

CURRICULUM VITAE

Matthew P. Ayres

Department of Biological Sciences, Dartmouth College, Hanover, NH 03755
(603) 646-2788, Matt.Ayres@Dartmouth.Edu, <http://www.dartmouth.edu/~mpayres>

APPOINTMENTS

Professor of Biological Sciences, Dartmouth College, 2008 -
Associate Director, Institute of Arctic Studies, Dartmouth College, 2014 -
Associate Professor of Biological Sciences, Dartmouth College, 2000-2008
Assistant Professor of Biological Sciences, Dartmouth College, 1993 to 2000
Research Entomologist, USDA Forest Service, Research Entomologist, 1993

EDUCATION

1991 Ph.D. Entomology, Michigan State University
1986 Fulbright Fellowship, University of Turku, Finland
1985 M.S. Biology, University of Alaska Fairbanks
1983 B.S. Biology, University of Alaska Fairbanks

PROFESSIONAL AFFILIATIONS

Ecological Society of America Entomological Society of America

PROFESSIONAL SERVICES

Member, Board of Editors: *Ecological Applications*; Member, Editorial Board, *Population Ecology*

Referee: (10-15 manuscripts / year) *American Naturalist, Annales Zoologici Fennici, Bioscience, Canadian Entomologist, Canadian Journal of Botany, Canadian Journal of Forest Research, Climatic Change, Ecography, Ecology, Ecology Letters, Ecological Entomology, Ecological Modeling, Ecoscience, Environmental Entomology, Environmental & Experimental Botany, European Journal of Entomology, Field Crops Research, Forest Science, Functional Ecology, Global Change Biology, Journal of Applied Ecology, Journal of Biogeography, Journal of Geophysical Research - Biogeosciences, Journal of Economic Entomology, Journal of Experimental Biology, Journal of Insect Behavior, Journal of Tropical Ecology, Integrated Pest Management Reviews, Landscape Ecology, Microbial Ecology, Mycologia, New Phytologist, Oecologia, Oikos, Population Ecology, Proceedings of the National Academy of Sciences US, Proceedings of the Royal Society B, Southern Journal of Applied Forestry, Science, Southwestern Naturalist, Symbiosis, Tree Genetics & Genomes, Tree Physiology*

Panel member: National Science Foundation, six panels since 2000.

Outside examiner for Ph.D.: University of Turku, University of Vermont, University of Joensuu (2), Australian National University, University of Pretoria.

Member, Expert Panel: [Adaptation of Forests to Climate Change](#), United Nations / IUFRO, 2008-2010

Member, Advisory Board, EU project: [Biodiversity and Climate Change \(BACCARA\)](#), 2009-2012.

Contributor: "[Climate Change and Agricultural Trade: Risks and Responses](#)", Seminar and work group organized by World Bank's Development Research Group, 2009-2010.

Member, [U.S. National Climate Assessment](#), Forestry Sector. 2011-12

Ad hoc reviewer of proposals: NSF, USDA NRICGP, NASA, Italian Science Foundation, Czech Science Foundation, U.S. Civilian Research & Development Foundation (CRDF), National Geographic Society, Canadian Foundation for Climate and Atmospheric Sciences (CFCAS), Norwegian Centres for Excellence, Earthwatch; California Department of Food & Agriculture.

CURRENT AND RECENT GRANTS

- NSF LTER Program. “Long term ecological research at the Hubbard Brook Experimental Forest”. PIs: Gary Lovett and Peter Groffman; Co-PIs include Matt Ayres. 2017—2023.
- USDA Forest Service. “Southern pine beetle range expansion: Forecasting SPB population dynamics and impacts of disturbance interactions on future forests of New York, New Jersey and New England.” PI Matt Ayres, Co-PI Carissa Aoki. 2016-18.
- US Forest Service International Programs Coop Agreement: “Intercontinental comparisons of ecology and impacts from an invasive forest insect: the case of the European woodwasp, *Sirex noctilio*.” Co-PI: Andrew Liebhold (US Forest Service); Co-Investigators: Juan Corley (Argentina), Bernard Slippers (South Africa), and María Lombardero (Spain). 2016-2020..
- NSF Polar Programs “A Dartmouth-JSEP Partnership for International Science Education in Greenland.” PIs: Ross Virginia, Lauren Culler. Co-PIs: Mary Albert, Matt Ayres. 2015-19.
- US Forest Service, Cooperative Agreement. Impact of southern pine beetle on forest structure and fuel loading in wildfire-prone landscapes. PI: Ken Clark. Co-PIs: Matt Ayres, Carissa Aoki. 2014-2016.
- US Forest Service Small Technology Development Program “Assessing Southern Pine Beetle Mortality in the New Jersey Pinelands.” 2013-15.
- US Forest Service International Programs Coop Agreement: “Intercontinental comparisons of the European woodwasp, *Sirex noctilio*.” Co-PI: Andrew Liebhold; Co-Investigators: Juan Corley, Mike Wingfield, Bernard Slippers, Brett Hurley, Jeff Garnas, María Lombardero, and Darcy Nelson. 2012-2016.
- DOE GAANN “Increasing graduate education in the Biological Sciences”. PIs: Matt Ayres, Tom Jack. 2012-16.
- USDA Forest Service. Cooperative Agreement “Forest management implications of climate change impacts on forest pest dynamics: linking process-based models with landscape predictions.” PIs: Thomas Holmes, Matt Ayres, Andrew Liebhold, Barbara Bentz. 2011-2013.
- USDA AFRI “Towards understanding subcontinental variation in forest pestilence from the southern pine beetle.” PIs: Matt Ayres, Brian Sullivan. 2009-2012.

TEACHING

Introduction to Ecology
[Physiological Ecology](#)

[Field Research in Tropical Ecology](#)
[The Nature and Practice of Science](#)

[Population Ecology](#)

Co-chair of Graduate program: Ecology and Evolutionary Biology (2002-2011, 2012-2015):

Chair of Graduate Program: Ecology, Evolution, Ecosystems, and Society ([EEES](#)): 2015 -

Current PostDoc: Jeff Kerby, [Carissa Aoki](#)

Past PostDocs: Nicholas A. Friedenber, Richard T. Hofstetter, María J. Lombardero, Sharon Martinson, Carla Pimentel, Deepa Pureswaran, Ernesto Ruelas, Erik Stange, R. Malcolm Strand, Anu Valtonen, Aaron Weed, Richard T. Wilkens, Tiina Ylioja.

Current Ph.D. students: Liz Studer, Ashley Lang, Fiona Jevon, Melissa DeSiervo, Flora Krivak-Tetley.

Graduated Ph.D. students: Greg Eaton, Alice Shumate, Richard Hofstetter, Nina Lany, Sharon Martinson, Erik Stange, Jeff Garnas, Lauren Culler, Carissa Aoki, Jeff Lombardo..

Committee Member, > 40 other Ph.D. students

Research mentor for undergraduates: > 80 students since 1993; 30 senior theses; 37 went on to graduate school; 10 published refereed papers; 6 received NSF or IGERT graduate Fellowships.

RECENT PRESENTATIONS AND INVITED SEMINARS, INTERNATIONAL

- 2016 Plenary talk, International Union of Forestry Research Organizations, Sept. Iles, Quebec.
- 2015 Contributed talks, International Union of Forestry Research Organizations, Bariloche, Argentina.
- 2013 Invited seminar, Swedish University of Agricultural Sciences, Uppsala
- 2013 Invited lead seminar, CLIMTREE conference on Climate and forests, Zurich
- 2011 Invited seminar, Instituto Superior de Agronomia, Universidade Técnica de Lisboa
- 2011 Invited seminar, Entomologie, Université du Québec à Montréal
- 2009 Invited seminar, Departamento de Producción Vegetal, Universidad de Santiago, Spain
- 2009 Invited presentation, Climate impact models workshop, Stockholm
- 2009 Invited seminar, University of Stockholm
- 2009 Invited seminar: Universidade de Tras Os Montes e Alto Douro, Portugal
- 2008 Plenary seminar: Network of climate change risks to forests, Umeå, Sweden
- 2008 Plenary seminars (2): International Congress of Entomology, Durban, South Africa
- 2008 Invited seminar: Canadian Forest Service Laboratory, Fredericton, New Brunswick
- 2007 Invited seminar, Swedish University of Agricultural Sciences, Uppsala, Sweden
- 2006 Invited presentation, International Acarology Congress, Amsterdam, Netherlands
- 2005 Plenary seminar, European Union research project on climate change, Corsica.

RECENT PRESENTATIONS AND INVITED SEMINARS. DOMESTIC

- 2017 Invited seminar, Northeastern Bark Beetle Identification Workshop, U Mass Amherst
- 2017 Invited seminar, Fairbanks Museum, St. Johnsbury, VT
- 2017 Invited seminar, Vermont Institute of Natural Science
- 2017 Invited presentation, Southern Forest Insect Work Conference, Melbourne, FL
- 2016 Invited presentation, National Forum on Climate and Pests, National Academy of Sciences, Washington D.C.
- 2016 Invited seminar, Long Island Arboricultural Association Annual Tree Symposium, Hofstra University.
- 2016 Invited presentation, Interagency Forum on Invasive Species, Annapolis, MD.
- 2015 Invited seminar, Pine Barrens Research Forum, Brookhaven National Laboratory
- 2015 Invited seminar, University of GA
- 2015 Invited seminar to VT Forest Health Information Meeting, Woodstock, VT.
- 2015 Invited leader of workshop for arborists, Bayard Arboretum, Long Island, NY.
- 2015 Symposium organizer, invited and contributed talks, Northeastern Forest Pest Work Council, Hanover, NH.
- 2014 Invited talks (3), World Congress of International Union of Forestry Research Organizations (IUFRO), Salt Lake City.
- 2014 Invited seminar, Ohio State University
- 2014 Invited seminar, University of Wisconsin Milwaukee
- 2014 Invited seminar, U Mass Amherst
- 2013 Invited seminar, Harvard Forest
- 2012 Invited public presentation, Pinelands Commission, NJ
- 2012 Invited talk, National Meeting Entomological Society of America, Knoxville, TN
- 2011 Invited public presentation, National Museum of Wildlife Art, Jackson, WY
- 2011 Invited seminar, Departments of Natural Resources, University of Wyoming
- 2011 Invited seminar, Department of Entomology, Cornell University
- 2011 Invited seminar, Cary Institute of Ecosystem Studies
- 2011 Invited seminar, Department of Biology, Fairleigh Dickinson University

List of Publications – Matthew P. Ayres

REFEREED PUBLICATIONS (www.dartmouth.edu/~mpayres/pubs/full.bib.htm)

- Lombardo, J. A., A. S. Weed, C. F. Aoki, B. T. Sullivan, and M. P. Ayres. 2018. Temperature affects phenological synchrony in a tree-killing bark beetle. *Oecologia*, in press.
- Pimentel, C. S., P. N. Firmino, and M. P. Ayres. 2018. Methods to obtain and maintain cultures of pinewood nematodes, *Bursaphelenchus xylophilus*. *The Journal of Nematology*, in press.
- Culler, L. E., Z. T. Wood, J. Diaz, S. B. Fey, D. Timmins, and M. P. Ayres. 2018. Streams in an uninhabited watershed have predictably different thermal sensitivities to variable summer air temperatures. *Freshwater Biology* DOI: 10.1111/fwb.13105
- Aoki, C. F., M. Cook, J. Dunn, D. Finley, L. Fleming, R. Yoo, and M. P. Ayres. 2018. Old pests in new places: Effects of stand structure and forest type on susceptibility to a bark beetle on the edge of its native range. *Forest Ecology and Management* 419-420: 206-219.
- Martinson, S. J., A. A. Fernández Ajó, A. S. Martínez, F. E. Krivak-Tetley, J. M. Villacide, M. P. Ayres, and J. C. Corley. 2018. Attack rates of *Sirex noctilio* and patterns of pine tree defenses and mortality in northern Patagonia. *Bulletin of Entomological Research* doi:10.1017/S0007485318000184
- Moritz, K. K., A. L. Parachnowitsch, R. Julkunen-Tiitto, C. Björkman, M. P. Ayres, and J. A. Stenberg. 2018. Roe deer prefer mixed-sex willow stands over monosexual stands but do not discriminate between male and female plants. *Environmental and Experimental Botany* 146:62-67.
- Ayres, M. P., M. J. Lombardero. 2018. Forest pests and their management in the Anthropocene. *Canadian Journal of Forest Research* 48:292-301.
- Pimentel, C. S., M. P. Ayres. 2018. Latitudinal patterns in temperature-dependent growth rates of a forest pathogen. *Journal of Thermal Biology* 72:39-43.
- Valtonen, A., A. Hirka, L. Szocs, M. P. Ayres, H. Roininen, and G. Csoka. 2017. Long-term species loss and homogenization of moth communities in Central Europe. *Journal of Animal Ecology* 86:730-738.
- Firmino, P. N., T Calvao, M. P. Ayres, and C. S. Pimentel. 2017. *Monochamus galloprovincialis* and *Bursaphelenchus xylophilus* life history in an area severely affected by pine wilt disease: implications for forest management. *Forest Ecology and Management* 389:105-115.
- Clark, K.L., M.P. Ayres, C. Aoki, E. Wengrowski, and J Peterken. 2017. Impact of southern pine beetle on forest structure and fuel loading in a wildfire-prone landscape.. Pp 147-154 in Potter, K.M., and B.L. Conkling, eds. Forest Health Monitoring: National Status, Trends, and Analysis 2016. General Technical Report SRS-222. U.S.D.A. Forest Service, Asheville, NC.
- Pimentel, C. A., P. N. Firmino, T. Calvao, M. P. Ayres, I. Miranda, and H. Pereira. 2017. Pinewood nematode population growth in relation to pine phloem chemical composition. *Plant Pathology* 66: 856-864.
- Lombardero, M. J., M. P. Ayres, P. Bonello, D. Cipollini, and D. A. Herms. 2016. Effects of defoliation and site quality on growth and defenses of *Pinus pinaster* and *P. radiata*. *Forest Ecology and Management* 382: 39-50.
- Lovett, G. M., M. Weiss, A. M. Liebhold, T. P. Holmes, B. Leung, K. F. Lambert, D. A. Orwig, F. T. Campbell, J. Rosenthal, D. G. McCullough, R. Wildova, M. P. Ayres, C. D. Canham, D. R. Foster, S. L. LaDeau, T. Weldy. 2016. Nonnative forest insects and pathogens in the United States: impacts and policy options.

Ecological Applications 26: 1437-1455. [Press](#).

- Kolb, T. E., C. J. Fettig, M. P. Ayres, B. J. Bentz, J. A. Hicke, R. Mathiasen, J. E. Stewart, and A. S. Weed, 2016. Observed and anticipated impacts of drought on forest insects and diseases in the United States. *Forest Ecology and Management*, doi:10.1016/j.foreco.2016.04.051
- Lombardero, Maria J., Matthew P. Ayres, Flora E. Krivak-Tetley, and Katrin N.E. Fitz. 2016. Population biology of the European woodwasp, *Sirex noctilio*, in Galicia, Spain. *Bulletin of Entomological Research*, doi: 10.1017/S0007485316000043. Cover photo.
- Weed, Aaron S., M. P. Ayres, Andrew M. Liebhold, and Ronald F. Billings. 2016. Spatio-temporal dynamics of a tree-killing beetle and its predator. *Ecography*: DOI: 10.1111/ecog.02046.
- Thomas E. Kolb, T. E., C. J. Fettig, B. J. Bentz, J. E. Stewart, A. S. Weed, J. A. Hicke, and M. P. Ayres. 2016. Forest insect and fungal pathogen responses to drought. Pages 113-133 in J.M. Vose, J.S. Clark, C.H. Luce, and T. Patel-Weynand, editors. Effects of drought on forests and rangelands in the United States: A comprehensive science synthesis. *USDA Forest Service, General Technical Report WO-93b*.
- Lany, Nina K., Matthew P. Ayres, Erik E. Stange, T. Scott Sillett, Nicholas L. Rodenhouse, & Richard T. Holmes. 2015. Breeding timed to maximize reproductive success for a migratory songbird: the importance of phenological asynchrony. *Oikos* 125: 656-666.
- Culler, Lauren E., Matthew P. Ayres, and Ross A. Virginia. 2015. In a warmer Arctic, mosquitoes avoid increased mortality from predators by growing faster. *Proceedings of the Royal Society B* 282: 20151549. [National Geographic](#); [Newsweek](#); [Washington Post](#); [The Guardian](#); [The Atlantic](#); [The Onion](#); [Science Friday on NPR](#)
- Symes, Laurel B., Matthew P. Ayres, Colleen P. Cowdery, and Robin A. Costello. 2015. Signal diversification in *Oecanthus* tree crickets is shaped by energetic, morphometric, and acoustic trade-offs. *Evolution* 69: 1518-1527. Coverage on NPR's "[Close Listening](#)".
- Weed, Aaron S, Barbara J Bentz, M.P. Ayres, and Thomas P Holmes. 2015. Geographically variable response of *Dendroctonus ponderosae* to winter warming in the western United States. *Landscape Ecology* 30: 1075-1093.
- Symes, Laurel. B. , Nancy Serrell, and M. P. Ayres. 2015. A practical guide for mentoring scientific inquiry. *Bulletin of the Ecological Society of America* 96: 352-367. Coverage in [Nature](#).
- Culler, Lauren E. , Mark A. McPeck, and M. P. Ayres. 2014. Predation risk shapes thermal physiology of a predaceous damselfly. *Oecologia* 176: 653-660./s00442-014-3058-8
- Ayres, M.P., Rebeca Pena, Jeffrey A. Lombardo, and Maria J. Lombardero. 2014. Host use patterns by the European woodwasp, *Sirex noctilio*, in its native and invaded range. *PLoS ONE* 9(3): e90321. doi:10.1371/journal.pone.0090321.
- Pimentel, Carla S., M. P. Ayres, Erich Vallery, Christopher Young, and Douglas A. Streett. 2014. Geographical variation in seasonality and life history of pine sawyer beetles *Monochamus* spp: its relation with phoresy by the pinewood nematode *Bursaphelenchus xylophilus*. *Agricultural and Forest Entomology* 16: 196-206.
- Valtonen, Anu, Reima Leinonen, Juha Pöyry, Heikki Roininen, Jukka Tuomela, and Matthew P. Ayres. 2014. Is climate warming more consequential towards poles? The phenology of Lepidoptera in Finland. *Global Change Biology* 20:16-27.

- Lombardero, Maria J., Javier Pereira-Espinel, and M.P. Ayres. 2013. Foliar terpene chemistry of *Pinus pinaster* and *P. radiata* responds differently to Methyl Jasmonate and feeding by larvae of the pine processionary moth. 2013. *Forest Ecology and Management* 310: 935-943.
- Weed, Aaron S., M.P. Ayres, and Jeffrey A. Hicke. 2013. Consequences of climate change for biotic disturbances in North American forests. *Ecological Monographs* 83:441–470. Coverage in [NY Times](#).
- Martinson, S. J., T. Ylioja, B. T. Sullivan, R. F. Billings, and M. P. Ayres. 2013. Alternate attractors in the population dynamics of a tree-killing bark beetle. *Population Ecology* 55:95-106.
- Valtonen, A., F. Molleman, C.A. Chapman, J.R. Carey, M.P. Ayres, and H. Roininen. 2013. Tropical phenology: bi-annual rhythms and interannual variation in an Afrotropical butterfly assemblage. *Ecosphere* 4(3): 36-.
- Garnas, J.R., D.R. Houston, M.J. Twery, M.P. Ayres, and C. Evans. 2013. Inferring controls on the epidemiology of beech bark disease by examining spatial patterning of disease organisms. *Agricultural and Forest Entomology* 15: 146-156.
- Huttunen L., Ayres M. P., Niemelä P., Heiska S., Tegelberg R., Rousi M., Kellomäki S. (2013). Interactive effects of defoliation and climate change on compensatory growth of silver birch seedlings. *Silva Fennica* 47(3): article id 964
- Marini, L, M.P. Ayres, A. Battisti, M. Faccoli. 2012. Climate change explains outbreak intensity and altitudinal range expansion in an eruptive bark beetle. *Climatic Change* 115:327-341.
- Shi, Peijan, Bo Wang, MP Ayres, Feng Gea, Ling Zhong, and Bai-Lian Li. 2012. Influence of temperature on the northern distribution limits of *Scirpophaga incertulas* Walker (Lepidoptera: Pyralidae) in China. *Journal of Thermal Biology* 37: 130-137.
- Shumate, AM, SA Teale, BD Ayres, and MP Ayres. 2011. Disruptive selection maintains variation in pheromone production by the bark beetle *Ips pini*. *Environmental Entomology* 40:1530-1540.
- Lombardero, MJ and MP Ayres. 2011. Forest fires and the population dynamics of bark beetles. *Environmental Entomology* 40: 1007-1018.
- Evans, LM, RW Hofstetter, MP Ayres, and KD Klepzig. 2011. Temperature changes a community: *Dendroctonus frontalis* and its symbionts. *Environmental Entomology* 40: 824-834.
- Garnas, JR., DR Houston, MP Ayres, and C. Evans. 2011. Disease ontogeny overshadows effects of climate and species interactions on population dynamics in a nonnative forest disease complex. *Ecography* 34: 1-10.
- Garnas, JR., MP Ayres, AM Liebhold, and C Evans. 2011. Subcontinental impacts of an invasive tree disease on forest structure and dynamics. *Journal of Ecology* 99: 532-541.
- Stange, E. E., M. P. Ayres, and J. A. Bess. 2011. Concordant population dynamics of Lepidoptera herbivores in a forest ecosystem. *Ecography* 34: 772-779.
- Haavik, L.J., M.P. Ayres, E.E. Stange, F.M. Stephen. 2011. Phloem and xylem nitrogen variability in *Quercus rubra* attacked by *Enaphalodes rufulus*. *Canadian Entomologist* 143: 380-383.
- Pimentel, Carla S, T. Calvão, and M.P. Ayres. 2010. Impact of climatic variation on populations of pine processionary moth *Thaumetopoea pityocampa* in a core area of its distribution. *Agricultural and*

Forest Entomology 13:273-281.

- Valtonen, A, M.P. Ayres, H. Roininen, J. Pöyry and R. Leinonen. 2010. Environmental controls on the phenology of moths - predicting plasticity and constraint under climate change. *Oecologia* 165: 237-248.
- Day, K.R., M.P. Ayres, R. Harrington and N.A.C. Kidd. 2010. Inter-annual dynamics of aerial and arboreal green spruce aphid populations. *Population Ecology* 52: 317-327.
- Berggren, A., C. Björkman, H. Bylund, and M.P. Ayres. 2009. The distribution and abundance of animals in a climate of uncertainty. *Oikos* 118: 1121-1126
- Fischlin, A., P. Glück, J. Innes, B. Louman, A. Lucier, B. Osman-Elasha, J. A. N. Parrotta, M. P. Ayres, M. Brockhaus, C. J. Pierce-Colfer, L. A. Joyce, D. Karnosky, S. Kellomäki, C. Loehle, A. Ogden, C. Ong, K. Percy, G.-P. Plattner, J. Rayner, G. Roberts, H. Santoso, B. Sohngen, I. Thompson, A. Wreford, O. Bergäll, T. H. Booth, S. Braatz, T. Dafalla, N. Marcar, J. Nkem, C. Robledo, R. Scholes, C. Swanston, and D. Zamolodchikov. 2009. *Adaptation of Forests and People to Climate Change – A Global Assessment Report*. United Nations Forum on Forests, New York, NY. 349 pp
- Dukes, J.S., J. Pontius, D. Orwig, J.R. Garnas, V.L. Rodgers, N. Braze, B. Cooke, K.A. Theoharides, E.E. Stange, R. Harrington, J. Ehrenfeld, J. Gurevitch, M. Lerda, K. Stinson, R. Wick, M.P. Ayres. 2009. Responses of pests, pathogens and invasive species to climate change in the forests of northeastern North America: What can we predict? *Can. J. For. Res.* 34:231-248.
- Shu, Y., X. Feng, E.S. Posmentier, A.M. Faiia, M.P. Ayres, and L.E. Conkey. 2008. Isotopic studies on leaf water. 2. Between-age and between-species isotopic variations. *Geochimica et Cosmochimica Acta* 72: 5189-5200.
- Lombardero, M.J., P. Vázquez-Mejuto, and M.P. Ayres. 2008. Role of plant enemies in the forestry of indigenous versus nonindigenous pines. *Ecological Applications* 18: 1171-1181.
- Friedenberg, N.A., S. Sarkar, N. Kouchoukos, R.F. Billings, and M.P. Ayres. 2008. Temperature extremes, density dependence, and southern pine beetle (Coleoptera: Curculionidae) population dynamics in east Texas. *Environmental Entomology* 37: 650-659
- Pureswaran, D.S, B.T. Sullivan, and M.P. Ayres. 2007. High individual variation in pheromone production by tree-killing bark beetles (Coleoptera: Curculionidae: Scolytinae). *Naturwissenschaften* 95:33-44.
- Martinson, S.J., R.W. Hofstetter, and M.P. Ayres. 2007. Why does longleaf pine have low susceptibility to southern pine beetle? *Canadian Journal of Forest Research* 37: 1966-1977.
- Friedenberg, N.A, B.M. Whited, D.H. Slone, S.J. Martinson, and M.P. Ayres. 2007. The differential impact of a destructive forest pest on two species of Pinus. *Canadian Journal of Forest Research* 37: 1427-1437.
- Friedenberg, N.A., J.A. Powell and M.P. Ayres. 2007. Synchrony's double edge: transient dynamics and the Allee effect in stage-structured populations. *Ecology Letters* 10: 564-573. Cover photo.
- Hofstetter, R.W., T.D. Dempsey, K.D. Klepzig, and M.P. Ayres. 2007. Temperature-dependent effects on mutualistic and phoretic associations. *Community Ecology* 8: 47-56.
- Tran, J.K., T. Ylioja, R. Billings, J. Régnière, and M.P. Ayres. 2007. Impact of minimum winter temperatures on the population dynamics of *Dendroctonus frontalis* (Coleoptera: Scolytinae) *Ecological Applications* 17: 882-899.

- Reynolds, L.V., M.P. Ayres, T.G. Siccama, and R.T. Holmes. 2007. Climatic effects on caterpillar fluctuations in northern hardwood forests. *Can. Journ. Forest Research* 37: 481-491.
- Pureswaran, D.S, B.T. Sullivan, and M.P. Ayres. 2006. Fitness consequences of pheromone production and host selection strategies in a tree-killing bark beetle (Coleoptera: Scolytinae). *Oecologia* 148: 720-728.
- Lombardero, M.J., M.P. Ayres, and B.D. Ayres. 2006. Effects of fire and mechanical wounding on *Pinus resinosa* resin defenses, beetle attacks, and pathogens. *Forest Ecology & Management* 225: 349-358.
- Hofstetter, R. W., K.D. Klepzig, J.C. Moser, and M.P. Ayres. 2006. Seasonal dynamics of mites and fungi and their effects on the southern pine beetle. *Environmental Entomology* 35:22-30.
- Hofstetter, R.W., J.T. Cronin, K.D. Klepzig, J.C. Moser, and M.P. Ayres. 2006. Antagonisms, mutualisms and commensalisms affect outbreak dynamics of the southern pine beetle. *Oecologia* 147: 679-691.
- Ylloja, T., D. H. Slone, and M. P. Ayres. 2005. Mismatch between herbivore behavior and demographics explains scale-dependence of host susceptibility in two pine species. *Forest Science* 51: 522-531.
- Hofstetter, R.W, J. B. Mahfouz, K. D. Klepzig and M.P. Ayres. 2005. Effects of tree phytochemistry on the interactions among endophloedic fungi associated with the southern pine beetle. *Journal of Chemical Ecology* 31:551-572.
- Wullschleger, S.D., S.B. McGlaughlin, and M.P. Ayres. 2004. High resolution analysis of stem increment and sap flow for loblolly pine trees attacked by southern pine beetle. *Canadian Journal of Forest Research* 34: 2387-2393.
- Klepzig, K.D., J. Flores-Otero, R.W. Hofstetter, and M.P. Ayres. 2004. Effects of available water on growth and competition of southern pine beetle associated fungi. *Mycological Research* 108:183-188.
- Lombardero, M.J., M. P. Ayres, R. W. Hofstetter, J.C. Moser, and K.D. Klepzig. 2003. Strong indirect interactions of *Tarsonemus* mites (Acarina, Tarsonemidae) and *Dendroctonus frontalis* (Coleoptera: Scolytidae). *Oikos* 102: 243-252. Featured in *Science* (302:774-)
- Veysey, J. S., M. P. Ayres, M. J. Lombardero, R. W. Hofstetter, and K. Klepzig. 2003. Relative suitability of Virginia pine and loblolly pine as host species for *Dendroctonus frontalis* (Coleoptera: Scolytidae). *Environmental Entomology* 32: 668-679.
- Eaton, G.K, and M.P. Ayres. 2002. Plasticity and constraint in growth and protein mineralization of ectomycorrhizal fungi under simulated nitrogen deposition. *Mycologia* 94:921-932.
- Rubenstein, D.R., C.P. Chamberlain, R.T. Holmes, M.P. Ayres, J.R. Waldbauer, G.R. Graves, and N.C. Tuross. 2002. Linking breeding and wintering ranges of a migrant songbird using stable isotopes. *Science* 295:1062-1065.
- Berg, E.S., G.K. Eaton, and M.P. Ayres. 2001. Augmentation of AM fungi fails to ameliorate the adverse effects of temporal resource variation on a lettuce crop. *Plant & Soil* 236: 251-262.
- Dale, V.H., L.A. Joyce, S. McNulty, R.P. Neilson, M.P. Ayres, M.D. Flannigan, P.J. Hanson, L.C. Irland, A.E. Lugo, C.J. Peterson, D. Simberloff, F.J. Swanson, B.J. Stocks, and B.M. Wotton. 2001. Climate change and forest disturbances. *Bioscience* 51:723-734.
- Ayres, B.D., M.P. Ayres, M.D. Abrahamson, and S.A. Teale. 2001. Resource partitioning and overlap among *Ips* bark beetles. *Oecologia* 128:443-453.

- Santoro, A.E., M.J. Lombardero, M.P. Ayres, and J.J. Ruel. 2001. Interactions between fire and bark beetles in an old growth pine forest. *Forest Ecology and Management* 144:245-254.
- Klepzig, K.D., J.C. Moser, F.J. Lombardero, R.W. Hofstetter, and M.P. Ayres. 2001. Symbiosis and competition: complex interactions among beetles, fungi, and mites. *Symbiosis* 30:83-96.
- Ayres, M.P., and M.J. Lombardero. 2000. Assessing the consequences of climate change for forest herbivores and pathogens. *The Science of the Total Environment* 262:263-286.
- Ruohomäki, K., M. Tanhuanpää, M.P. Ayres, P. Kaitaniemi, T. Tammaru, and E. Haukioja. 2000. Causes of cyclicity of *Epirrita autumnata* (Lepidoptera: Geometridae) - grandiose theory and tedious practice. *Population Ecology* 42: 211-223.
- Lombardero, M.J., M.P. Ayres, P.L. Lorio, and J.J. Ruel. 2000. Environmental effects on constitutive and inducible resin defenses of loblolly pine. *Ecology Letters* 3:329-339.
- Lombardero, M.J., K.D. Klepzig, J.C. Moser, and M.P. Ayres. 2000. Biology, demography, and community interactions of *Tarsonemus* (Acarina: Tarsonemidae) mites phoretic on *Dendroctonus frontalis* (Coleoptera: Scolytidae). *Agricultural and Forest Entomology* 2:1-10.
- Lombardero, M., M.P. Ayres, B.D. Ayres, and J.D. Reeve. 2000. Cold tolerance of four species of bark beetle (Coleoptera: Scolytidae) in North America. *Environmental Entomology* 29:421-432.
- Ayres, M.P., R.T. Wilkens, J.J. Ruel, M.J. Lombardero, and E. Vallery. 2000. Nitrogen budgets of phloem-feeding bark beetles (Coleoptera: Scolytidae) with and without symbiotic fungi. *Ecology* 81:2198-2210.
- Ungerer, M.J., M.P. Ayres, and M.J. Lombardero. 1999. Climate and the northern distribution limits of *Dendroctonus frontalis* Zimmermann (Coleoptera: Scolytidae). *Journal of Biogeography* 26: 1133-145. Cover photo.
- Ruel, J. J., and M.P. Ayres. 1999. Jensen's inequality predicts direct effects of environmental variation. *Trends in Ecology and Evolution* 14:361-366.
- Ylloja, T., H. Roininen, M.P. Ayres, M. Rousi, and P.W. Price. 1999. Host-driven population dynamics in an herbivorous insect. *Proceedings of the National Academy of Sciences* 96:10735-10740.
- Ruben, J.A., D.T. Bolger, D.R. Peart, and M.P. Ayres. 1999. Effects of clearcutting of secondary forests on understory herb assemblages in a northern hardwood forest, USA: spatial and temporal patterns. *Biological Conservation* 90:203-215.
- Erelli, M.C., M.P. Ayres, and G.K. Eaton. 1998. Altitudinal patterns in host suitability for forest insects. *Oecologia* 117:133-142.
- Strand, R.M., D.A. Herms, M.P. Ayres, M.E. Kubiske, M.G. Kaufman, E.D. Walker, K.S. Pregitzer, and R.W. Merritt. 1999. Effects of atmospheric CO₂, light availability, and tree species on the quality of leaf detritus as a resource for treehole mosquitoes. *Oikos* 84:277-283.
- Ruel, J.J., M.P. Ayres and P.L. Lorio, Jr. 1998. Inducible defense? Loblolly pine responds to mechanical wounding with increased resin flow. *Canadian Journal of Forest Research* 28: 596-
- Ayres, M. P., T. P. Clausen, S. F. MacLean, Jr., A. M. Redman, and P. B. Reichardt. 1997. Diversity of structure and anti-herbivore activity in condensed tannins. *Ecology* 78: 1696-1712.

- Walker, E.D., M.G. Kaufman, M.P. Ayres, M.H. Reidel, R.W. Merritt. 1997. Effects of variation in quality of leaf detritus on growth of the eastern tree hole mosquito, *Aedes triseriatus* (Diptera: Culicidae). *Canadian Journal of Zoology* 75: 706-718.
- Strom, B. L., F. P. Hain, and M. P. Ayres. 1996. Field performance of F1-sterile gypsy moth larvae (Lepidoptera: Lymantriidae) on loblolly pine and sweetgum. *Environmental Entomology* 25:749-756.
- Ruel, J. J., and M. P. Ayres. 1996. Variation in temperature responses among populations of *Betula papyrifera*. *Silvae Fennica* 30:145-158.
- Ayres, M.P., and J.M. Scriber. 1994. Local adaptation to regional climates in *Papilio canadensis* (Lepidoptera: Papilionidae). *Ecological Monographs* 64: 465-482.
- Suomela, J. and M. P. Ayres. 1994. Within-tree and among-tree variation in leaf characteristics of mountain birch and its implication for herbivory. *Oikos* 70:212-222.
- Matsuki, M., M. P. Ayres, and S. F. Maclean, Jr. 1994. Temperature effects on the growth and molt of *Nematus calais* (Hymenoptera: Tenthredinidae). *Environmental Entomology* 23: 719-725.
- Schamel, D., and M. P. Ayres. 1992. The "minds-on" approach: student creativity and personal involvement in the undergraduate science laboratory. *Journal of College Science Teaching* 21:226-229.
- Lederhouse, R. C., M. P. Ayres, J. K. Nitao, and J. M. Scriber. 1992. Differential use of lauraceous hosts by swallowtail butterflies, *Papilio troilus* and *P. palamedes* (Papilionidae). *Oikos* 63:244-252.
- Nitao, J. K., M. P. Ayres, and R. C. Lederhouse. 1991. Larval adaptation to Lauraceae hosts: geographic divergence in the spicebush swallowtail. *Ecology* 72:1428-1435.
- Kukal, O., M. P. Ayres, and J. M. Scriber. 1991. Cold tolerance of pupae in relation to the distribution of swallowtail butterflies. *Canadian Journal of Zoology* 69:3028-3037.
- Lederhouse, R.C., M.P. Ayres, and J.M. Scriber. 1990. Adult diet affects male virility in *Papilio glaucus*. *Functional Ecology* 4:743-751.
- Ayres, M.P., and D.L. Thomas. 1990. Alternative formulations of the mixed model ANOVA applied to quantitative genetics. *Evolution* 44:221-226.
- Scriber, J.M., and M.P. Ayres. 1990. New foodplant and oviposition records for the tiger swallowtail butterfly, *Papilio glaucus* in Alaska. *Great Lakes Entomologist* 23:145-147.
- Lederhouse, R.C., M.P. Ayres, and J.M. Scriber. 1989. Evaluation of spermatophore counts in studying the mating behavior of Lepidoptera. *Journal of the Lepidopterists' Society* 43:93-101.
- Scriber, J.M., and M.P. Ayres. 1988. Observations on the puddling behavior of the Canadian Tiger swallowtail butterfly, *Papilio glaucus canadensis* R & J in northern Michigan. *Great Lakes Entomologist* 21:141-142.
- Scriber, J.M., and M.P. Ayres. 1988. Leaf chemistry as a defense against insects. *ISI Atlas of Science (Plant and Animal Section)* 1:117-123.
- Ayres, M.P. and S.F. MacLean, Jr. 1987. Development of birch leaves and the growth energetics of *Epirrita autumnata* (Geometridae). *Ecology* 68:558-568.
- Ayres, M.P. and S.F. MacLean, Jr. 1987. Molt as a component of insect development: *Galerucella*

sagittariae (Chrysomelidae) and *Epirrita autumnata* (Geometridae). *Oikos* 48:273-279

Ayres, M.P., J. Suomela, and S.F. MacLean, Jr. 1987. Growth performance of *Epirrita autumnata* on mountain birch: trees, broods, and tree-brood interactions. *Oecologia* 74:450-

MacLean, S.F., Jr. and M.P. Ayres. 1985. Estimation of soil temperatures from climatic variables at Barrow, Alaska. *Arctic and Alpine Research* 17:425-432.

BOOK CHAPTERS

Garnas, R.J., M. P. Ayres, and M. J. Lombardero. 2018. Forest insect population dynamics. Pages ??-?? In J. D. Allison, T. D. Paine, M. J. Wingfield, and B. Slippers, editors. *Forest Entomology and Pathology*, Springer International Publishing, Cham, Switzerland. In press.

Weed, Aaron S., M. P. Ayres, and Barbara J. Bentz. 2015. Population dynamics of bark beetles. Pages 157-176 in F. E. Vega and R. W. Hofstetter, editors. *Bark Beetles: Biology and Ecology of Native and Invasive Species*. Elsevier Academic Press., ISBN: 9780124171565.

Ayres, MP, Jeffrey A. Hicke, Becky K. Kerns, Don McKenzie, Jeremy S. Littell, Lawrence E. Band, Charles H. Luce, Aaron S. Weed, and Crystal L. Raymond. 2014. Disturbance regimes and stressors. Chapter 4 in David L. Peterson, James M. Vose, and Toral Patel-Weynand (eds.), *Climate Change and United States Forests*, *Advances in Global Change Research* 57. Springer. ISBN 978-94-007-7514-5 Vose, J.M.; D.L. Peterson, T. Patel-Weynand, editors. 2012. Effects of climatic variability and change on forest ecosystems: a comprehensive science synthesis for the U.S. Gen. Tech. Rep. PNW-GTR-870. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 265 p.

Klapwijk, M. J., M. P. Ayres, A. Battisti and S. Larsson. 2012. Assessing the impact of climate change on outbreak potential. Pages 429-450 in Barbosa, P., editors. *Insect outbreaks revisited*. Academic Press, Inc., New York.

Tanhuanpää, M., K. Ruohomäki, P. Turchin, M.P. Ayres, P. Kaitaniemi, T. Tammaru and E. Haukioja. 2002. Population cycles of the autumnal moth in Fennoscandia. Pages 142-154 in *Population Cycles: Evidence for Trophic Interactions*, edited by Alan Berryman.

Klepzig, K.D., J.C. Moser, M.J. Lombardero, M.P. Ayres, and R.W. Hofstetter. 2001. Mutualism and antagonism: Ecological interactions among bark beetles, mites and fungi. Pages 237-267 in M.J. Jeger and M.J. Spence, editors. *Biotic Interactions in Plant-Pathogen Associations*, British Society of Plant Pathology.

Ayres, M. P. and G. A. Reams. 1997. Global change and disturbance in southern forest ecosystems. Pages 741-753 in R. A. Mickler and S. Fox, editors. *The productivity and sustainability of southern forest ecosystems in a changing environment*. Springer-Verlag, NY

Wilkens, R. T., M. P. Ayres, P. L. Lorio, Jr. and J. D. Hodges. 1997. Environmental effects on pine tree carbon budgets and resistance to bark beetles. Pages 591-616 in R. A. Mickler and S. Fox, editors. *The productivity and sustainability of southern forest ecosystems in a changing environment*. Springer-Verlag, NY

McNulty, S. G., P. L. Lorio, Jr., M. P. Ayres and J. D. Reeve. 1997. Predictions of southern pine beetle populations under historic and projected climate using a forest ecosystem model. Pages 617-634 in R. A. Mickler and S. Fox, editors. *The productivity and sustainability of southern forest ecosystems in a changing environment*. Springer-Verlag, New York.

Reeve, J.R., M.P. Ayres, and P.L. Lorio, Jr. 1995. Host suitability, predation, and bark beetle population dynamics. Pages 339-357 in N. Cappuccino and P. Price, editors. Population dynamics: new approaches and synthesis. Academic Press.

Lederhouse, R. C., M. P. Ayres, and J. M. Scriber. 1995. Physiological and behavioral adaptations to variable thermal environments in North American Swallowtail butterflies . Pages 71-82 in Scriber, J. M., Y. Tsubaki, and R. C. Lederhouse, editors. Swallowtail butterflies: their ecology and evolution. Scientific Publishers, Inc., Gainesville, GA.

Ayres, M. P. 1993. Global change, plant defense, and herbivory. Pages 75-94 in P. M. Kareiva, J. G. Kingsolver and R. B. Huey, eds. Biotic interactions and global change. Sinauer Press.

Ayres, M.P., J.L. Bossart, and J.M. Scriber. 1991. Variation in the nutritional physiology of tree-feeding swallowtails. Pages 85-102 in Y. N. Baranchikov, W. J. Mattson, F. P. Haine, and T. L. Payne, editors. Forest insect guilds: patterns of interaction with their host trees. USDA Forest Service, Northeastern Forest Experiment Station, General Technical Report NE-153.

ESSAYS

Response to: Morrison, T. A. 2009. Speaking out: weighing advocacy and objectivity as a junior scientist. *Frontiers in Ecology and the Environment* 8(1): 51-52.

PROCEEDINGS AND REPORTS

Ayres, M.P., J. A. Hicke, and A.S. Weed. 2014. Climate change and biotic disturbances in U.S. forests. Contribution to National Climate Assessment.

Bentz, B.J., C. Allen, M. Ayres, E. Berg, A. Carroll, M. Hansen, J. Hicke, L. Joyce, J. Logan, J. MacMahon, W. Macfarlane, S. Munson, J. Negron, H. Nordhaus, T. Paine, J. Powell, K. Raffa, J. Régnière, M. Reid, B. Romme, S. Seybold, D. Six, D. Tomback, J. Vandygriff, T. Veblen, M. White, J. Witcosky, and D. Wood. 2009. Bark Beetle Outbreaks in Western North America: Causes and Consequences. University of Utah Press. Chicago, IL.

Ayres, M.P., S.J. Martinson, and L.M. Evans. 2005. Southern pine beetle infestations with respect to pine species in Chickasawhay District, DeSoto National Forest, 2004. Prepared for U.S. Forest Service. www.dartmouth.edu/~mpayres/pubs/Chick04/Chick2004.htm

Ayres, M.P., B.D. Ayres, M. Peltier, and J. Albers. 2003. Impacts of drought and bark beetles on red pine forests of the Anoka Plains, Minnesota. Prepared for Minnesota Department of Natural Resources. www.dartmouth.edu/~mpayres/pubs/Anoka

Ayres, M.P., M.J. Lombardero, B.D. Ayres, and A.E. Santoro. 1999. The biology and management of bark beetles in old growth pine forests of Itasca State Park. Great Lakes Institute for Pine Ecosystem Studies, Colfax, WI. 136 pp. www.dartmouth.edu/~mpayres/itasca.htm

ENCYCLOPEDIA CONTRIBUTIONS

Ayres, M. P., S.J. Martinson and N.A. Friedenber. 2011. Southern pine beetle ecology: populations within stands. Pages 75-89 in R.N. Coulson and K.D. Klepzig, editors. The Southern Pine Beetle Encyclopedia. USDA Forest Service, Southern Research Station, Asheville, NC. <http://www.treearch.fs.fed.us/pubs/39017>

Stange, E.E., and M.P. Ayres. 2010. Climate change impacts: Insects. Encyclopedia of Life Sciences, Elsevier. <http://www.els.net/> [Link](#)

Ayres, B.D, and M.P. Ayres. 2004. *Ips grandicollis* (Coleoptera, Scolytinae). Encyclopaedia contribution for Crop Protection Compendium, CAB International, Oxon, UK. www.cabi.org/compendia/cpc/index.htm

PUBLISHED PHOTOGRAPHS

Online library of still and video images of phoretic mites.

Online photographic library of Cleridae (Coleoptera) associated with conifers.

www.dartmouth.edu/~mpayres/photos.htm

Bioscience, cover image, July 2006. Spring salamander (*Gyrinophilus porphyriticus*)

Science, 31 October 2003. Image of *Dendroctonus frontalis* in feature article on symbioses.

Northern Woodlands, Spring 2003. Image of spring salamander (*Gyrinophilus porphyriticus*)

Society for Conservation Biology website. February 2002. Images of spring salamander (*Gyrinophilus porphyriticus*) and habitat in Second College Grant, NH.

www.conbio.net/SCB/Services/Tips/2002-2-February.cfm

National Geographic, May 2001. Image of *Dendroctonus frontalis* in Geographica section.

WORKING GROUPS

European wood wasp (*Sirex noctilio*), [Sandy Liebhold](#), USDA Forest Service Northern Research Station, . .

Juan Corley, Ecología de Insectos, [INTA EEA Bariloche](#), Argentina. Bernard Slippers Forestry and

Agricultural Biotechnology Institute ([FABI](#)), University of Pretoria, South Africa. [María \(Fina\)](#)

[Lombardero](#), Departamento de Producción Vegetal, Universidad de Santiago, Spain. [US Forest Service International Programs](#), Washington DC.

[Powell Working Group](#). Predicting the next high-impact insect invasion: Elucidating traits and factors determining the risk of introduced herbivorous insects on North American native plants. Principal investigators: Kathryn A Thomas, USGS Pacific Northwest; Travis D. Marsico, Arkansas State University; Daniel A. Herms, Ohio State University; Patrick C. Tobin, University of Washington.

Joint Science Education Project ([JSEP](#)). Through a grant to the Institute of Arctic Studies at Dartmouth, the [National Science Foundation](#) supports two opportunities for US high school students to travel to the polar regions and participate in hands-on and inquiry-based science activities. JSEP takes students to Greenland and the Joint Antarctic School Expedition ([JASE](#)) takes students to Antarctica.

[CLINF](#): Climate-change effects on the epidemiology of infectious diseases and the impacts on Northern societies. Project Leader: Birgitta Evengard, Umeå University.

[NeAT](#). Network for Arthropods of the Tundra.

[National Forum on Climate and Pests](#).

[Adaptive management of the pinewood nematode](#). Carla Pimentel, Instituto Superior de Agronomia, Lisbon, Portugal.

AWARDS

Graduate Faculty Mentoring Award, Graduate Student Council, Dartmouth College (2004).

August T Larsson Guest Researcher, Department of Ecology, Swedish University of Agricultural Sciences, Uppsala (2013-2015).