Academic CV

Michael S. Zavada

Professor of Biology & Geosciences
Chair, Department of Geosciences
The University of Texas - Permian Basin
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[redacted]

RESEARCH INTERESTS

Ecology, Paleoecology, Environmental Science, Origin and Evolution of Angiosperms, Plant Systematics, Paleobotany, Palynology, Ethnobiology

FIELD EXPERIENCE

North America, Central & South America, Southern Africa, Madagascar, Mongolia

EDUCATION

Arizona State University, Tempe	BS	1974	Botany
Arizona State University, Tempe	MS	1976	Botany / Palynology
Ctr. for Foreign Language, Skopje	Cert.	1977	Macedonian for Foreigners
University of Connecticut, Storrs	BA	1982	Slavic Languages / Literature
University of Connecticut, Storrs	PhD	1982	Ecology / Evolutionary Biology

PROFESSIONAL EXPERIENCE

2015- Professor, Biology / Geosciences, University of Texas-Permian Basin, Odessa, TX
2012-15 Professor, Biology, Seton Hall University, S. Orange, NJ
2006-12 Professor, Biological Sciences, East Tennessee State University, Johnson City, TN
1999-06 Professor, Providence College, Providence, RI
1996-99 Associate Professor, Biology Department, Providence College, Providence, RI
1994-96 Assistant Professor, Biology Department, Providence College, Providence, RI
1993-94 Associate Professor, Biological Sciences, University of Louisiana, Lafayette, LA
1988-93 Assistant Professor, Biological Sciences University of Louisiana, Lafayette, LA
1985-87 Lecturer (Assis. Prof.), Botany, University of Witwatersrand, Johannesburg, South Africa.
1984-85 Post-doctoral Research Associate, Ohio State University, Columbus, OH
1982-84 Post-doctoral Research Associate, Indiana University, Bloomington, IN
1977-78 Biology Teacher and Baseball Coach, Fairfield College Preparatory School, Fairfield, CT
1973-77 Research Assistant, USDA-ARS, Western Cotton Research Laboratory, Phoenix, AZ

ADMINISTRATIVE EXPERIENCE

2019- Chairman, Department of Geosciences, University of Texas – Permian Basin, Odessa TX
2015-19 Dean, College of Arts and Sciences, University of Texas – Permian Basin, Odessa, TX
2012-15 Dean, College of Arts and Sciences, Seton Hall University, S. Orange, NJ
2006-12 Chairman, Biological Sciences, East Tennessee State University, Johnson City, TN
1996-06 Chairman, Biology, Providence College, Providence, RI

AWARDS

Beta Beta Beta Biological Science Honorary Society 1972 (https://www.tribeta.org/list-of-members)
Sigma XI Research Honorary Society, 1976-Present (https://www.sigmaxi.org/about)
Alpha Mu Gamma Foreign Language Honorary Society, 1978
The Isabel Cookson Award for the best paper presented in the Paleobotanical Section of the Botanical Society of America at the AIBS meeting, Penn. State University, 1982.
https://botany.org/home/awards/recognition-and-presentation-awards-for-students/cooksonaward.html#82

GRANTS (Received a total of about $9,500,000 from various sources)

Substantial competitive Grants from a University System for Research

The University of Connecticut Summer Fellowship, 1980-81.

The University of Connecticut Demi-Fellowship, 1981-82.

Senate Research Committee, The University of the Witwatersrand – The ultrastructure of Mesozoic Gondwana pollen, 1986.

Senate Research Committee, The University of the Witwatersrand, continued support for, The Ultrastructure of Mesozoic Gondwana pollen, 1987.

Faculty Research Grant - University of Southwestern Louisiana, Summer Salary, 1990.

Faculty Research Grant - University of Southwestern Louisiana - Phylogeny of the Hamamelidae, 1991.

CAFR Grant -Providence College, for the purchase of research equipment, 1995

CAFR Grant-Providence College, Funding for field studies on the self-incompatibility system of *Theobroma cacao,* 1998

CAFR Grant -Providence College, Ultrastructure of angiosperm-like pollen from the Triassic and Jurassic of China (in collaboration with Dr. Yuke Shang, Nanjing Institute of Geology and Paleontology), 2000.

Competitive External Grants that supported Research

Fulbright-Hayes Cultural Exchange Grant to Skopje, Yugoslavia, 1976-1977

Fulbright Specialist Award to the Universidad National del Altiplano, Puno, Peru. Tasked with development of an environmental Science program 2022-2023

Grants from the Bulgarian government and the International Research and Exchanges Board (IREX) to attend the summer seminar on Bulgaristics, 1981.

Grants from the Botanical Society of America and the National Science Foundation to attend the XIII International Botanical Congress, Sydney, Australia, 1981.

National Geographic Society - Field work in South Africa, 1986

National Geographic Society - Field work in Madagascar. The ultrastructure of Mesozoic Gondwana pollen, 1988-89.

National Geographic Society, The development of angiosperm diversity in Madagascar, 2002-2003

CSIR Grant to attend the XIV International Botanical Congress, Berlin, West Germany, 1987.

Shering-Plough Company (Merck), Research and Graduate Student Support - The relationship between the pollen rain and vegetation of the central Transvaal, South Africa, 1987-88.

Georgia Geological Survey -Palynostratigraphy of the Georgia Kaolinites, 1989.

LEQSF Grant -Determination of the recognition site and the physiological agents involved in the self-incompatibility system of *Theobroma cacao*, 1992-1994.

American Cocoa Research Institute (ACRI)- Funding for field studies on the self-incompatibility system of *Theobroma cacao*, 1999.

American Philosophical Society - Field work in South Africa. Development of angiosperm diversity through the Mesozoic and Cenozoic, 2000-2001.

Rhode Island Space Grant Program (NASA), Identification and significance of human induced and natural erosion features on the high plateau of Madagascar, (in collaboration with Dr. Y.Q. Wang, University of Rhode Island, Kingston), 2003-2004.

National Research Initiative (NRI) Competitive Grants Program Award, Soil quality changes in the riparian zones. With M. Stolts, University of Rhode Island, Kingston, RI, 2006-2009.

National Science Foundation (NSF) Miocene Landscape, Temperature and Plant Biodiversity in the Neotropics. With Carlos Jaramillo, Smithsonian Tropical Research Institute, 2010 – 2013.

Environmental Integrity – Grant to set up air quality monitoring in the Odessa Midland area. 2020-Pres

Grants Solicited as Department Chair and Dean to improve facilities, infrastructure or faculty development

Champlin Foundation, George I. Alden Trust, Hoffman Foundation - Development of the Department of Biology Electron Microscopy Unit - 1996-97.

National Institute of Health (NIH) - Biomedical Research Infrastructure Network (Rhode Island BRIN) - Institutional laboratory renovations grant, Dept. of Biology, Providence College, 2002-2003.

National Institute of Health (NIH) - (Rhode Island INBRE) - Institutional laboratory renovations grant, new faculty salaries, Dept. of Biology, Providence College, 2004-2008.

Rhode Island EPSCoR (NSF) – Institutional equipment and salaries, Dept. of Biology, Providence College, 2006 – 2009

National Science Foundation (NSF- ARI^2) Research Laboratory renovations, Brown Hall, East Tennessee State University. With Dean Gordon Anderson and Jeff Wardeska, 2010 – 2012.

Doran Endowed Chair and Research Fund. Developed an endowed Chair in Neurobiology and accusation of a Scanning Electron Microscope, UTPB, 2016-2017.

Facilitated the accusation 2 STARS Grants and 8 Rising STARS Grants from the University of Texas System in Biology, Chemistry, Geosciences and Psychology for UTPB, 2017-19.

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PUBLICATIONS

Theses/Technical Papers/Educational Papers/ Creative Works

1) Zavada, M.S.1976. Palynology of the Upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico. M.S. Thesis, Arizona State University, Tempe.
2) Lee, M. and M. Zavada. 1977. A report of a Tertiary petrified wood from Yuma County, Arizona. *Journal of the Arizona Academy of Science*, 12: 21-22.
3) Nash, T.H. and M. Zavada. 1977. Population studies in the parmelias subsection *Xanthoparmelia*. *American Journal of Botany,* 64: 666-671.
4) Zavada, M. 1979. Palynology of some Upper cretaceous flysch deposits in Central Macedonia, Yugoslavia. *Geologia Balkanica*, 9: 35-46.
5) Zavada, M. 1979. A cactus close to home. *Connecticut Audubon Bulletin*, 1(4):3.
6) Crepet, W.L., Daghlian, C.P. and M. Zavada. 1980. Investigations of fossil flowers from the Eocene of North America: A new juglandaceous catkin. *Review of Paleobotany and Palynology*, 30: 361-370.
7) Zavada, M. 1980. Fossil plants of the Connecticut River Valley. *Newsletter Connecticut Botanical Society*, 8(3-4):1-2.
8) Zavada, M. 1980. Fossil plants of the Connecticut River Valley. *Newsletter Connecticut Botanical Society*, 8(3-4):1-2.
9) Zavada, M. and W.L. Crepet. 1981. Investigations of angiosperms from the Eocene of North America: Flowers of the Celtidoideae. *American Journal of Botany*, 68: 924-933.
10) Zavada, M.S.1982. Morphology, ultrastructure, and evolutionary significance of monosulcate pollen. Ph.D. Thesis, The University of Connecticut, Storrs.
11) Zavada, M., Xu, Xue-Lin, and M. Edwards. 1983. On the taxonomic status of *Lophiola aurea* Ker-Gawler. *Rhodora*, 85: 73-81.
12) Zavada, M. 1983. Pollen morphology of Ulmaceae. *Grana*, 22: 23-30.
13) Zavada, M. 1983.Comparative morphology of monocot pollen and evolutionary trends of apertures and wall structure. *Botanical Review*, 49: 331-379.
14) Zavada, M. 1983. Pollen wall development of *Zamia floridana*. *Pollen et Spores*, 25: 287-304.
15) Zavada, M. 1984. Pollen wall development of *Austrobaileya maculata*. *Botanical Gazette*, 145: 11-21.
16) Zavada, M. 1984. Angiosperm origins and evolution based on dispersed fossil pollen ultrastructure. *Annals of the Missouri Botanical Garden*, 71: 440-459.
17) Zavada, M. 1984. The relation between pollen exine sculpturing and self-incompatibility mechanisms. *Plant Systematics and Evolution,* 147: 63-78.
18) Yatskievych, G. and M. Zavada. 1984. Pollen morphology of Lennoaceae. *Pollen et Spores*, 26: 131-143.
19) Zavada, M. and W.L. Crepet. 1985. Pollen wall ultrastructure of the type material of *Pteruchus africanus*, *P. dubius* and *P. papillatus*. *Pollen et Spores*, 27: 271-276.
20) Taylor, T.N. and M.S. Zavada. 1986. Developmental and functional aspects of fossil pollen, pgs. 165-178. In: Pollen and Spores, Form and Function, S. Blackmore and I.K. Ferguson (eds.) Linn. Soc. Symposium Series 12, London.
21) Zavada, M. and D.L. Dilcher. 1986. Comparative morphology and phylogeny of pollen of the Hamamelidae. *Annals of the Missouri Botanical Garden,* 73: 348-381.
22) Dilcher, D.L. and M.S. Zavada. 1986. Phylogeny of the Hamamelideae: An introduction. *Annals of the Missouri Botanical Garden,* 73: 225-226.
23) Zavada, M. and W.L. Crepet. 1986. Pollen wall structure of *Caytonanthus arberi*. *Plant Systematics and Evolution*, 153: 259-264.
24) Zavada, M. and T.N. Taylor. 1986. The role of self-incompatibility and sexual selection in the

gymnosperm-angiosperm transition: A hypothesis. *American Naturalist*, 128: 538-550.
25) Zavada, M. and T.N. Taylor. 1986. Pollen morphology of Lactoridaceae. *Plant Systematics and Evolution*, 154: 31-39.
26) Zavada, M.S. and A. Cadman. 1987. People, pollen and pollinosis. *Allergy Update,* 2/87:7-8.
27) Zavada, M.S. and A. Cadman. 1987. A Pollen Calendar for Southern Africa. *Allergy Update*, 3/87:1-2.
28) Cadman, A. and M.S. Zavada. 1987. Pollen Rain in the South African context. *Allergy Update*, 4/87:6-8.
29) Taylor, T.N., Zavada, M., and S. Archangelsky. 1987. The ultrastructure of *Cyclusphaera psilata* from Cretaceous deposits of Argentina. *Grana,* 26: 74-80.
30) Zavada, M.S. 1987. The occurrence of *Cyclusphaera sp.* in Southern Africa. VII Simposio Argentino de Paleobotanica y Palynologia, Actas: pgs. 101-105.
31) Zavada, M.S. and J. Benson. 1987. The first fossil evidence for the primitive angiosperm family, Lactoridaceae. *American Journal of Botany*, 74: 1590-1594.
32) Manchester, S.R. and M. Zavada. 1987. *Lygodium* foliage with intact sorophores form the Eocene of Wyoming. *Botanical Gazette*, 148: 392-399.
33) Zavada, M.S. and D.L. Dilcher. 1988. Pollen wall ultrastructure of selected dispersed monosulcate pollen from Cenomanian, Dakota Formation of central U.S.A. *American Journal of Botany*, 75: 667-677.
34) Kerr, S. and M.S. Zavada. 1989. The effect of the Lichen *Acarospora sinopica* on the elemental composition of three sedimentary rock substrates in South Africa. *The Bryologist*, 92: 407-410.
35) Zavada, M.S. 1990. The Mexican curandera in Arizona. *Desert Plants,* 10: 61-65.
36) Zavada, M.S. 1990. The ultrastructure of selected monosulcate pollen from the Triassic Chinle Formation, Western U.S. *Palynology*, 14: 9-18.
37) Zavada, M.S. 1990. A contribution to the pollen wall ultrastructure of orchid pollinia. *Annals of the Missouri Botanical Garden*, 77: 457-482.
38) Zavada, M.S. 1990. Correlations between pollen exine sculpturing and angiosperm self-incompatibility systems - A rebuttal. *Taxon*, 39: 442-447.
39) Zavada, M.S. 1991. Determining character polarities in pollen, pgs. 239-256. In: Pollen and Spores: Patterns of Diversification, Blackmore, S. and S. Barnes (eds.), Linn. Soc. Symp. Series, Oxford University Press.
40) Zavada, M.S. and N.I. Gabarayeva. 1991. Comparative pollen wall development of *Welwitschia mirabilis* and selected primitive angiosperms. *Bulletin of the Torrey Botanical Club*, 118:292-302.
41) Zavada, M.S. 1991. The ultrastructure of pollen found in the dispersed sporangia of *Arberiella* (Glossopteridaceae). *Botanical Gazette*, 152:248-255.
42) Zavada, M.S. and M. Mentis. 1992. Plant-Animal Interaction: The effect of Permian mega-herbivores on the Glossopterid flora. *American Midland Naturalist,* 127:1-13.
43) Zavada, M.S. 1992. Pollen wall ultrastructure of fossil discoid pollen. *Bulletin of the Torrey Botanical. Club*, 119:44-49.
44) Wei, Z.-X., Zavada, M.S. and Ming, T.-L. 1992. Pollen morphology of *Camellia* (Theaceae) and its taxonomic significance. *Acta Botanica Yunnanica*, 14: 275-282.
45) Zavada, M.S. and G. Scott. 1993. Pollen morphology of *Cyanella spp.* (Tecophiliaceae). *Grana*, 32: 189-192.
46) Zavada, M.S. and Z. Wei. 1993. A contribution to the pollen wall ultrastructure of *Camellia spp.* (Theaceae). *Grana*, 32: 233-242.
47) Zavada, M.S. and A. Cadman. 1993. Palynological investigation at the Makapansgat Limeworks: An australopithecine site. *Journal of Human Evolution*, 25: 337-350.
48) Kim, M. and M.S. Zavada. 1993. Pollen morphology of *Broussonetia* (Moraceae). *Grana*, 32: 327-329.
49) Zavada, M.S. 1993. The historical use of henna (*Lawsonia inermis* L.) in the Balkans. *Thaiszia – Journal of Botany*, 3: 97-100.
50) Zavada, M.S. 1993. Other things to do on a good dinosaur day. *Plants and Planets, Lafayette Natural History Museum Newsletter*, 17: 4-5.
51) Kurmann, M.H. and M.S. Zavada. 1994. Pollen morphological diversity in extant and fossil gymnosperms, pgs. 123-137. In: M.H. Kurmann and J.A. Doyle (eds.), Ultrastructure of fossil spores and pollen, Royal Botanic Gardens. Kew Bull.

52) Baker, R.P., Hasenstein, K.H. and M.S. Zavada. 1994. Self-incompatibility in *Theobroma cacao*: Hormonal changes associated with the incompatibility response, pgs. 273-275. In: Pollen-Pistal Interaction and Pollen Tube Growth, Stephenson, A.G. and Kao, T.h. (eds.). American Society of Plant Physiologists.
53) Zavada, M.S. and T. Lowrey. 1995. Floral heteromorphism in *Dais cotinifolia* L. (Thymelaeaceae): a possible case of heterostyly. *Adansonia*, 17: 11-20.
54) Zavada, M.S. and M. Kim. 1996. Phylogenetic analysis of the Ulmaceae. *Plant Systematicsand Evolution*, 200: 13-20.
55) Baker, R.P., Hasenstein, K.H. and M.S. Zavada 1997. Hormonal changes after compatible and incompatible pollinations in *Theobroma cacao* L. *Hortscience*, 32: 1231-1234.
56) Zavada, M.S. and G.J. Anderson. 1997. The wall and aperture development of pollen from the dioecious *Solanum appendiculatum*: What is inaperturate pollen? *Grana*, 36:129-134.
57) Levesque, A. and M.S. Zavada 1998. Cycad-like fossils from the Molteno Formation of South Africa. *Cycad Newsletter,* 21: 6-8.
58) Allain, L.K. Zavada, M.S. and D.G. Matthews 1999. The reproductive biology of *Magnolia grandiflora*. *Rhodora*, 101: 143-162.
59) Goodwin, M.B., Clemens, W.A., Hutchinson, J.H., Wood, C.B., Zavada, M.S., Kemp, A., Duffin, C.J., and C.R. Schaff. 1999. Mesozoic continental vertebrates with associated palynostratigraphic dates from the Northwestern Ethiopian plateau. *Journal of Vertebrate Paleontology*, 19: 728-741.
60) Harley, M.M. and M.S. Zavada. 2000. Pollen of the monocotyledons: Selecting characters for cladistic analysis, pgs. 194-213. In: Monocots: Systematics and Evolution, Wilson, K.L. and D. Morrison (eds.), CSIRO Publishing, Sydney, Australia.
61) Zavada, M.S. and S. De Villiers. 2000. Pollen of the Asteraceae from the Paleocene-Eocene of South Africa. *Grana*, 39: 39-45.
62) Zavada, M.S., G.J. Anderson and T.N. Taylor. 2000. The role of apertures in pollen germination: A case study from *Solanum appendiculatum,* pgs. 89-97. In: M.M. Harley, C.M. Morten, and S. Blackmore (eds.). Pollen and Spores: Morphology and Biology, Royal Botanic Gardens, Kew.
63) Zavada, M.S. and P. Simoes. 2001. The possible demi-lichenization of the basidiocarps of *Trametes versicolor* (L.:Fries) Pilat (Polyporaceae). *Northeastern Naturalist*, 8: 101-112.
64) Hasenstein, K.H. and M.S. Zavada. 2001. Auxin modification of the incompatibility response in *Theobroma cacao* L. *Physiologia Plantarum*, 112: 113-118.
65) Zavada, M.S. 2003. The ultrastructure of angiosperm pollen from the Lower Cenomanian of the Morondova Basin, Madagascar. *Grana*, 42: 20-32.
66) Shang, Y. and M.S. Zavada. 2003. The ultrastructure of *Cerebropollenites* from the Jurassic and Cretaceous of Asia. *Grana,* 42: 102-107.
67) Zavada, M.S., DiMichele, L., and C. Toth. 2004. The demi-lichenization of *Tremetes veriscolor* II. The transfer of fixed $^{14}CO_2$ from the aglal epiphyte to the fungus. *Northeast Naturalist*, 11: 33-40.
68) Zavada, M.S. 2004. The earliest occurrence of angiosperms in Southern Africa. *South African Journal of Botany*, 70: 646-653.
69) Zavada, M.S. 2004. Ultrastructure of Upper Paleozoic and Mesozoic monosulcate pollen from southern Africa and Asia. *Palaeontologia Africana*, 40: 59-68.
70) Zavada, M.S. 2005. Are Lavakas important for Conservation? *Ravintsara,* 3: 3-4.
71) Zavada, M.S. 2007. The identification of fossil angiosperm pollen and its bearing on the time and place of origin of angiosperms. *Plant Systematics and Evolution*, 263: 117-134.
72) Zavada, M.S. 2007. Botanical Methods. Bent Tree Press, Reno, NV, 116 pgs.
73) Zavada, M.S., McGraw, S.M., and M.A. Miller. 2007. The role of clothing fabrics as passive pollen collectors in the northeastern United States. *Grana,* 46:285-291.
74) Shunk, A.J., Driese, S.G., Farlow, J.O., Zavada, M.S, and M.K. Zobaa. 2009. Late Neogene paleoclimate and paleoenvironment reconstructions from the Pipe Creek Sinkhole, Indiana, USA. *Journal of Paleogeography, Paleoclimatology, Paleoecology*, 274: 173-184.
75) Zavada, M.S., Wang, Y.Q., Rambolamanana, G., Raveloson, A. and Razanatsoa, H. 2009. The significance of human induced and natural erosion features (lavakas) on the high plateau of Madagascar. *Journal Madagascar Conservation and Developmen*t, 4 (2): 120-127.
76) Zavialova, N, Konijnenburg-van Cittert and M.S. Zavada. 2009. The exine ultrastructure of *Williamsoniella coronata. International Journal of Plant Science*, 170:1195-1200.

77) El Beialy, S.Y.,El Atfy, H.S., Zavada, M.S., El Khoriby, E.M. and R.H. Abu-Zied. 2010. Palynological, Palynofacies, Paleoenvironmental and Organic Geochemical Studies on the Upper Cretaceous Succession of the GPTSW-7 Well, Northwestern Desert, Egypt. *Marine and Petroleum Geology,* 27: 370-385.

78) Zavada, M.S. and T.K. Lowrey.2010. Comparative pollen morphology of *Brachylena, Tarchananthus*, and two species of *Tubulifloridites* (Asteraceae) from the Eocene, Knysna Lignite of South Africa. Review of Palaeobotany and Palynology, 162: 183-192.

79) Zobaa, M.K., Zavada, M.S., Whitelaw, M**.** J., Shunk, A. J., and F.E. Oboh-Ikuenobe. 2011. Palynology and palynofacies analysis of the Gray Fossil Site, eastern Tennessee: Their role in understanding the basin fill history. *Journal of Paleogeography, Paleoclimatology, Paleoecology*, 308:433-444.

80) Ricker, M.C., Donohue, S.W., Stolt, M.H. and M.S. Zavada. 2012. Development and application of multiproxy indices of land use change for riparian zone soils in southern New England, USA. *Ecological Applications*, 22:487-501.

81) Ochoa, D., Whitelaw, M., Liu, Y-S., Zavada, M.S. 2012. Palynology of neogene sediments at the Gray Fossil Site, Tennessee, USA: Floristic implications. *Review of Paleobotany and Palynology*, 184: 36-48.

82) Gonçalves da Silva, A., Campos-Arceiz, A. and M. S. Zavada. 2012. Introduction: Tapir biology, ecology, evolution and conservation. Part I, Integrative Zoology, 7: 329-330.
Gonçalves da Silva, A., Campos-Arceiz, A. and M. S. Zavada. 2013. Introduction: Tapir biology, ecology, evolution and conservation. Part II, Integrative Zoology, 8: 1-3.

83) McConnell, S.M. and M.S. Zavada. 2013. The occurrence of an abdominal fauna in an articulated tapir (*Tapirus polkensis*) from the Miocene Gray Fossil Site, northeast Tennessee, USA. *Integrative Zoology*, 8: 74-83.

84) Jaramillo, C., M.S. Zavada, Ortiz, J., Pardo, A. and D. Ochoa. 2013. The biogeography of the araucarian dispersed pollen *Cyclusphaera*. *International Journal of Plant Science*, 174: 489-498.

85) Martinez, C., Madrinan, S., Zavada, M.S. and C.A. Jaramillo. 2013. Tracing the fossil record of *Hedyosmum* (Chloranthanceae), an old lineage with recent Neotropical diversification*, Grana*, 53: 1-20.

86) Worobiec, E., Liu, Y-S., and M.S. Zavada. 2013. Paleoenvironment of the Late Neogene lacustrine sediments at the Gray Fossil Site, northeastern Tennessee, USA. *Annales Societatis Geologorum Poloniae*, 83:51-63

87) Ricker, M.C., Stolt, M.H., Donohue, S.W., Blazejewski, G.A. and M. S. Zavada. 2013. Soil Organic Carbon Pools in Riparian Landscapes of Southern New England. *Soil Science Society of America Journal*, 77 (3): 1070-1079.

88) Ricker, M C, Stolt, M.H. and M.S. Zavada. 2014. Comparison of Soil Organic Carbon Dynamics in Forested Riparian Wetlands and Adjacent Uplands. *Soil Science Society of America Journal*, 78: 1817-1827.

89) Huang, Y-J., Liu, Y-S and M.S. Zavada. 2014. New fossil fruits of *Carya* (Juglandaceae) from the latest Miocene to earliest Pliocene in Tennessee, eastern United States. *Journal of Systematics and Evolution*, 52: 508-520.

90) Ochoa, D., Zavada, M.S., Liu, Y., and J. O. Farlow. 2016. Floristic implications of two contemporaneous inland upper Neogene sites in the eastern United States: Pipe Creek Sinkhole, Indiana and the Gray Fossil Site, Tennessee (USA). *Paleobiodiversity and Paleoenvironments*, 96(2): 239-254.

91) Jaramillo, C., Romero, I., D'Apolito, Bayona, G., Duarte, E., Louwye, S, Escobar, J., Javier, L., Carrillo, J., Zapata, V., Mora, A., Schouten, S., Zavada, M., Harrington, G. and J. Ortiz. 2017. Miocene Flooding Events of Western Amazonia. *Science Advances*, 3(5), e1601693, DOI: 10.1126/sciadv.1601693.

92) Yehnjomg, P. S., Zavada, M.S. and Y. Liu. 2017 Characterization and ecological significance of a seed bank from the Upper Pennsylvanian Wise Formation, southwest Virginia, USA. *Acta Palaeobotanica*, 57(2): 165-175.

93) Ricker, M.C., Stolts, M.H. and M. S. Zavada. 2019. Pollen preservation in Alluvial Soils: Implications For Paleoecology and Land Use Studies. *Soil Science Society of America Journal*, DOI:10.2136/ssaj2019.01.0025

94) Zavada, M.S. 2020, Sometimes life isn't as wonderful as music makes it sound. *Agradecidas Senas: Revista Literaria*. Vol. 1 No. 1 https://agradecidassenas.com/.
95) Ranaivosoa, V., Zavada M.S., and T. Rakotondrazafy 2020. Palynostratigraphy of Upper Mesozoic outcrops near Anjiajia (Mahajanga Basin) and Manamana (Morondava Basin) and its bearing on the development of Cretaceous angiosperm floras in Madagascar. *International Journal of Paleobiology & Paleontology*, 3(1): 000118.
96) Zavada, M.S. and P. Hackley. 2022. The effect of diagenesis on the preservation of morphology and ultrastructural features of pollen. *Review of Paleobotany and Palynology*, 302:104679

Papers in Preparation

A new approach to teaching plant taxonomy, morphology, anatomy and the ethnobotany of plants associated with indigenous cultures (K-16). (M. Zavada, S. Abraham)
Biogeography and modern affinity of *Spirosyncolpites spiralis* (Fabaceae) from the Tertiary of South America. (I.C. Romero, M.S. Zavada, C. Jaramilo, J. Ortiz)
The role of fire in maintaining the Woodland –Savanna habitat of the Miocene Gray Fossil Site, Gray, Tennessee. (M.S. Zavada and Y. Liu)
The role of inaperturate (omni-aperturate) pollen in the evolutionary transition from a distal monosulcus in the basal angiosperms to the equatorial apertures of the Eudicots. (M.S. Zavada)

Research in Progress

Monitoring air quality in the Permian Basin during Covid-19 and the west Texas drought from 2020 - 2023. (S.B. Adkins, M.S. Zavada).
The effect of air quality on public health. 2020-Pres. (O. Dipeolu, M.S. Zavada)
Characterizing crude oil from individual wells with Raman Spectroscopy to determine the origin of stolen crude oils. (S. Carridine, M.S. Zavada)
Factors affecting rangeland sustainability in the Altai region of western Mongolia. (M.S. Zavada, J. Baatar)
Phytolith assemblages and abundance as a proxy for determining rangeland condition. (M. Zavada, J. Baatar)

Book Reviews

Willemstein, S.C. 1987. An Evolutionary Basis for Pollination Ecology. Leiden, Botanical Series, 10: 425 pgs. PALYNOS, Vol. 11 (1): 3.
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Arizona Academy of Science, Tucson, Az.
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Wang, Y.Q., Zavada, M.S., Lee, V., and R. Bowen. The University of Rhode Island and Providence College Team – An Associate of the ESSE 21 Program.

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Invited Seminars, Symposiums, & Papers

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Biology Seminar, University of Southwestern Louisiana, Department of Biology, Lafayette, LA. The role of self-incompatibility and sexual selection in the gymnosperm-angiosperm transition.

Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales Dept. de Ciencias Biologicas, Buenos Aires, Argentina. The role of self-incompatibility and sexual selection in the origin of the angiosperms.

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Rhode Island Natural History Survey Lecture Series. The Natural History of Pollen. 1997.

Rhode Island College, Providence, RI, Pollen: Form, Function and Evolution. 1998.

Southern Illinois University, Carbondale, IL, The Role of Self-Incompatibility in the Origin of Angiosperms. 2000.

Shanghai Institute of Plant Physiology, Shanghai, China, Self-Incompatibility in *Theobroma cacao*. 2000

Beijing Normal University, Beijing, China, Self-Incompatibility in *Theobroma cacao*. 2000

University of Rhode Island, Kingston, RI, Origin of angiosperms: Palynological evidence. 2002.

University of Connecticut, Storrs, Ct, Origin of the Angiosperms: Palynological evidence Revisited. 2004.

11th International Palynological Congress, Granada, Spain, Origin of Angiosperms: Palynological evidence revisited, 2004.

University of Nebraska, Omaha, NE, Origin of the Angiosperms: Palynological Evidence. 2005.

Providence College, Center for Teaching Excellence, Why research at Providence College? 2005.

Linnaean Society, London, Palynology Day, The significance of human induced and natural erosion features (lavakas) on the high plateau of Madagascar. 2005.

XVII International Botanical Congress, Vienna Austria, Zavada, M.S. and J. Osborn. Identification of fossil angiosperm pollen and its bearing on interpretations of the origin of angiosperms. 2005.

38th Annual American Association of Stratigraphic Palynologists, St. Louis, MO. Keynote speaker. Zavada, M.S. Origin of angiosperms: Palynological evidence revisited, 2005.

Cornell University, Ithaca, N.Y. The Origin of Angiosperms: Palynological evidence revisited. 2005.

East Tennessee State University, Biological Sciences, Johnson City, TN. The palynological evidence for the early origin of the angiosperms. 2006

East Tennessee State University, Physics, Astronomy, & Geology, Johnson City, TN. The significance of human induced and natural erosion features (lavakas) on the high plateau of Madagascar. 2006

8th European Paleobotany – Palynology Conference, Budapest, Hungary, Keynote Speaker – Symposium 23 - The importance of electron microscopy for paleopalynology. Zavada, M.S. 2010. The palynological evidence for the origin of the angiosperms; Data, diagenesis and dogma.

Botanical Society of America Annual Meeting, St Louis, Mo. Symposium: Innovations in organismal botany -A tribute to the pioneering studies of Donald A. Eggert. Zavada, M.S. 2011. Microgametophyte development of fossil seed ferns and the origins of modern pollen.

Seton Hall University, Graduate Seminar Series. Zavada, M.S. 2012. The Contributions of the fossil record to understanding the evolution of morphological and functional innovations in the seed plant microgametophyte.

9th Eurpoean Paleobotany Palynology Conference (EPPC), Padua, Italy, August 26-31Zavada, M.S. and W.S. Evans. 2014. The role of inaperturate pollen in the evolutionary transition from a distal monosulcus in the basal angiosperm to the equatorial apertures of the Eudicots..

9th European Paleobotany and Palynology Conference (EPPC), Padova, Italy. August 26-31, Zavada, M.S. 2014. Is Palynology a sub-discipline or a meta-discipline?

Stockholms Universitet, Stockholm, Sweden. Zavada, M. 2017. Palynological evidence for the Origin of the Angiosperm

XLIII Semana de Química Internacional and the XIX Jornadas de Investigación, Universidad Autónoma De Chihuahua, Chihuahua, Mexico . Zavada, M 2018. Biotecnología: ¿es "Dolly" realmente una mariposa?

Louisiana State University - Shreveport – Seminar- Zavada, M.S. 2021. Factors Affecting Rangeland Sustainability in the Altai Region of Western Mongolia.

Paleobotanical Commission of the Russian Academy of Sciences, Virtual Seminar /Workshop. Zavada,

M.S. 2022. The role of inaperturate (omni-aperturate) pollen in the Monosulcate -Tricolpate transition in the basal angiosperms.

GRADUATE STUDENTS

MS Students

Paul Baker, M.S., 1990-1992. The effects of non-random vegetation distribution on the pollen-vegetation relationship. (ULL)

Allain, Larry M.S. 1992-1994. The reproductive biology of *Magnolia grandiflora* L. (ULL)

Abraham, Sneha M.S. 2007- 2010. The taxonomy and ethnobotany of common grocery store plants and their use in teaching the science standards (Plant Science) of grades 8-12 in Tennessee, Virginia and North Carolina. (ETSU)

Beck, Chase M.S. 2007 – 2010. Pollen and charcoal analysis of Eagle Drink and Fair View Gap Bluff shelters, Fentress County, TN. (ETSU)

McConnell, S. M.S. 2007- 2011. Analysis of the gut contents of fossil tapirs at the Gray Fossil Site: the occurrence of intestinal parasites. (ETSU)

Petra, Seka, M.S., 2012-2014. Characteristics and ecological significance of Paleozoic seeds banks. (ETSU)

Romero, Ingrid, M.S., 2012-2014. Miocene landscape, temperature and plant biodiversity in the neotropics. (SHU)

Adkins, S. B., MS, 2020-Pres. Air quality monitoring during Covid -19 epidemic and a West Texas drought in Ector County, Texas. (UTPB)

Dipeolu, O. MS, 2022-Pres. Analysis and correlation of public health data in relation to air quality (Airborne Biologicals, PM SO2, and VOCs in Ector County, Texas. (UTPB)

Carridine, S. MS, 2022-Pres. Analysis of single origin crude oil using Raman Spectroscopy to determine the source of stolen crude oil in the Permian Basin. (UTPB)

PhD Students

Adrianne Cadman, Ph.D. 1986-1990. The relationship among pollen rain, vegetation, climate, meteorological factors and land use in the PWV, Transvaal. (Wits.)

Paul Baker, Ph.D. 1992-1997. Self- incompatibility in *Theobroma cacao*: New data suggests an adaptive incompatibility system. (ULL).

POST-DOCTORAL RESEARCH ASSOCIATES & VISITING SCHOLARS

Zhongxin Wei, Visiting Scholar, 1989-1990, Kungming Botanical Institute, Kungming, China. Pollen morphology and phylogeny of *Camellia sp.* (Theaceae). (ULL)

Muyeol Kim, Post-doctoral research associate, 1991, Jeonbug National University, Deogjin-Dong, Jeonju, Korea. Phylogenetic analysis of the Ulmaceae and Celtidaceae. (ULL)

Yuke Shang, Visiting Scholar, 2000, Nanjing Institute of Geology and Paleontology, Nanjing, China. Pollen wall ultrastructure of monosulcate pollen from the Triassic and Lower Cretaceous of China. (PC)

Voajanahary Ranaivosoa, Visiting Ph.D. Candidate. 2005. University of Antananarivo, Madagascar. Characterization of the local vegetation patterns by sampling airborne pollen. Instruction in light, scanning and transmission electron microscopy, and basic palynological techniques. I am currently serving as her "Garant scientifique" (PC, UTPB)

Mohamed Zobaa, Visiting Scholar. 2006-2007. Benha University, Benha Egypt. Palynological characterization and age determination of the Gray Fossil Site, Gray TN. (ETSU)

Baatar, Jargalsaikhan ('Jagaa'), 2019**.** Strategies for improving the sustainability of rangelands and preserving the nomadic way of life of the people of the Altai region of Mongolia. (UTPB)

PROFESSIONAL ORGANIZATIONS
AASP - The Palynological Society
Botanical Society of America (Paleobotanical Section)
International Organization of Paleobotanists
Linnaean Society of London (Fellow)
The Society for Ethnobiology
West Texas Geological Society (WTGS)

EXAMPLES OF SERVICE
Departmental & College
Undergraduate Student Advisor (Wits. Univ., UL & PC, ETSU, UTPB)
Graduate Student Advisor (Wits. Univ., UL, ETSU, UTPB)
Oversight committee for Sterkfontein Caves Research Site 1985-1987 (Wits. Univ.)
Faculty Senate 1988-1992 (UL)
Graduate Council 1991-1994 (UL)
Faculty Peer Review Committee 1991-1994 (UL)
Ad Hoc Committee to Evaluate Masters Programs 1993-1994 (UL)
Development of the departmental brochure for recruitment of undergraduate biology majors 1992-1993 (UL)
Environmental Studies Program Mission Statement Committee 1995 (PC)
Biology Departmental Speaker Series 1995-1996 (PC)
Self-Study Subcommittee on Physical Resources 1996-1998 (PC)
Environmental Studies Committee 1996- 2003. (PC)
Institutional Animal Care and Use Committee 1997-1999 (PC) 2019-Pres. (UTPB)
Recommendations for Health Professions Committee 1997-2006 (PC)
Hazardous Substance Storage and Waste Management Committee 1999-2006 (PC)
Faculty Workload Committee 2000-2006 (PC)
University Committee – Evaluation of Faculty Productivity, 2007-2008 (ETSU)
University Committee – Evaluation of the National Survey of Student Engagement, 2007-2008 (ETSU)
University Committee - Faculty Recruitment, Retention, and Development, 2007-2008 (ETSU)
Sigma Xi President of the Southern Appalachian Chapter 2007-2011 (ETSU)
Department of Biological Sciences, Graduate Coordinator, 2006-Pres. (ETSU)
University Committee - Task Force on Faculty Salary Equity 2011-Pres. (ETSU)
Task force for Online Education TLTC, (SHU)
Task Force for the Development of the School of Communication (SHU)
Chairman if the IACUC Committee (UTPB)
Review Panel for the National Science Foundation Graduate Research Fellowship Program (GRFP) in Evolutionary Biology & Systematics FY2023

Service to the Community
College Representative to the Rhode Island INBRE (NIH) Steering Committee 2000-2006
Chairman and College Representative to the Rhode Island EPSCoR (NSF) Steering Committee 2003-2006
Rhode Island Aviation and Space Education Society 2005-2006 & Rhode Island Space Grant Consortium
Petersheim Academic Exposition, Committee Member, Seton Hall University 2012-2015.
Board of Directors, WSOU – Pirate Radio, Seton Hall University 2012-2015.
Board of Directors, Joseph A. Unanue Latino Institute, Seton Hall University, 2012-2015.
Board of Directors, Arts Council, Seton Hall University 2012-2015.
Governing Board of South Orange Preforming Arts Center (SOPAC) 2012-2015.
Board of Directors South Orange Vailsburg United Methodist Church, South Orange, NJ, 2014-2015.
Dual Credit/Early College HS Task Force University of Texas System 2016-2017
Numerous University and College committees at University of Texas- Permian Basin 2015-Present
Board of Directors First Presbyterian Church, Odessa TX 2020-Pres.

COURSES TAUGHT

Wits=University of the Witwatersrand, Johannesburg, RSA, UL= University of Louisiana – Lafayette, LA, PC=Providence College, Providence, RI, ETSU = East Tennessee State University, UTPB = University of Texas of the Permian Basin

Undergraduate

Ecology (PC, ETSU, UTPB**)**
Electron Microscopy (Wits, PC. ETSU)
Environmental Literature (UL)
Environmental Science (UTPB)
Environmental Geology (UTPB)
Ethnobotany (UL, PC, ETSU, UTPB)
Evolution (ETSU, UTPB)
General Biology I & II, Majors (Wits, UL, PC, ETSU, UTPB)
General Biology I & II, Non-Majors (UL, PC, ETSU)
General Biology I & II Medical Students (Wits)
General Botany (Wits, PC)
Physical Geology (UTPB)
Historical Geology (UTPB)
Introduction to Paleobiology (UTPB)
Paleobotany (Wits, UL, ETSU, UTPB)
Palynology (Wits, UL, ETSU)
Plant Anatomy (Wits, UL, ETSU)
Plant Morphology (Wits, UL, ETSU)
Plant Taxonomy (UL, PC)
Pre-Cambrian Paleontology (UTPB)

Graduate

Air Quality and its impact on Health and the Environment (UTPB)
Morphology of Non-Vascular Plants (UL)
Paleobotany (Wits, UL, ETSU)
Palynology (Wits, UL, ETSU)
Pre-Cambrian Paleontology (UTPB)
Various Seminar Courses in Ecology and Evolution

REFEREES

Dr. Karl H. Hasenstein
Department of Biology
University of Louisiana - Lafayette
[redacted]

Dr. Yusheng (Chris) Liu
Vice Chancellor for Research, Office of Research & Economic Development
Dean, School of Graduate Studies
Professor, Department of Earth & Environmental Studies
University of Missouri-Kansas City
[redacted]

Dr. Adam Lambert
University of California – Santa Barbara
Marine Science Institute
[redacted]

Committee on Energy and Commerce
U.S. House of Representatives

Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI, Clause 2(g)(5)

1. Your Name: **Michael S. Zavada**		
2. Your Title: **PhD**		
3. The Entity(ies) You are Representing: Myself as a resident of Odessa		
4. Are you testifying on behalf of the Federal, or a State or local government entity?	**Yes**	**No** X
5. Please list any Federal grants or contracts, or contracts or payments originating with a foreign government, that you or the entity(ies) you represent have received on or after January 1, 2020. Only grants, contracts, or payments related to the subject matter of the hearing must be listed. None at the moment		
6. Are you a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing?	**Yes** **X**	**No**
7. Please attach your curriculum vitae to your completed disclosure form.		

Signature: _[redacted]_ **Date:** ___**2/17/2023**_____