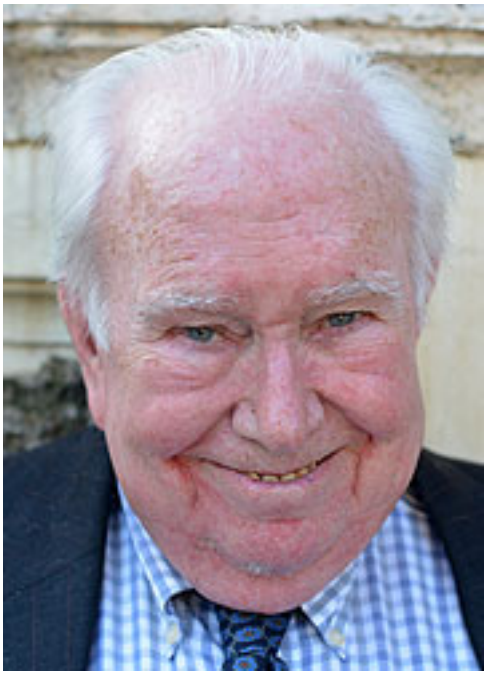
Prof. Peter Hamilton Raven
Professor



Most important awards, prizes and academies

Awards: Distinguished Service Award, American Inst. of Biological Studies (1981); Int. Environmental Leadership Medal of UNEP (1982); Int. Prize in Biology, Japanese Government (1986); United States National Medal of Science (2000); International Cosmos Prize (2003). *Academies*: US National Academy of Sciences (1977); Fellow, American Academy of Arts and Sciences (1977); Foreign Member, Royal Danish Academy of Sciences and Letters (1980); Foreign Member, Royal Swedish Academy of Sciences (1982); Honorary Member, Royal Society of New Zealand (1984); Foreign Member, Academy of Sciences of the USSR (1988-91); Russian Academy of Sciences (1991); Corresponding Member, Australian Academy of Science (1990); Foreign Fellow, National Academy of Sciences of India (1990); Foreign Fellow, Indian National Science Academy (1990); Pontifical Academy of Sciences (1990); Corresponding Member, Academia de Ciencias Exactas, Físicas y Naturales, Argentina (1991); Corresponding Member, Austrian Academy of Sciences (1992); Honorary Member, Academia Chilena de Ciencias (1993); Corresponding Member, Academia Nacional de Ciencias, Córdoba, Argentina (1993); Foreign Member, Academy of Sciences of the Ukraine (1994); Foreign Member, Chinese Academy of Sciences (1994); Honorary Member, Hungarian Academy of Sciences (1998).

Summary of scientific research

Dr. Peter Raven is one of the world's leading authorities on plant systematics and evolution, who has published more than 480 books and papers in the fields of taxonomy, population biology, biogeography, reproductive biology, ethnobotany, and conservation biology. His initial work centered around his broad and outstanding investigations of the systematics and evolution of the plant family Onagraceae, the evening primrose family. This research, augmented by that of his students and collaborators and embracing morphology, anatomy, cytology, palynology, embryology, ecology, reproductive biology, population genetics, and, most recently, molecular biology, has made this family of plants one of the best known of any size, and a valuable model for evolutionary studies. Working from this center in systematics, Raven pursued wide-ranging studies that encompassed and even helped to define many aspects of evolutionary and population biology. His 1965 paper with Paul Ehrlich on butterflies and plants coined the term co-evolution and helped to refocus much subsequent evolutionary research by its emphasis on the importance of mutual co-adaptation. Another paper with Ehrlich in 1969 challenged the prevailing dogma that species cohesion was maintained primarily by gene flow (the 'biological species concept'), arguing instead that gene flow was highly restricted in natural populations. In these and other papers, Raven helped lay the groundwork for the ongoing reevaluation of the nature and concept of biological species. Early studies of pollination in *Onagraceae* led him in 1972 to propose that the mutualistic interactions between plants and their pollinators could be analyzed in energetic terms. This idea anticipated and stimulated an explosive growth in pollination biology, and led to more rigorous and predictive models about pollinator specificity and floral rewards. Another seminal paper from this period proposed a multiple origin of plastids and mitochondria, based on Raven's perceptive reading of the detailed ultrastructural data emerging from the field of cell biology. Raven was among the first botanists to realize the significance for evolutionary biology of the earlier-discredited concept of continental drift. In 1974 he wrote with Daniel Axelrod a now-classic analysis of angiosperm biogeography by examining the relationship and distributions of major plant groups in the context of the new geological paradigm of plate tectonics. His synthetic analyses have helped to illuminate the early radiation of angiosperms, especially in the Southern Hemisphere. On an other front, his collaborative studies in the early 1960s on Mayan folk taxonomy helped to establish this new area of ethnobotany on the interface between biology and anthropology. Since 1971, Raven has developed the Missouri Botanical Garden into the world's pre-eminent center for the study of plant diversity, with exploring and collecting programs throughout North and South America, Africa and Madagascar, and China. At the same time, he has become one of the most influential spokespersons for the importance of understanding and preserving biological diversity. He has championed the concept of national biological resources surveys in the USA, Taiwan, Mexico, and else where, helping to establish a pattern that will be critical for the preservation of ecosystems and their plants, animals, fungi, and microorganisms throughout the world.

Main publications

Raven, P.H., *Papers on Evolution*, Little, Brown & Co., Boston, pp. xii+564 (with Ehrlich, P.R. and

Holm, R.W.), 1969; Raven, P.H., *Principles of Tzeltal Plant Classification. An Introduction to the Botanical Ethnography of a Mayan-Speaking People of Highland Chiapas*, Academic Press, New York and London, pp. xxii+660 (with Berlin, B. and Breedlove, D.E.), 1974; Raven, P.H., *Coevolution of Animals and Plants*, University of Texas Press, Austin and London, pp. xiii+246, (L.E. Gilbert and P.H. Raven, eds), 1975, revised edition, 1981; Raven, P.H., *Topics in Plant Population Biology*, Columbia Univ. Press, New York, pp. xvii+589, (O.T. Solbrig, S. Jain, G.B. Johnson and P.H. Raven, eds), 1979; Raven, P.H., *Advances in Legume Systematics*, Royal Botanic Gardens, Kew, pp. 1-1049 (2 vols.), (R.M. Polhill and P.H. Raven, eds.), 1981; Raven, P.H., *Biology*, C.V. Mosby Publishers, St. Louis, pp. xxx+1198 (with Johnson, G.B.), 1986; 2nd edn., 1989; 3rd edn., 1992, 4th edn., Wm. C. Brown, 1996, 6th edn., McGraw-Hill, 2002, 7th edn., McGraw-Hill, 2005 (released January 2004); Raven, P.H., *Modern Aspects of Species*, Univ. Tokyo Press, Tokyo, pp. 240, (H. Iwatsuki, P.H. Raven and W.J. Bock, eds), 1986; Raven, P.H., *Understanding Biology*, C.V. Mosby Publishers, St. Louis, pp. xxx+799 (with Johnson, G.), 1988; 2nd edn., 1991; 3rd edn., Wm. C. Brown, 1995.