabled restoration to begin in 2008, with the building reopening the following year. In 2009, having guided the replanting, Mary published *The Benmore Fernery: Celebrating*



Figure 2. Professor Gibby at Benmore Botanic Garden. Photograph: RBGE.

the World of Ferns. After retiring from RBGE in 2012, Mary continued to work as a research associate at the NHM London and RBGE in Edinburgh, active in editing, helping to curate collections, teaching, and helping students and colleagues.

Mary was a considerate and strong leader, an exemplary Ph.D. supervisor, and a great mentor. With an astute understanding of, and insights into, character, she knew her science and was respected as a member of the scientific community. She established large research teams and attracted substantial amounts of external funding.

Outwith academia, Mary loved the outdoors and enjoyed regular collecting field trips in the UK, Europe and Africa. After the birth of her daughter, Jessica Barrett, these became family trips, Jess accompanying her mother from the age of six months on the island of Madeira and later in Africa. After retirement Mary continued fieldwork with her husband, fellow botanist and geneticist Janis Antonovics, on his annual fieldwork in the mountains in Italy.

In addition to nature and wild places, another of Mary's major passions was for canals and narrowboats. Much time was spent aboard her beloved *Swan*, a working narrowboat built in 1933 that she owned and faithfully restored. She was a founding member of the Battlebridge Basin boat community at King's Cross, London, and served as a Director of the London Narrow Boat Company Ltd from 2014 to 2020.

Steve Blackmore: I first met Mary through mutual friends when I was a Ph.D. student, and I got to know her well on joining the NHM in 1980. After she moved to RBGE, we enjoyed hillwalking together, including traversing the five Munros of the Ben Lawers range after only a week in her new post. Knowing that Mary was an able rock climber, which I am not, I let her go first on the steep descent from An Stùc. A little after leaving the top, Mary turned to me and said, 'Why don't you go first, Steve? It's rather steep you know!' I did as I was told (and survived). On another memorable day in the hills of Torridon, we needed crampons and ice axes to reach the frozen summit of Spidean Coire nan Clach on Beinn Eighe. Little wonder that Mary had the fitness for fieldwork above 4000 m in Yunnan.

Johannes Vogel: I met Mary in 1990 while studying part II genetics with John Barrett at Cambridge. In 1991 she encouraged me to apply for an NHM Ph.D. studentship on *Asplenium*, developing and exploring newly emerging molecular methods for ferns. John and Mary were my supervisors, and we stayed close friends after Mary's move to Edinburgh. We regularly spent time together in the UK, Germany and the USA, always finding time to botanise together. She was a faithful and much-loved friend and colleague.

We and many others will miss Mary greatly.

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