Gerald J. Gastony

One of the world's foremost students of ferns, Professor Gerald Gastony completed his bachelor's degree in the College of Philosophy and Letters at St. Louis University. Through his focus on the humanities, he became fluent in Latin and comfortable in Greek, skills that aided his future career as a plant systematist. As an undergraduate he also took the equivalent of a major's course work in biology and supporting sciences, and his talent for botany was recognized and encouraged by one of his teachers, systematist John Dwyer, who encouraged Jerry to apply to Tulane University, where he was advised by the noted naturalist and botanical historian, Joseph Ewan. It was during his master's work at Tulane that Jerry became interested in ferns, which would be the focus of his doctoral work and future career. Ewan encouraged Jerry to apply to Harvard, where he completed his Ph.D. under Rolla Tryon, one of the preeminent classical fern systematists of his time.

Jerry's doctoral work on the taxonomy of the tree fern genus *Nephelea* not only prepared him for a career in systematics, but it also stimulated his interest in related topics such as the comparative morphology of fern spores, variation in the fern life cycle (particularly asexual reproduction), and speciation through genome doubling or polyploidy. Jerry came to IU in 1970, straight from graduate school. His initial research in Bloomington focused primarily on the spore morphology of tree ferns. Several years into his position, however, he had the prescience to gain technical skills that would allow him to broaden significantly his research program. Jerry sat in on several courses at IU on biochemistry and genetics in an effort to apply the developing field of isozyme electrophoresis to ferns. He quickly complemented these efforts with a sabbatical in Leslie Gottlieb's lab at the University of California at Davis, where he perfected his isozyme techniques and began to apply them to evolutionary and population genetic studies in ferns. At the time, existing protocols to extract, resolve, and genetically interpret the banding patterns of common enzyme systems did not work for the most part with ferns, and Jerry was challenged to prove himself in the Gottlieb lab. Ferns in the genus *Pellaea* are abundant and cytologically diverse in California, and these became Jerry's model system for future studies.

This coupling of classical and molecular techniques led to Jerry's pioneering work on fern isozymes, and his lab (known as "Sky Lab" because of its location on the fifth floor of Jordan Hall) became a popular destination and invaluable resource for graduate and postdoctoral students interested in plant systematics and evolution. Jerry continued to be a proponent of the application of molecular approaches to fern systematics, and in the mid-1980s his lab, in the vanguard of the molecular systematic revolution, was one of the first to use variation in fern chloroplast DNA to understand historical relationships among species. A few years later he began employing DNA sequence data for phylogenetic analyses of ferns, which resulted in the first comprehensive phylogeny for ferns. Most recently, his lab generated the first genetic linkage map for ferns, which will provide an important and permanent resource for fern genetics.

Because of the diversity of Jerry's contributions to fern systematics and evolution, it is difficult to summarize all of them here. For example, he was the first to count the chromosomes of the Appalachian gametophyte, a gametophyte (*Vittaria*) that has basically done away with the sporophyte generation. He also demonstrated that ferns have diploid isozyme expression patterns despite their high chromosome numbers and that, contrary to prevailing wisdom at the time, homosporous ferns are highly heterozygous rather than homozygous. He later showed that fern genes were rapidly silenced following genome doubling, indicating that diploid isozyme expression did not necessarily disprove the hypothesis of paleopolyploidy as an explanation for the high chromosome numbers of ferns. Finally, his work completely revamped the phylogeny and systematics of Cheilanthoid ferns, demonstrating that previous classifications were often incorrect because of widespread convergence of key morphological features. For these contributions he received the Edgar Wherry Award from the Botanical Society of America in 1995 and was elected president of the American Fern Society (1996-98). In addition, three species of plants new to science have been named in his honor: *Macrocoma gastonyi* Norris & Vitt (a moss he collected at the top of the highest

mountain in the West Indies), *Phanerophlebia gastonyi* Yatskievych (a fern from southern Mexico), and *Pellaea gastonyi* Windham (a fern from the western United States and Canada).

In addition to his contributions to scientific research, Jerry has been a caring and skilled teacher of both undergraduate and graduate students. His Vascular Plants course was widely recognized as one of the best courses in the Department of Biology at IU, and in 2001 he received the Department of Biology Senior Class Award for Teaching Excellence in Biology and Dedication to Undergraduates. He has also been a much loved and respected mentor of graduate students, several of whom have gone on to become eminent plant systematists in their own right.

Jerry has been a generous contributor of his time to journals, funding agencies, the Department of Biology, and Indiana University. He has been associate editor of *American Fern Journal* since 1973 and was editor-in-chief of *Systematic Botany*, the primary research journal for the field of plant systematics, from 1992 through 1995. He served as a National Science Foundation panel member in 1990 and 1998, and was director of the IU Herbarium from 1990 to 2004. He also directed the Evolution, Ecology, and Behavior Graduate Program from 1991 to 2002. Under Jerry's guidance, the program developed into one the strongest of its kind in the country, and Jerry's attention to detail and reputation for fairness ensured that it ran smoothly and was responsive to the needs of both faculty and graduate students. Finally and most importantly, Jerry was a generous and supportive colleague to all of those who requested his advice or help.

Loren Rieseberg