

CURRICULUM VITAE

Karl Joseph Niklas

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Biographical Information: DOB: 23rd August, 1948; Manhattan, New York, N.Y.

Academic Degrees:

Post-Doctoral Fulbright-Hayes Fellow, University of London, Birkbeck College (1974 – 1975)

Ph.D. (Paleobotany), University of Illinois, Urbana, Illinois (1974)

M.S. (Major: Botany; Minor: Plant Physiology), University of Illinois, Urbana, Illinois (1971)

B.S. (Mathematics), The City College of the City of New York (1970)

Academic Appointments:

Liberty Hyde Bailey Professor, *emeritus*, Cornell University (2019 –)

Fellow, Wissenschaftskolleg zu Berlin, Germany (2013)

Stephen H. Weiss Presidential Fellow (2012)

Erskine Fellow, University of Canterbury, Christchurch, New Zealand (2004)

Liberty Hyde Bailey Professor of Plant Biology, Cornell University (2000 – 2019)

Professor of Botany, Cornell University (1985)

Associate Professor of Botany, Cornell University (1981)

Assistant Professor of Botany, Cornell University (1978)

NYBG Adjunct Faculty Appointment, Lehman College (1975)

Curator of Paleobotany, New York Botanical Garden, Bronx (1974)

Research Interests: biophysics; evolution; plants

Society Memberships:

American Academy of Arts and Sciences, Fellow (AAAS)

L'Association Botanique du Canada (ABC)

American Association for the Advancement of Science, Fellow (AAAS)

Society for Integrative and Comparative Biology (SICB)

Botanical Society of America (BSA)

American Society of Plant Taxonomists (ASPT)

American Fern Society (AFS)

International Organization of Paleobotany (IOP)

Linnean Society of London

Phi Beta Kappa; Gamma Sigma Delta; Pi Alpha Xi, Sigma Alpha, and Alpha Zeta

Editorial Services:

Associate Editor, *Frontiers in Plant Science*

(*Deciphering Mechanisms of Plant Adaptation and Resistance Under Cold Temperature Stress*) (2023)

Associate Editor, *Frontiers in Plant Science*

(*Leaf Functional Traits: Ecological and Evolutionary Implications*) (2023)
 Advisor, *Journal of Biological Systems* (2013 – 2014)
 Associate Editor, *Journal of Botany* (2009 – 2014)
 Associate Editor, *Quarterly Review of Biology* (2008 – 2021)
 Special co-editor, *American Journal of Botany* (Plant biomechanics special issue) (2006)
 Associate Editor, *Journal of Biological Systems* (2005 – 2014)
 Associate Editor, *Journal of Arboriculture and Urban Forestry* (2002 – 2008)
 Editor-in-Chief, *American Journal of Botany* (1995 – 2004)
 Associate Editor, *Evolution* (1987 – 1989)
 Associate Editor, *Paleobiology* (1983; 1986)
 Associate Editor, *Organic Geochemistry* (1979 – 1982)

National and International Service:

AAAS symposium organizer/moderator, *Quantifying Biological Form and Symmetry Using the Concept of Relative Entropy*, Philadelphia (2022)
 Organizing Committee, 10th International Plant Biomechanics Conference, Lyon, France (2021)
 Organizing Committee, Mathematical Biosciences Institute *Rules of Life* (2019)
 Katherine Esau Awards Committee, Botanical Society of America (2015 – 2017)
 Investment Committee, Botanical Society of America (2014 – 2019)
 European Congress of Arboriculture, Planning Committee, Turin, Italy (2013 – 2014)
 Botanical Society of America Investment Committee (2013 – 2014)
 Czech Society of Biomechanics scientific planning committee for the European Society of Biomechanics 2015 Congress, Prague, Czech Republic (2012 – 2015)
 Science advisor to NOVA “Exoplanet Documentary” (2012 – 2013)
 Scientific Advisory Committee, Mathematical Biosciences Institute (2008 – 2011)
 President, *Botanical Society of America* (2008 – 2009)
 Production and distribution of “*Botany Without Borders*”, a film about botany (2008)
 Strategic Planning Committee, *Botanical Society of America* (2008 – 2009)
 Science Advisory Board, National Geographic Society (*Hidden Universe*) (2007 – 2009)
 Science Advisory Board, Sea Studios, Inc., WNET Projects (2006 – 2007)
 European Geoscience Union, organizing committee, Vienna (2006)
Botanical Society of America Centenary Planning Committee (2003 – 2006)
Botanical Society of America Web-page Committee (2003 – 2004)
 Consultant, NYC Department of Parks (2003)
Botanical Society of America Publications Committee (1999 – 2004)
Mechanics of Plants, Animals, and Their Environments 2000 Symposium, Chairs Committee (2000)
 Scientific Committee, 3rd Plant Biomechanics Conference, Badenweiler, Germany (2000)
 National Center for Ecological Analysis and Synthesis, Body Size Workshop (1999 – 2002)
 Scientific Advisor to Partridge Films, Bristol, England, *The Future is Wild* TV Series (1998 – 2001)
Botanical Society of America, AJB Task Force Committee (1997 – 1999)
 Senior Scientific Advisor to NHK and the Discovery Channel (1994 – 1995)
 BSA Steering Committee: *Botany for the Next Millennium* (1993 – 1995).
 BSA Pelton Award Committee (member, 1991-1992; Chair, 1993)
 NSF *Plant Biology Centers of Excellence* Grants Review Panel (1988)
 NASA, Ames Research Center ECHO Workshop (1985)

NASA, Exobiology Grants Review Panel (1984 – 1987)

Academic Recognition:

Elected Fellow, American Association for the Advancement of Science (2018)
 Orchid: *Spiranthes niklasii* by Dr. Mathew C. Pace (2017)
 Elected Fellow, American Academy of Arts and Sciences (2015)
 Elected Fellow, Wissenschaftskolleg zu Berlin, Institute for Advanced Study (2013)
 Stephen H. Weiss Presidential Fellow, Cornell University (2012)
 College of Liberal Arts & Sciences Alumni Achievement Award, University of Illinois, Champaign, IL (2012)
 Listed in *The Best 300 Professors* (Random House, Princeton Review Books) (2012)
 National Association of Colleges and Teachers Award of Merit (2008)
 Botanical Society of America's Centennial Medal, California (2006)
 Visiting Senior Scientist, National Tropical Botanical Garden, Kauai, Hawaii (2006)
 University of Canterbury Visiting Erskine Fellow, Christchurch, New Zealand (2004)
 Annual Annals of Botany Lecture, Botanical Society of America, Snowbird, Utah (2004)
 Who's Who in Agriculture Higher Education (2003)
 The Jeanette Siron Pelton Award, BSA and the Conservation and Research Foundation (2002)
 Liberty Hyde Bailey Professorship, CALS (2000)
 First Japanese Annals of Botany Lecture, Japanese Botanical Society, Akita, Japan (1999)
 Alexander von Humboldt Forschungspreis for Senior Distinguished USA Scientists (1998)
 Gamma Sigma Delta, Honorary Membership (1998)
 Botanical Society of America, Merit Award ["Distinguished Fellow" award] (1996)
 Fellow, New York Academy of Sciences (1995 – resigned 2000)
 Fellow, Linnean Society of London (1995 –)
 SUNY Chancellor's Award for Excellence in Teaching (1995)
 Michael A. Cichan Award, Botanical Society of America (1993)
 John Simon Guggenheim Fellow (1985)
 George Gaylord Simpson Prize, Peabody Museum, Yale University (1982)
 Fulbright-Hayes Fellow; post-doctoral research, University of London, Birkbeck College (1974 – 1975)
 Isebell Cookson Award, BSA Paleobotany Section (1973)
 Woodrow Wilson Fellow (1970)
 Paul Bateson Award, City College of the City of New York (1970).

Invited Talks:

Arboricultural Association, University of Warwick, Coventry, England (2024)
 Missouri State University, Department of Biology (2024)
 National Museum of Natural History, Smithsonian Institution, Washington DC (2024)
 Department of Philosophy, Bristol University, England (2023)
 College London, Ancient Tree Forum, Imperial Windsor, England (2023)
 Biodiversity Institute, University of Florida, Gainesville, Florida (2023)
 Asociación de Arboricultura, Real Jardín Botánico, Madrid, Spain (2023)
 Department of Evolution and Ecology, Cornell University (2023)
 Sainsbury Laboratory, University of Cambridge, England (2022)
 Sachverständigen-Arbeitsgemeinschaft (SAG) plenary speaker, Trieste, Italy (2022)

Xylodiv Network Research Presentation, plenary speaker, Nancy, France (2022)
 Square Bamboos and The Geometree, Tilburg, The Netherlands (2022)
 Garden State Arborist Annual Meeting, Plenary Speaker, Atlantic City, NJ (2022)
 Gothenburg Museum of Art and Science, plenary speaker, Sweden (2021)
 University of Arizona, Plant Biology Seminar Series, Tucson AZ (2021)
 National Autonomous University of Mexico, Ciudad Universitaria, Mexico City,
 Seminar Series (2021)
 Arboricultural Association, Standards and Development Day, Tortworth Court,
 Wootin Under Edge, UK (2021)
 Arboricultural Association, Webcast Series, United Kingdom (2021)
 Urban Forestry Today, Noon Hour Webcast Series, University of Massachusetts (2021)
 Emory University, workshop on “Principles of Size Control in Living Systems Across
 Scales”, Atlanta, Georgia (2020)
 The Helix Center round table *Behavior, Mind, and the 4-Billion-Year History of Life*,
 NYC, NY (2020)
 University of Massachusetts, Amherst, *Urban Forestry Today* podcast (2020)
 Harvard Medical School, Afternoon Chalkboard Talks (2020) (cancelled, COVID)
 Arnold Arboretum, lecture series (2020) (cancelled, COVID)
 Asociación Española de Arboricultura, Real Jardín Botánico, Madrid, Spain (2020)
 (cancelled, COVID)
 Gomez-Pompa Lecture, University of California, Riverside, CA (2019)
 Mathematical Biosciences Institute, *Rules of Life* symposium, Columbus, Ohio (2019)
 International Centre for Mechanical Sciences, Plant Biomechanics, short course
 (six lectures) Udine, Italy (2019)
 Society for Integrative and Comparative Biology *Allometry, Scaling and Ontogeny of
 Form* Symposium, Tampa, Florida (2019)
 Kungälv's Folkhögskolan Kungälv, 3 lectures, Göttenburg, Sweden (2019)
 9th International Plant Biomechanics Conference, Montreal, Canada (2018)
 Plenary Speaker, L'Association Botanique du Canada, Victoria, British Columbia (2016)
 Tom L. Phillips Lecture, Urbana-Champaign, IL (2016)
 Indiana University, School of Informatics and Computing, Indiana (2016)
 Purdue University, Indianapolis, Department of Biology (2016)
 National Tropical Botanical Garden, Kalaheo, Kauai (2016)
 A Broader View of Plant Evo-Devo, BSA Symposium, Edmonton, Canada (2015)
 Clone 2015 Symposium, Czech Republic (2015)
 Ecological Society of America, Symposium on Scaling, Baltimore (2015)
 Origins Institute, McMaster University, Ontario, Canada (2015)
 Konrad Lorenz Institute, Altenberg, Austria, conference organizer and speaker (2014)
 European Conference of Arboriculture, keynote speaker, Turin, Italy (2014)
 German Botanical Society, keynote speaker, Dresden Germany (2014)
 Ithaca College, Biology Department, seminar series, Ithaca, NY (2014)
 International Society of Arboriculture, 89th Annual Conference, keynote speaker,
 Toronto, Ontario (2013)
 International Society for the History, Philosophy, and Social Studies of Biology,
 Symposium speaker, Montpellier, France (2013)
 Bertram Whittier Wells Seminar speaker, North Carolina State University, Raleigh, N.
 C. (2013)
 Botanical Society of America, *The Devonian Period: A Time of Major Plant
 Diversification* symposium speaker, New Orleans (2013)

The Philip C. Hamm Memorial Lectureship in the Plant Sciences, The University of Minnesota, Twin Cities, MN (2012)

MathBio Symposium on *Scale*, keynote speaker, University of Wisconsin, Madison (2012)

International Society of Arboriculture, keynote speaker, Morton Arboretum, Lisle, IL (2012)

7th Plant Biomechanics Conference, keynote speaker, Clermont-Ferrand, France (2012)

Society of Experimental Biology, keynote speaker, Salzburg, Austria (2012)

Department of Biology, the University of New Mexico, Albuquerque, NM (2012)

Botanical Society of America, Gnetales Symposium, Columbus, Ohio (2012)

Studies of Science and Technology Colloquium, University of Minnesota, Twin Cities, MN (2011)

Wind and Trees 2011 conference (keynote speaker), University of Georgia, Athens, GA (2011)

Torrey Botanical Club, NE Botanical Society of America, and American Fern Society joint meeting, Ithaca, NY (2011)

University of Illinois, Urbana-Champaign, Ill. (2011)

University of Connecticut, Storrs, Connecticut (2011)

Southern Illinois University, Carbondale (2011)

Conceptual Change in Biological Science: Evolutionary Developmental Biology, Dahlem Conference, Berlin–Dahlem, Germany (2010)

University of Pennsylvania, Seminar Series, Philadelphia, PA (2010)

La Selva Seminar Series, Costa Rica (2010)

Hennig–Symposium on Evolutionary Biology and Phylogenetics, Stuttgart Germany (2009)

The 8th Annual Conference in Philosophy and Biology and Consortium for the History and Philosophy of Biology, Duke University, NC (2009)

Philadelphia Academy of Sciences, Darwin symposium (2009)

University of Pennsylvania, Ecolunch seminar series (2009)

Colgate University Science Colloquium Series, Colgate University, Hamilton, NY (2009)

Darwin Lecture Series, University of Vienna, Vienna, Austria (2008)

6th Computation of Shell and Spatial Structures, IASS–IACM, Ithaca, NY (2008)

John Bonner’s *Morphogenesis* Symposium, Arizona State University (2008)

Metabolic Basis of Ecology, Gordon Research Conference, Univ. of New England (2008)

John Innes Centre, seminar series, Norwich Research Park, Norwich, UK (2008)

Department of Animal and Plant Sciences, University of Sheffield, Sheffield, England (2008)

Stony Brook colloquium, SUNY at Stony Brook, NY (2007)

Perspectives in Biology, 2007 Symposium, Wake Forest University, NC (2007)

Keynote address, first annual *Centre d’etude de la foret* conference, Montreal, Canada (2007)

Scottish Crop Research Institute, Dundee, Scotland (2007)

The functional significance of leaf shape variation symposium, BSA, Chicago (2007)

California Tree Failure Report Program, Annual Meeting, Woodside, CA (2007)

Keynote speaker, 5th Plant Biomechanics Conference, Stockholm, Sweden (2006)

School of Life Sciences seminar series, Arizona State University, Tempe, AZ (2006)

21st annual Darwin Lecture, University of Calgary, Alberta, Canada (2006)

Centro de Astrobiología (CSIC-INTA), invited speaker, Madrid, Spain (2006)

National Tropical Botanical Garden, guest lecture, Hawaii, Kauai (2006)

Land Plant Evolution: Phylogeny and Beyond, BSA symposium, Chico CA (2006)

- XVII International Botanical Congress, symposium keynote speaker, Vienna, Austria (2005)
- 4th International Canopy Conference, symposium speaker, Leipzig, Germany (2005)
- Adolf Seilacher symposium, Yale University, New Haven, CT (2005)
- Royal Society of New Zealand*, Christchurch, New Zealand (2004)
- Science Prestige Lecture, Canterbury University, New Zealand (2004)
- School of Biological Sciences Lecture, Canterbury University, New Zealand (2004)
- Land Care Institute, Lincoln, New Zealand (2004)
- Annals of Botany* 2004 Annual Lecture, Snowbird, Utah (2004)
- John Templeton Foundation symposium, Vatican Observatory, Castel Gandolfo, Italy (2004)
- Konrad Lorenz Institute, *Modeling Biology: Shape, Behavior, Evolution* Workshop, Altenberg, Austria (2004)
- Gordon Conference: *The Allometry of Bioenergetics*. Bates College, Maine (2004)
- Graduate Student Annual Lecture, Department of Botany, U. of Florida, Gainesville FL (2004)
- American Society of Biomechanics (ASB)* annual meeting keynote speaker, Toledo, Ohio (2003)
- The Roger E. Carpenter Lecture in Comparative Biology, U. of California, San Diego (2003)
- Washington State University, School of Biological Sciences, Pullman, Washington (2003)
- Graduate Student ‘Research Day’ Keynote Speaker, Edmonton, Alberta, Canada (2002)
- Pelton Award Lecture, Madison, Wisconsin (2002)
- 38th Annual Society of Municipal Arborists Conference, Keynote Speaker, Ithaca, NY (2002)
- College of Engineering, Johns Hopkins University, Maryland (2002)
- Deutsche Botanische Gesellschaft*, Botanikertagung plenary speaker, Freiburg, Germany (2002)
- Cold Spring Harbor, “*History and Mechanisms of Animal/Plant Evolution*”, NY (2001)
- International Tree Structure and Mechanics Conference, Keynote Speaker (2001)
- American Society for Gravitational and Space Biology*, plenary lecture, Alexandria, VA (2001)
- International Symposium on Molecular Domestication of Forest Trees, Skamania, Washington (2001)
- North American Paleontology Congress, “*Artificial Life and Evolution*,” symposium, Berkeley, CA (2001)
- University of Texas Integrative Biology Lecture Series, Austin, TX (2001)
- International Arboriculture Meeting, invited keynote speaker, Savannah, GA (2001)
- Workshop on *Theoretical Morphology*, Santa Fe Institute, NM (2000)
- NATO Workshop on Morphogenesis in the Animate & Non-living World*, Greece (2000)
- 3rd Plant Biomechanics Conference, Keynote Speaker, Badenweiler, Germany (2000)
- Arbeitskreis für Paläobotanik und Palynologie*, keynote speaker, Tübingen, Germany (1999)
- International Botanical Congress, *Plant Biomechanics* symposium, St. Louis, MO (1999)
- Organization of Tropical Studies*, Short Course Lectures, La Selva, Costa Rica (1999, 2000)
- First Annual *Annals of Botany* Lecture, Japanese Botanical Society, Akita, Japan (1999)
- SEB, *Designs for Life: The Science of Biomechanics* symposium, Edinburgh (1999)

National Center of Ecological Analysis and Synthesis, Santa Barbara (1999 – 2001)
New Phytologist, *At the Crossroads of Plant Physiology and Ecology* symposium, Ecole
 Nationale Supérieure Agronomique de Montpellier, France (1998)
 Earth History and Paleobiology seminar series, Harvard, Cambridge, MA (1998)
Society of Experimental Biology, *Stabilizing Processes* symposium, York, UK (1998)
 Gordon Conference, *Gravitational Effects on Living Systems*, NH (1998)
California Academy of Sciences, BioForum, San Francisco, CA (1998)
 Christianna Smith Lecture Series, Mt. Holyoke College, MA (1997)
 NAPC Morphospace Concepts Symposium, Washington D.C. (1996)
 Linnean Society Symposium, *Plant Architecture*, London (1995)
 ASPP symposium, *Biophysical Aspects of Plant Stress* (1994)
 Gordon Conference, *Gravitational Effects on Living Systems*, NH (1994)
NASA, *Tempo and Mode in Evolution* symposium, Irvine, CA (1994)
Society for Gravitational and Space Sciences Lecture Series (1993)
 Michael A. Cichan Lecture Series, Columbus, Ohio (1991)
 Cold Spring Harbor Centennial Symposium, speaker, Long Island, NY (1990)
 Charles E. Bessey Distinguished Lecturer, Ames, Iowa (1989)
 The Ermine Cowles Case Memorial Lecture, Museum of Paleontology,
 University of Michigan (1987)

Departmental and University Committees:

University Assembly — Campus Welfare Committee (2011 – 2013)
 CALS Academic Integrity Hearing Board (2008 – 2011)
Ad hoc Teaching/ Curriculum Committee, Chair (2005)
 Cornell University Nominations and Elections Committee (2002 – 2004)
 CALS Nominations and Election Committee (2000 – 2002)
 University Appeals Committee (2000 – 2003)
 University Ethics Committee (1999 – 2000)
 Director of Undergraduate Students, Section of Plant Biology (1997-1998)
 Curriculum Committee, Chair, Section of Plant Biology (1990-1994)
 Plant Science Curriculum Committee, Section of Plant Biology (1990-1994)
 Various *ad hoc* tenure and promotion committees

Courses Taught While at Cornell:

Introductory Botany, BioPL 2410 (Fall Semester)
 Evolutionary Plant Biology, BioPL 2440 (Spring Semester)
 Plant Biomechanics, BioPl 4560 / BEE 4560 (Fall Semester)
 Blue Plant/Green World, BioPL 2400 (Spring Semester)
 Plant Evolution and the Fossil Record, BioPL 4480 (Spring Semester)
 Plant Form and Function: Anatomy, Cell Biology, and Development, BioPL4841 (Spring
 Semester)
 Special Topics in Plant Evolution, BioPL 6560 (Spring Semester)

Extracurricular Activities:

Councilman, Town of Ithaca Town Board (1990 – 1996)
 Town of Ithaca Codes and Ordinance Committee, Chair (1990 – 1996)
 Town of Ithaca Comprehensive Planning Committee (1988 – 1990)
 String Quartet, cello (1986 – 1990)
 Cornell Weight-Lifting Club, Charter Member (1979)

Free & Accepted Masons (raised 1969) (Lodge Secretary 1975 – 1978)

Publications: (= books; ** = book chapters or encyclopedia articles; † = book or article reviews).*

1972

1. Phillips, T. L., _____, and Andrews, H. N. 1972. Morphology and vertical distribution of *Protosalvinia* (*Foerstia*) from the New Albany Shale (Upper Devonian). *Review of Palaeobotany and Palynology* 14: 171 – 196.

1974

2. _____. 1974. Some problematic algae of the Paleozoic. Ph.D. Thesis, University of Illinois, Urbana. 511 pp.

1976

3. _____. 1976. The role of morphological-biochemical reciprocity in early land plant evolution. *Annals of Botany* 40: 1239 – 1254.
4. _____. 1976. Plant evolution and the reciprocity model. *Annals of Botany* 40: 1255 – 1276.
5. _____. 1976. Chemical examination of some non-vascular Paleozoic plants. *Brittonia* 28: 113 – 137.
6. _____. 1976. Chemotaxonomy of *Parka decipiens* from the Lower Old Red Sandstone, Scotland (U.K.) *Review of Palaeobotany and Palynology* 21: 205 – 217.
7. _____. 1976. Chemotaxonomy of *Prototaxites* and evidence for possible terrestrial adaptation. *Review of Palaeobotany and Palynology* 22: 1 – 17.
8. _____. 1976. Morphological and chemical examination of *Courvoisiella ctenomorpha* gen. and sp. nov., a siphonous alga from the Upper Devonian, West Virginia, U.S.A. *Review of Palaeobotany and Palynology* 21: 187 – 203.
9. _____. 1976. Organic chemistry of *Protosalvinia* (= *Foerstia*) from the Chattanooga and New Albany Shales. *Review of Palaeobotany and Palynology* 22: 265 – 279.
10. _____. 1976. Morphological and ontogenetic reconstruction of *Parka decipiens* Fleming and *Pachytheca* Hooker from the Lower Old Red Sandstone, Scotland. *Transactions of the Royal Society of Edinburgh* 69: 483 – 499.
11. _____, and Chaloner, W.G. 1976. Chemotaxonomy of some problematic Paleozoic plant fossils. *Review of Palaeobotany and Palynology* 22: 81 – 104.
12. _____, and Chaloner, W.G. 1976. Simulations of the ontogeny of *Spongiophyton*, a Devonian plant. *Annals of Botany* 40: 1 – 11.
13. _____, and Gensel, P.G. 1976. Chemotaxonomy of some Paleozoic vascular plants. Part I: chemical compositions and preliminary cluster analyses. *Brittonia* 28: 353 – 378.
14. _____, and Phillips, T.L. 1976. Morphology of *Protosalvinia* from the Upper Devonian of Ohio and Kentucky. *American Journal of Botany* 63: 9 – 29.
15. _____, Phillips, T.L. and Carozzi, A.V. 1976. Morphology and paleoecology of *Protosalvinia* from the Upper Devonian (Famennian) of the Middle Amazon Basin of Brazil. *Paleontographica* 155B: 1 – 30.

1977

16. _____. 1977. Applications of finite element analyses to problems in plant morphology. *Annals of Botany* 41: 133 – 153.
17. _____. 1977. Ontogenetic constructions of some fossil plants. *Review of Palaeobotany and Palynology* 23: 337 – 357.

18. _____. 1977. Theoretical evolutionary rates in plant groups and the fossil record. *Brittonia* 29: 241 – 254.
 19. _____, and Gensel, P.G. 1977. Chemotaxonomy of some Paleozoic vascular plants. Part II: Chemical characterization of major plant groups. *Brittonia* 29: 100 – 111.
 20. _____, and Giannasi, D.E. 1977. Flavonoids and other chemical constituents of fossil Miocene *Zelkova* (Ulmaceae). *Science* 196: 877 – 878.
 21. _____, and Giannasi, D.E. 1977. Geochemistry and thermolysis of flavonoids. *Science* 197: 767 – 769.
 22. Giannasi, D.E. and _____. 1977. Flavonoids and other chemical constituents of fossil Miocene *Celtis* and *Ulmus* (Succor Creek Flora). *Science* 197: 765 – 767.
 - 23.** Giannasi, D.E. and _____. 1977. IV. Phytochemistry. In: Pakaraimoideae, Dipterocarpaceae of the Western Hemisphere. (Eds., B. Maguire, et. al.). *Taxon* 26(4): 361– 385.
- 1978
24. _____. 1978. Branching patterns and mechanical design in Paleozoic plants: A theoretic assessment. *Annals of Botany* 42: 33 – 39.
 25. _____. 1978. Coupled evolutionary rates and the fossil record. *Brittonia* 30: 373 – 394.
 - 26.** _____. 1978. Morphometric relationships and rate of evolution among Paleozoic vascular plants. In: *Evolutionary Biology* (Eds., Max K. Hecht, William C. Steere and Bruce Wallace). Plenum Press, New York, Vol. 11, pp.509 – 543.
 27. _____, and Gensel, P.G. 1978. Chemotaxonomy of some Paleozoic vascular plants. Part III. Cluster configurations and their bearing on taxonomic relationships. *Brittonia* 30: 216 – 232.
 28. _____, Brown, R. M. Jr., Santos, R. and Vian, B. 1978. Ultrastructure and cytochemistry of Miocene angiosperm leaf tissues. *Proceedings of the National Academy of Sciences USA* 75: 3263 – 3267.
 29. _____, and Giannasi, D.E. 1978. Angiosperm paleobiochemistry of the Succor Creek Flora (Miocene) Oregon, USA. *American Journal of Botany* 65:943 – 952.
- 1979
30. _____. 1979. Simulations of apical developmental sequences in bryophytes. *Annals of Botany* 44: 339 – 352.
 31. _____. 1979. An assessment of chemical features for the classification of plant fossils. *Taxon* 28: 505 – 516.
 32. _____. 1979. Parameters in assessing geochemical studies of fossil angiosperms. *International Association of Angiosperm Paleobotany* 5(2): 1-5.
 33. _____. 1979. Information, entropy, and the evolution of living systems. *Brittonia* 31:428 – 430.
 34. Knoll, A.H., _____, and Tiffney, B.H. 1979. Phanerozoic land plant diversity in North America. *Science* 206: 1400 – 1402.
 35. Mauseth, J.D. and _____. 1979. Constancy of relative volumes of zones in shoot apical meristems of Cactaceae: implications concerning meristem size, shape, and metabolism. *American Journal of Botany* 66: 933 – 939.
- 1980
- 36.** _____. 1980. Exinite chemodiagenesis and spore wall compressional failure. IV. *International Palynological Conference, Luchnow (1976-1977)* 2: 597 – 609.

- 37.** _____. 1980. Paleobiochemical techniques and their applications to paleobotany. In: Progress in Phytochemistry (Eds., L. Reinhold, J.B. Harborne, and T. Swain) Pergamon Press, Oxford, New York. Vol.6, pp. 143 – 182.
- 38.** _____, and Brooks, J. 1980. The chemistry of fossils: Biochemical stratigraphy of fossil plants. In: Biostratigraphy of fossil plants. (Eds., D. L. Dilcher, and T.N.Taylor). Dowden, Hutchinson, and Ross, Inc., Stroudsburg, Pennsylvania. pp. 227-250.
- 39._____, and Pratt, L.M. 1980. Evidence for lignin-like constituents in Early Silurian (Llandoveryan) plant fossils. Science 209: 396 – 397.
- 40.** _____, Tiffney, B.H. and Knoll, A.H. 1980. Apparent changes in the diversity of fossil plants: A preliminary assessment. In: Evolutionary Biology. (Eds. M. Hecht, W. Steere, and B. Wallace), Plenum Publishing, New York. Vol. 12: 1 – 89.
- 41._____, and Mauseth, J.D. 1980. Simulations of cell dimensions in shoot apical meristems: Implications concerning zonate apices. American Journal of Botany 67: 715 – 732.
- 1981
- 42._____. 1981. Simulated wind pollination and airflow around ovules of some early seed plants. Science 211: 275 – 277.
- 43._____. 1981. Paleophytochemistry: Implications concerning plant evolution. Paleobiology 7: 1 – 3.
- 44._____. 1981. Airflow patterns around some early seed plant ovules and cupules: implications concerning efficiency in wind pollination. American Journal of Botany 68: 635 – 650.
- 45.** _____. 1981. A discussion of "Vicariance biogeography of angiosperms in relation to paleobotanical data." In: Vicariance Biogeography: A critique (Eds. G. Nelson and D. E. Rosen). Columbia University Press, New York, pp. 428 – 435.
- 46._____, and Mauseth, J. 1981. Relationships among shoot apical meristem ontogenic features in *Trichocereus pachanoi* and *Melocactus matanzanus* (Cactaceae). American Journal of Botany 68: 101 – 106.
- 47._____, and Brown, R. Malcom, Jr. 1981. Ultrastructural and paleobiochemical correlations among fossil leaf tissues from the St. Maries River (Clarkia) area, Northern Idaho USA. American Journal of Botany 68: 332 – 341.
- 48._____, and Brown, R. M., Jr. 1981. Some chemophysical factors attending fossilization. BioScience 31: 148 – 149.
49. Giannasi, D.E. and _____. 1981. Comparative paleobiochemistry of some fossil and extant Fagaceae. American Journal of Botany 68: 762 – 770.
- 50.** _____. 1981. Implications on pre- and post-depositional environments of ultrastructural-biochemical correlations in fossil angiosperm leaf tissues. In: Organic Maturation Studies and Fossil Fuel Exploration (Ed. J. Brooks), pp. 111 – 144.
- 51.** _____, et al. 1981. Research Trends. In: Trends, Priorities and Needs in Systematic Biology. The Association of Systematics Collections, Lawrence, Kansas. 51 pp.
- 52._____. 1981. The chemistry of fossil plants. BioScience 31: 820 – 825.
- 1982
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