

CURRICULUM VITAE

Daniel Wu Fong
 Associate Professor
 Department of Biology
 American University
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Education

B.A. Zoology. University of California, Berkeley, CA. 1975.
 M.S. Zoology. University of Oklahoma, Norman, OK. 1980.
 Ph.D. Ecology and Evolutionary Biology. Northwestern University, Evanston, IL. 1985.

Employment History

Midwest Research Institute, Kansas City. Junior Biologist. 1975-77.
 University of Oklahoma. Graduate Teaching Assistant. 1977-80.
 Northwestern University. Graduate Teaching Assistant. 1980-84.
 University of Minnesota - Duluth. Lecturer. 1984-85.
 Rocky Mountain Biological Laboratory, Gothic, CO. Instructor. 1985.
 Northwestern University. Post-doctoral Trainee. 1985-87.
 American University, Department of Biology:
 Post-doctoral Research Associate. 1987-88.
 Assistant Professor, non-tenure track appointment. 1988-90.
 Assistant Professor, tenure track appointment. 1990-94.
 Associate Professor. 1994-present.
 Chair. 1995-97.
 Environmental Studies Program Coordinator. 1992-94; 1997-2001.
 Visiting Scholar, University of Maryland – College Park, 1994-95.
 Visiting Scholar, University of California – San Diego. 2001-02.

Publications

Books:

Culver, D.C., T.C. Kane, and **D.W. Fong**. 1995. *Adaptation and Evolution in Caves*. Harvard University Press.
Fong, D.W., D.C. Culver, H.H. Hobbs, III, and T. Pipan. 2007. *The Invertebrate Cave Fauna of West Virginia, Second Edition*. Bulletin 16, West Virginia Speleological Survey, Barrackville, WV.

Book Chapters:

Culver, D.C., W.K. Jones, **D.W. Fong**, and T.C. Kane. 1994. Case studies of karstic systems: Organ Cave Basin, West Virginia. In pp. 451-473, J. Gibert, D. Danielopol, and J. Stanford (eds.), *Groundwater Ecology*. Academic Press, New York.
Fong, D.W., and D.C. Culver. 1994. Invertebrate Fauna. In: pp. 41-42, G.R. Dasher and W.M. Balfour, eds., *The Caves and Karst of the Buckeye Creek Basin, Greenbrier County, West Virginia*. Bulletin 12, West Virginia Speleological Survey, Barrackville, WV.

Edited Volume:

Sasowsky, I.D., **Fong, D.W.**, and E.L. White, Editors. 1997. *Conservation and Protection of the Biota of Karst*. KWI Special Publication 3, Karst Waters Institute, Charles Town, WV.

Others:

- Fong, D.W.** 1996. Madison Cave Isopod (*Antrolana lira*) Recovery Plan. U.S. Fish and Wildlife Service, Hadley, MA, 36pp.
- Fong, D.W.**, and Ben Hutchins. 2007. Within and Between Site Analysis of Molecular Variation in the Madison Cave Isopod, *Antrolana lira*. Report of Contract Number 2006-9548. Virginia Department of Games and Inland Fisheries. Richmond, VA.
- Fong, D.W.** 2009. Within and Between Site Analysis of Molecular Variation in the Lee County Isopod, *Lirceus usdagalum*. Report of Contract Number SVFO7008. US Fish and Wildlife Service, Southwest Virginia Field Office, Abingdon, VA.\

Articles in Refereed Journals:

- Sprague, G.L., **D.W. Fong**, and T.R. Castles. 1978. Alteration of brain chromatin and nuclear synthetic activity in morphine-tolerant rats. *Research Communications in Chemistry, Pathology and Pharmacology* 19:553-556.
- Fong, D.W.**, and D.C. Culver. 1985. A reconsideration of Ludwig's differential migration theory of regressive evolution. *Bulletin of the National Speleological Society* 47:123-127.
- Culver, D.C., and **D.W. Fong**. 1986. Why all cave animals look alike. *Stygologia* 2:208-216.
- Vawter, A.T., **D.W. Fong**, and D.C. Culver. 1987. Negative phototaxis in surface and cave populations of the amphipod *Gammarus minus*. *Stygologia* 3:83-88.
- Fong, D.W.** 1989. Morphological evolution of the amphipod *Gammarus minus* in caves: quantitative genetic analysis. *American Midland Naturalist* 121:361-378.
- Culver, D.C., T.C. Kane, **D.W. Fong**, R. Jones, M.A. Taylor, and S.C. Sauereisen. 1989. Morphology of cave organisms - is it adaptive? *Memoires de Biospeologie* 17:3-16.
- Kane, T.C., R.C. Richardson, and **D.W. Fong**. 1990. The phenotype as the level of selection: cave organisms as model systems. *Journal of the Philosophy of Science Association* 1990(1):151-164.
- Culver, D.C., **D.W. Fong**, and R.W. Jernigan. 1991. Assessing species interactions in cave stream communities. *American Midland Naturalist* 126:364-379.
- Culver, D.C., and **D.W. Fong**. 1994. Subterranean crustacean fauna of major river basins of the Virginias: effects of scale. *Hydrobiologia* 287:3-9.
- Fong, D.W.**, and D.C. Culver. 1994. Fine-scale biogeographic differences in the crustacean fauna of a cave system in West Virginia, USA. *Hydrobiologia* 287:29-37.
- Jernigan, R.W., D.C. Culver, and **D.W. Fong**. 1994. A graphical analysis of genetic correlations as evidence for selection. *Evolution* 48:587-596.
- Fong, D.W.**, T.C. Kane, and D.C. Culver. 1995. Evolution of vestigial and nonfunctional characters. *Annual Review of Ecology and Systematics* 26:249-268.
- Knapp, S., and **D.W. Fong**. 1999. Estimates of population size of the cave-dwelling amphipod *Stygobromus emarginatus* in Organ Cave, West Virginia. *Journal of Cave and Karst Studies* 61:3-6.

Articles in Non-Refereed Journals and Proceedings:

- Fong, D.W.** 1982. Genetic analysis of regressive evolution. *Cave Research Foundation Annual Report* 1982:4-5.
- Fong, D.W.** 2004. Intermittent pools at headwaters of subterranean drainage basins as sampling sites for epikarst fauna. *Proceedings of the International Symposium on the Epikarst*. Karst Waters Institute Special Publications 9: 114-118.

Research Grants and Projects**Sponsored Research:****Grants and Contracts Received:**

- "Quantitative Analysis of Retrogressive Evolution in the Amphipod *Gammarus minus*." Karst Research Fellowship, \$2,000. Cave Research Foundation. 1982.
- "Reversal of Eye Size Evolution in the Amphipod *Gammarus minus*." Summer Research Award, \$8,000. The American University. 1992.
- "Evolution of Eye Size in the Amphipod *Gammarus minus*." Senate Research Development Award, \$10,000. The American University. 1994.

“Recovery Plan for the Madison Cave Isopod, *Antrolana lira*, a Threatened Species on the federal and state (Virginia) lists.” \$4000. U. S. Fish and Wildlife Service. 1995.

“Determination of epikarstic flow in a cave stream.” Cave Conservancy of the Virginias: \$2400. 1996.

“Keys to the Subterranean Fauna of North America north of Mexico.” Cave Conservancy Foundation: \$45,000. 05/01/99 - 08/31/01.

“Genetic population structure of two wide-spread stygobiotic species in West Virginia” Cave Conservancy Foundation: \$6,000. 08/01/07 - 07/31/08.

“Determining the number of genetic populations of the Lee County Isopod, *Lirceus usdagalun*.” U.S. Fish and Wildlife Service: \$4,025. 09/01/07 - 12/31/07.

Proposals Submitted:

“Improving Biological Sciences Education at American University.” PI. Submitted 10/22/97 to Howard Hughes Medical Institute. \$2,196,954. Not funded.

“Subterranean Fauna of North America and Europe: Taxonomic Databases and Dichotomous Keys.” Co-PI. Submitted 11/06/98 to National Science Foundation. \$91,656. Not funded.

Invited Seminars and Presentations:

Genetic analysis of regressive evolution in a cave-dwelling amphipod, *Gammarus minus*. University of Minnesota - Duluth. 1984.

Species interactions in cave stream communities. University of Maryland, College Park. 1990.

Mechanisms of eye-size evolution in cave populations of the amphipod *Gammarus minus*. Old Dominion University. 1991.

Evolution of eye size in cave populations of the amphipod *Gammarus minus*. University of Oklahoma. 1991.

Evolution of eye size in cave populations of the amphipod *Gammarus minus*. Ursinus College, Pennsylvania. 1993.

Morphological evolution of the caved-dwelling amphipod *Gammarus minus*. University of Maryland, College Park. 1994.

Bugologizing in Organ Cave. West Virginia Association for Cave Studies, Franklin, WV. 1995.

Karst ecosystems. Why all the fuss? Virginia Lakes and Watersheds Association, 9th Annual Virginia Water Conference, Staunton. 1996.

Intermittent pools at headwaters of subterranean drainage basins as sampling sites for epikarst fauna. International Symposium on the Epikarst. Karst Waters Institute. Shepherdstown, West Virginia. 2003.

International Long Term Ecological Research Site Planning Workshop. Karst Research Institute, Postojna, Slovenia. Invited to participate, and chaired discussion panel on biodiversity issues. 2006.

Workshop on Future of Karst Science. Karst Waters Institute. San Antonio, Texas. Invited to participate in session on Ecosystem Function. 2007.

Phylogeography of the cave amphipod, *Gammarus minus*. Symposium on Ecology and Evolution of Freshwater Amphipods. The Crustacean Society. La Serena, Chile. 2007.

Presentations at Professional Meetings (oral presentations, non-refereed unless noted otherwise):

Fong, D. W. Saltatory *Sonora*, an unusual behavior in the plains ground snake, *Sonora episcopa*. Oklahoma Academy of Sciences. Central State University, Edmund. 1979.

Fong, D. W. Genetic parameters of regressive evolution in *Gammarus minus*. National Speleological Society. Davis and Elkins College, Elkins, WV. 1983.

Fong, D. W. Quantitative genetics of eye degeneration and antennal elaboration in a cave-dwelling amphipod, *Gammarus minus*. Society for the Study of Evolution. Crested Butte, CO. 1984.

Fong, D. W. Quantitative genetic analysis of regressive evolution. Society for the Study of Evolution. Montana State University, Bozeman. 1987.

Fong, D. W. The use of biplots to compare genetic correlation matrices. Society for the Study of Evolution. Asilomar Center, Pacific Grove. 1988.

Fong, D. W. Large and small scale effects on the crustacean community structure within an underground drainage. Ecological Society of America. UC Davis, CA. 1988.

- Fong, D. W.** The anatomy of eye reduction in *Gammarus minus*: comparison between populations. VIIth International Colloquium on Amphipoda. Darling Marine Center, University of Maine. 1989.
- Fong, D. W.** Variation in optic structure between cave-dwelling populations of *Gammarus minus*. Society for the Study of Evolution. Pennsylvania State University. 1989.
- Fong, D. W.** Determinants of community structure in groundwater resurgence ecosystems. Third International Crustacean Conference. University of Queensland, Brisbane. 1990.
- Fong, D. W.** Origin of karst window populations of the amphipod *Gammarus minus*. National Speleological Society, SUNY-Cobleskill. 1991.
- Fong, D. W.** Origin of karst window populations of the amphipod *Gammarus minus*. Washington Area Population Ecology and Genetics. Laboratory of Molecular Systematics, Smithsonian Institution. 1991.
- Fong, D. W.** Fine-scale biogeography of the Organ Cave crustacean fauna. International Meeting of The Crustacean Society, Charleston, SC. Refereed. 1992.
- Fong, D. W.** Origin of karst window populations of the amphipod *Gammarus minus*. Society for the Study of Evolution. Snowbird, Utah. 1993.
- Fong, D. W.** Morphological evolution of the amphipod *Gammarus minus*: an analysis of time. National Speleological Society, Brackettville, TX. 1994.
- Fong, D. W.** Mark-recapture estimates of population size of the crangonytid amphipod *Stygobromus emarginatus* in Organ Cave, West Virginia. National Speleological Society, Virginia Polytechnic Institute and State University, Blacksburg, VA. 1995.
- Fong, D. W.** Population sizes of some apparently rare cave animals. Karst Waters Institute Symposium on Conservation and Protection of the Biota of Karst, Nashville, TN. 1997
- Fong, D. W.** Why are there so many troglobites? National Speleological Society, Sullivan, MO. 1997.
- Fong, D. W.** Estimates of population size of two stygobitic crustaceans. National Speleological Society, Filer, ID. July, 1999.
- Fong, D. W.** Estimates of population size of two stygobitic crustaceans. 14th International Symposium of Biospeleology, Markaska, Croatia. September, 1999.
- Carlini, D. B., **D. W. Fong**, and J. Manning. Genetic variation in subterranean stream and surface spring populations of the freshwater amphipod *Gammarus minus* in Greenbrier County, WV. Joint meeting of the Society for the Study of Evolution (SSE), the American Society of Naturalists (ASN), and the Society of Systematic Biologists (SSB), Stony Brook State University of New York, Stony Brook, NY. Refereed. [Poster presented by Carlini at meeting] 2006.
- Fong, D. W.**, D. B. Carlini, and J. Manning. Genetic variation within and among cave and spring populations of the amphipod *Gammarus minus*. XVIIIth International Symposium of Biospeleology, International Society for Subterranean Biology. Cluj-Napoca, Romania. Refereed. [Oral presentation given by Fong] 2006.
- Fong, D. W.** Cave-dwelling populations of the amphipod *Gammarus minus* should be considered a series of different species. National Speleological Society Convention. Western Washington University, Bellingham, WA. 2006.
- Fong, D. W.** Mark-recapture estimates of population size of the Madison Cave Isopod, *Antrolana lira*. National Speleological Society Convention. Marengo, Indiana. 2007.
- Fong, D. W.** Mark-recapture estimates of population size of the Madison Cave Isopod, *Antrolana lira*. The Crustacean Society. La Serena, Chile. Refereed. 2007.
- Fong, D. W.**, B. Hutchins, and D.B. Carlini. Three distinct clades of the stygobiotic cirrolanid isopod, *Antrolana lira*, in the Shenandoah Valley of the Eastern U.S. 19th International Symposium of Biospeleology, International Society for Subterranean Biology. Western Australian Museum, Perth, Australia. Refereed. 2008.
- Holsinger, J.R., **D.W. Fong**, and D.C. Culver. A new species of stygobiotic amphipod in the genus *Gammarus* from Pennsylvania, U.S. 19th International Symposium of Biospeleology, International Society for Subterranean Biology. Western Australian Museum, Perth, Australia. Refereed. [Presented by Holsinger]. 2008.

Other Research:**Non-Sponsored Research in Preparation for Grant Proposal:**

Phylogenetic reconstruction of cave, karst window, and surface populations of *Gammarus minus* using COI gene sequences. (Collaboration with David Carlini).

Tissue turn-over rate comparison between cave and surface isopods of the genus *Caecidotia* using stable isotopes. (Collaboration with Stephen MacAvoy).

SEM analysis of morphological adaptation in subterranean crustaceans. (Collaboration with Christopher Tudge)

Editorial Activities

Editor, North American Biospeleology Newsletter. 1991-97.

Public Testimony

Presented expert testimony in support of H.R. 698 "To Protect Lechuguilla Cave and Other Resources and Values In and Adjacent to Carlsbad Caverns National Park", at a hearing before the Subcommittee on National Parks, Forests, and Public Lands, of the Committee on Natural Resources, of the House of Representatives, of the One Hundred Third Congress. March 2, 1993.

Supervision of Theses and Dissertations:**As committee chair:**

Ning Dai, M.S. 1989. "Anatomy of Eye Reduction in the Amphipod *Gammarus minus*: Comparison among cave populations."

Zhijun Man, M.S. 1991. "Size-Selective Predation and Life-History Variation among Spring-Dwelling Populations of the Amphipod *Gammarus minus*."

Evelyn Fahy, M.A. 1992. "Environmental Sex Determination as a Constraint on the Evolution of Viviparity in Reptiles."

Hiba Melhem, M.S. 1993. "Detection of the Subcutaneous Zone as Primary Habitat of the Isopod *Caecidotia holsingeri* By Molecular Genetic Markers."

Beth Parker, M.S. 2000. "Genetic Distance and Hydrological Distance Among Spring Populations of the amphipod *Gammarus minus*."

Melanie Hoffman, M.S. 2000. "Analysis of Fluctuating Asymmetry of Skull Characters in the South American Sea Lion. Effects of 1997-98 El Niño Events."

Ben Hutchins, M.S. 2007. "Determination of genetic distance among groundwater dwelling populations of two species of stygobiontic crustaceans: *Antrolana lira* (Isopoda: Cirolanidae)."

Karen Kavanaugh, M.S. expected 2009. "Geographic analysis of genetic variation among populations of the subterranean amphipod, *Stygobromus tenuis potomacus*."

Kerry Chu, B.S./M.S. expected 2009. "Morphological adaptation to different subterranean habitats in three lineages of amphipod crustaceans."

As committee member:

M.A.:

Charlotte White, 1988. Hillery Sheevers, 1989. Christine Ladwig, 1990.

M.S.:

Khatereh Iranmanesh, 1989. Danielle Holiday, 1992. Amal Nadel, 1993.

Linda Zeit, 1993. Bettina Hoyte, 1994. Kent Carlson, 1994. Radu Popa, 1997.

Natasha Gray, 1999. Katie Schneider, 2003. David Baker, 2004. Katherine Migura, 2004. Nathan Anderson, 2006. Natalie Hanson, expected 2008.

Ph.D.:

Kevin Simon, Department of Biological Sciences, Virginia Polytechnical Institute and State University. 2000.

Rania Tarboush, Department of Psychology, AU.

Independent Laboratory Research Student Supervision:

Shirley White, Spring 1988 (3 credits)

David Schroeder, Spring and Fall 1990 (5 credits)

Ryan O'Connor, Fall 1990 and Spring 1991 (8 credits)
 Jonah Rainey, Spring 1991 (Honors Supplement)
 Jonah Rainey, Fall 1991 and Spring 1992 (5 credits total)
 Joyce Sekharan, Fall 1991 (2 credits)
 Rebecca Case, Spring 1992 (3 credits)
 Amin Olyai, Summer and Fall 1993 (4 credits)
 Jeanine Grillo, Summer 1993 (co-advice with Dr. Ida Chow)
 Shannon Knapp, AY 1993-94, 94-95 (Research Apprentice Program)
 Andrea Muniz, Fall 1993 (Freshman Research Apprentice Program)
 Rukshana Cader, AY 1994-95 (Honors thesis research)
 Brooke Smith, Fall 1996 (3 credits)
 Rachel Gallery, Fall 1996 (3 credits)
 Adam Switalski, Spring 1997 (2 credits)
 Zack Prag, Spring 2004 (2 credits)
 James Johnson, Spring 2003-04 (6 credits)
 Michelle Chesnut, Fall 2005 (3 credits)
 Matt Kent, Spring 2008 (3 credits)
 Amanda Luh, Spring 2008 (3 credits)

Curriculum Development

New courses:

09.250 Living in the Environment 5:2 (3).
 Developed Spring, 1991.
 First Taught Fall, 1991.
 09.102 Seminar in Environmental Issues (1).
 Developed Spring, 1992.
 First Taught Fall, 1992.
 HNRS-301 Human Diseases and Evolution (3)
 First Taught Fall, 2006.
 ENVS-396 Science and Policy of Biodiversity (3)
 First Taught Spring, 2008

New program:

Bachelor of Arts in Environment Studies. New Major.
 Program development, AY 1991-92. Program Initiated Fall, 1992.
 Bachelor of Science in Marine Science. New Major.
 Program development, AY 2000-2001. Program Initiated Fall, 2003.

Service

Departmental:

Seminar Series Coordinator. AY 1988-89.
 Rank and Tenure Committee. Spring 1988, AY 90-91, Chair: 1998-2000, AY2004-08.
 Graduate Studies Committee. Fall 1988, Spring 91, AY 91-92, 1997-2000. 2004-08.
 Undergraduate Studies Committee. AY 1989-90, 90-91, 91-92.
 Library-Department Liaison. AY 1990-91, 91-92, 92-93, 93-94.
 Faculty Search Committee. Spring 1993. AY 1998-99. Chair: 2007-08.
 Department Chair. AY 1995-97.

College of Arts and Sciences:

Freshman Recruitment Phonathon. Spring 1990, 1993.
 Freshman Mentor Program. AY 1990-91, 91-92, 92-93.
 Graduate Recruitment Open House. Fall, 1990.
 Education Policy Committee
 AY 1991-92. Departmental Representative.
 AY 1992-93, 93-94. At Large Representative.
 AY 1992-93, 93-94 Nominations Committee.

AY 2005-07: Curriculum Committee. (Chair: Spring 2007).
 Program Development: B.A. in Environmental Studies. AY 1991-92.
 Freshman Environmental Experience Program. Fall, 1991-present.
 Coordinator of Environmental Studies. 1992-94, 1997-2004.
 Environmental Studies Advisory Committee. AY 1992-93.
 Environmental Studies Conference. Moderator, Biodiversity Session. Spring, 1993.
 Environmental Fair. Organizer. Spring, 1993.
 Statistics Faculty Search Committee. AY 2004-05.

Other Professional Activities

Referee:

Reviewer of manuscripts for publication in *Biology Letters*, *Ecology*, *Evolution*, *Freshwater Biology*,
Journal of Crustacean Biology, *Journal of Cave and Karst Studies*, *Zoological Science*.
 Reviewer of grant proposals to Undersea Research Program of NOAA.

Consultant Activities:

Survey of invertebrate fauna in Hamilton and New Trout caves, Virginia. National Speleological Society.
 1989.
 Survey of invertebrate fauna in caves in Greenbrier County, and along the Elk River drainage, West
 Virginia. The Nature Conservancy. 1990. (With D.C. Culver)
 Survey of cave fauna in northeastern Oklahoma. Oklahoma Biological Survey. 1991.
 Survey of microbial activity in Lechuguilla Cave. Carlsbad Caverns National Park. 1992 (August and
 November).
 Survey of cave invertebrate fauna of West Virginia. Division of Natural Resources, West Virginia. 2004-
 06. (With D.C. Culver of AU and H.H. Hobbs of Wittenberg University)
 Within and between site analysis of molecular variation in the Madison Cave Isopod. Virginia Department
 of Game and Inland Fisheries. 2006-2007.

Professional Organization Membership, Activities, and Honors:

Cave Conservancy of the Virginias:
 Board of Directors, 1992-2003; 2006-present
 Nominations Committee, 1993-94.
 Vice President, 1994-1999.
 Membership Committee Chair, 2006-present

Karst Waters Institute:
 Board of Directors, 1991-1996:
 Finance Committee Chair, 1994-96.
 Treasurer, 1997-2007.
 President, 2007-present

National Speleological Society:
 Awards Committee, 1998-present
 Biology Section:
 Treasurer, 1991-2005.
 Editor of section newsletter, 1991-97.
 Founding and Managing Editor of online journal, *Speleobiology Notes*. 2009-
 Program Chair, Biology Session, 1995 Convention, Blacksburg, VA.
 Fellow of Society, 1996.
 Organizer, John Holsinger Symposium. 2007 Convention. Marengo, Indiana.
 Instructor, Cave Biology for Cavers Course. 2007 Convention. Marengo, Indiana.

North American Benthological Society
 Society for the Study of Evolution
 The Crustacean Society
 West Virginia Association for Cave Studies