

Andrew W. Park

CONTACT INFORMATION Odum School of Ecology *Phone:* (706) 540-6025
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APPOINTMENTS Associate Professor, University of Georgia (2014 – present)

- Odum School of Ecology (2008 – present)
- Dept. Infectious Diseases, College of Veterinary Medicine (2008 – present)
- Faculty of Infectious Diseases (2008 – present)
- Institute of Bioinformatics (2008 – present)
- Bimolecular Health Sciences Institute (2014 – present)

Assistant Professor, University of Georgia (2008-2013)

Postdoctoral Fellow (2005-2008), Swiss Federal Institute for Aquatic Science and Technology (Zürich, Switzerland) & Institut de Recherche pour le Développement (Montpellier, France)

Visiting Fellow (2005) Australian National University

Postdoctoral Fellow (2004-2005), Dept. Mathematics & Statistics (York University, Canada) & Dept. Biology (Queen's University, Canada)

Postdoctoral Fellow (2001-2003), Dept. Zoology (University of Cambridge, UK)

EDUCATION **University of Cambridge, UK**
Ph.D., Biology, 2001 (Advisor: Prof. Christopher A. Gilligan)

University of Dundee, UK
M.S., Mathematical Biology, 1996 (Distinction)

Aston University, UK
B.S., Mathematics & Chemistry, 1994

RESEARCH INTERESTS Theoretical epidemiology, Infectious disease ecology, Host-parasite biology, Mathematical modeling, Population ecology, Community ecology, Evolutionary theory, Statistical modeling, Cross-species transmission

EDITORIAL BOARDS *Ecosphere* (Associate Editor: 2013 – present)

RESEARCH ARTICLES Dallas, T.A., Park, A.W. & Drake J.M. 2016. Predictability of helminth parasite host range using information on geography, host traits and parasite community structure. *Parasitology* (accepted)

Dibble, C.J., O'Dea, E.B., Park, A.W. & Drake, J.M. 2016. Waiting time to infectious disease emergence. *J. Roy. Soc. Interface*

Kramer, A., Pulliam, J., Alexander, L., Park, A.W., Rohani, P., & Drake, J.M. 2016. Spatial spread of the West Africa Ebola epidemic. *Roy. Soc. Open Science*

Stephens, P.R., Altizer, S., Smith, K., Aguirre, A., Brown, J., Budischak, S., Byers, J.E., Dallas, T.A., Davies, J., Drake, J.M., Ezenwa, V., Farrell, M., Gittleman, J.G., Han, B.A., Huang, S., Hutchinson, R., Johnson, P., Nunn, C., Onstad, D., Park, A.W., Vazquez-Prokopec, G., Schmidt, J.P. & Poulin, R. 2016. The macroecology of infectious diseases: a new perspective on global-scale drivers of pathogen distributions and impacts. *Ecology Letters*

- Vinson, J.E., Drake, J.M., Rohani, P. & Park, A.W. 2016. The potential for sexual transmission to compromise control of Ebola virus outbreaks. *Biology Letters*
- Sutherland, K.P., Berry, B., Park, A.W., Kemp, D.W., Kemp, K.M., Lipp, E.K. & Porter J.W. 2016. Shifting white pox etiologies affecting *Acropora palmata* in the Florida Keys, 1994-2014. *Phil. Trans. R. Soc. B.*
- Park, A.W., Haven, J., Kaplan, R. & Gandon S. 2015. Refugia and the evolutionary epidemiology of drug resistance. *Biology Letters*
- O'Regan, S.M., Vinson, J.E. & Park, A.W. 2015. Interspecific contact and competition may affect the strength and direction of disease-diversity relationships for directly transmitted microparasites. *American Naturalist*
- Park, A.W., Cleveland, C.A., Dallas, T.A., & Corn, J.L. 2015. Vector species richness increases hemorrhagic disease prevalence through functional diversity modulating the duration of seasonal transmission. *Parasitology*
- Drake, J.M., Kaul, R.B., Alexander, L.W., O'Regan, S.M., Kramer, A.M., Pulliam T.J., Ferrari, M.J., & Park, A.W. 2015. Ebola cases and health system demand in Liberia. *PLoS Biology*
- Han, B.A., Park, A.W., Jolles, A., & Altizer, S. 2015. Infectious disease transmission and behavioral allometry in wild mammals. *J. Anim. Ecol.*
- Stallknecht, D.E., Allison, A.B., Park, A.W., Phillips, J.E., Goekjian, V.H., Nettles, V.F. & Fishcher, J.R. 2014. Apparent increase of reported and confirmed hemorrhagic disease in the Midwest and Northeast United States. *J. Wildlife Dis.*
- Park, A.W., Vandekerkhove, J. & Michalakis, Y. 2014. Sex in an uncertain world: environmental stochasticity helps restore competitive balance between sexually and asexually reproducing populations. *J. Evol. Biol.*
- Haven, J. & Park, A.W. 2013. Superinfection reconciles host-parasite association and cross-species transmission. *Theor. Pop. Biol.*
- Daly, J.M., Newton, J.R., Wood, J.L.N. & Park, A.W. 2013. What can mathematical models bring to the control of equine influenza?. *Eq. Vet. J.*
- Magori, K & Park, A.W. 2013. Dynamics of the frequency of immune escape mutants: evolutionary and epidemiological interactions. *J. Math. Biol.*
- Berry, B.S., Magori, K., Perofsky, A.C., Stallknecht, D.E. & Park, A.W. 2013. Wetland cover dynamics drive hemorrhagic disease patterns in white-tailed deer in the United States. *J. Wildlife Dis.*
- Park, A.W., Magori, K., White, B.A. & Stallknecht, D.E. 2013. When more transmission equals less disease: reconciling the disconnect between disease hotspots and parasite transmission. *PLoS One*
- Haven, J., Magori, K. & Park, A.W. 2012. Ecological and inhost factors promoting distinct life-history strategies in Lyme borreliosis. *Epidemics*
- Park, A.W. 2012. Infectious disease in animal metapopulations: the importance of environmental transmission. *Ecol. Evol.*
- Park, A.W., Jokela, J. & Michalakis, Y. 2010. Parasites and deleterious mutations: interactions influencing the evolutionary maintenance of sex. *J. Evol. Biol.*
- Park, A.W., Daly, J.M., Lewis, N.S., Smith, D.J., Wood, J.L.N. & Grenfell, B.T. 2009. Quantifying the impact of immune escape on transmission dynamics of influenza. *Science*
- Park, A.W. & Glass, K. 2007. Dynamics patterns of avian and human influenza in East and South East Asia. *Lancet Inf. Dis.*

Day, T., André, J.B. & Park, A.W. 2006. The evolutionary emergence of pandemic influenza. *Proc. R. Soc. Lond. B*

Day, T., Park, A.W., Madras, N., Gumel, A. & Wu, J. 2006. When is quarantine a useful control strategy for emerging infectious diseases? *Am. J. Epidemiology*

Park, A.W., Wood, J.L.N., Daly, J.M., Newton, J.R., Glass, K., Henley, W., Mumford, J.A & Grenfell, B.T. 2004. The effects of strain heterology on the epidemiology of equine influenza in a vaccinated population. *Proc. R. Soc. Lond. B*

Daly, J.M., Yates, P.J., Newton, J.R., Park, A.W., Henley, W., Wood, J.L.N., Davis-Poynter, N. & Mumford, J.A. 2004. Evidence supporting the inclusion of strains from each of the two co-circulating lineages of H3N8 equine influenza virus in vaccines. *Vaccine*

Wood, J.L.N., Kelly, L., Cardwell, J.M. & Park, A.W. 2004. Results of a quantitative assessment of the risks of reducing routine swabbing requirements for the detection of *Taylor equigenitalis*. *Vet. Rec.*

Park, A.W., Wood, J.L.N., Newton, J.R., Daly, J.M., Mumford, J.A & Grenfell, B.T. 2003. Optimizing vaccination strategies in equine influenza. *Vaccine*

Wood, J.L.N., Newton, J.R., Daly, J.M., Park, A.W. & Mumford, J.A. 2003. It's all in the mix: infection transmission in populations. *Eq. Vet. J.*

Park, A.W., Gubbins, S. & Gilligan, C.A. 2002. Extinction times for closed epidemics: the effects of host spatial structure. *Ecology Letters*

Park, A.W., Gubbins, S. & Gilligan, C.A. 2001. Invasion and persistence of plant parasites in a spatially structured metapopulation. *Oikos*

Davidson, F.A. & Park, A.W. 1998. A mathematical model for fungal development in heterogeneous environments. *Appl. Math. Lett.*

MANUSCRIPTS
SUBMITTED

Schmidt, J.P., Park, A.W., Kramer, A., Han, B.A., Alexander, L.W. & Drake, J.M. Spatiotemporal fluctuations and triggers of Ebolavirus spillover.

Cleveland, C., Dallas, T.A, Vigil, S., Corn, J.L. & Park, A.W. Metacommunity ecology links environmental drivers to *Culicoides* spp. communities and hemorrhagic disease reports in the southeastern United States.

OTHER
PUBLICATIONS

Drake, J.M. & Park, A.W. 2016. A model for coupled outbreaks contained by behavior change. In: *Mathematical and Statistical Modeling for Emerging and Re-emerging Infectious Diseases* (Eds: Chowell, G. & Hyman, J.M.) Springer International Publishing Switzerland.

Park, A.W. & Day, T. 2007. Quarantine and isolation. In: *Encyclopedia of Epidemiology*, Sage Publishing.

Newton, J.R., Park, A.W. & Wood, J.L.N. 2004. Maximizing the benefits of vaccination against equine influenza. In: *Equine respiratory diseases* (Ed: Lekeux, P.) IVIS Ithaca New York.

Park, A.W., Wood, J.L.N., Newton, J.R., Daly, J., Mumford, J.A., Glass, K. & Grenfell, B.T. 2002. Modelling equine influenza: epidemiology, vaccination, spatial spread and strain variation. *Proc. Soc. Vet. Epidem. Prev. Med.*

Park, A.W. 1998. Plants fight back against fungi. *Trends Plant Sci.*

GRANTS

- 2009-2013 McDonnell Foundation Complex systems grant *Transient pathogen evolution in heterogeneous host populations* Sole PI \$450,000
- 2010-2015 NSF Ecology of Infectious Diseases Grant *Ecology of a reverse zoonosis: human-environment interactions in the transmission, persistence, and virulence of white pox disease in elkhorn coral* Co-PI \$2.3M
- 2012-2014 NSF REU site *Population biology of infectious diseases* Senior personnel \$283,500
- 2012 NSF REU project *Water Quality Patterns and Coral Disease Processes in the Florida Keys* Co-PI \$9,000
- 2013-2017 NSF RCN *The macroecology of infectious diseases* Core participant \$500,000
- 2013-2015 Zoetis *Mathematical modeling of heartworm transmission, drug resistance and intervention* Co-PI \$41,541
- 2013-2014 UGA One Health seed grant *The Ecology of Leptospirosis* Lead PI \$5,000
- 2014-2017 *Post-baccalaureate training in infectious disease research* Key personnel \$1.59M
- 2014-2019 NIH R01 *Forecasting tipping points in emerging and re-emerging infectious diseases* Co-PI \$3.2M
- 2015 NSF Rapid *Fitting Ebola multi-type branching process models to data* Sole PI \$58,000

TEACHING

- Population and community ecology* (ECOL 4000/6000)
Fall: 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
- Population biology of infectious diseases* (ECOL/BIOL 4150L/6150L)
Spring: 2010, 2011, 2012, 2014, 2015, 2016
- Modeling infectious diseases* (EPID/ECOL/IDIS 8515L)
Fall: 2009
- Cross disciplinary ecology* (ECOL 8030)
Fall: 2010
- Ecology and evolution of infectious diseases* (IDIS 8900)
Fall: 2011, 2013, 2015
- Research methods in disease ecology* (ECOL 8140L)
Fall: 2012
- Topics in modern ecology* (ECOL 8000)
Fall: 2016
- Fundamentals of disease biology 1* (ECOL 8510L)
Fall: 2016

THESES DIRECTED

- Chris Cleveland, MS Population Health, 2015
- Brett Berry, MS Ecology, 2016
- Ashton Griffin, PhD Ecology, expected 2017
- John Vinson PhD Ecology, expected 2018
- David Vasquez, PhD Ecology, expected 2021

THESIS
COMMITTEES

Mary Browning, MS Genetics (advisor: Nancy Manley, completed)
Sarah Bowden, PhD Ecology (advisor: John Drake, completed)
Chris Cleveland, PhD Population Health (advisor: Michael Yabsley, ongoing)
Austin Coleman, MS Ecology (advisor: Stacey Lance, ongoing)
Tad Dallas, PhD Ecology (advisor: John Drake, completed)
Ming Fung, MS Pathology (advisor: Nicole Gottdenker, completed)
Shamus Keeler, PhD Population Health (advisor: Dave Stallknecht, completed)
Yan Li, PhD Public Health (advisor: Andreas Handel, completed)
Paige Miller, PhD Ecology (advisor: John Drake, ongoing)
Dara Satterfield, PhD Ecology (advisor: Sonia Altizer, completed)
Nibiao Zheng, PhD Public Health (advisor: Andreas Handel, completed)

POSTDOCTORAL
MENTORSHIP

2010-2012 Krisztian Magori: Modeling, Hemorrhagic disease, Vaccine escape, Cross-species transmission
2011-2014 James Haven: Modeling, Lyme disease, Parasite generalism vs specialism
2013-2014 Suzanne O'Regan: Mathematical modeling of infectious diseases, Theoretical development of disease-diversity relationships
2015 Chris Dibble: Bifurcation delay in infectious disease systems at critical points (joint with John Drake)
2015-present Eamon O'Dea: Modeling infectious diseases at critical points (joint with John Drake)

FELLOWSHIPS &
AWARDS

2010 President's Venture Fund UGA - Computational Ecology Workshops (\$3,000)
2011 John M. Bowen award for excellence in biomedical research (\$1,000, UGA award for developing an extramurally funded research program)
2011 UGA Lilly Fellowship (\$2,000, one of 10 tenure-track faculty selected into 2-year program for excellence in instruction)
2012 Odum School of Ecology undergraduate instruction award
2014 Michael F. Adams Early Career Scholar Award (\$2,000, Recognition by UGA of outstanding accomplishment and evidence of potential future success in scholarship, creative work or research by an early career faculty member in any discipline - up to one scholar per year)