

## Curriculum del Prof. Andrea Pugliese:

### • QUALIFICA ATTUALE

Professore di Analisi Matematica (MAT/05) presso il Dipartimento di Matematica, Università di Trento

### • ISTRUZIONE

1986            PhD  
                  Dept. of Ecology and Evolution; State University of New York at Stony Brook, USA  
1978            Laurea in Matematica, Università "La Sapienza", Roma

### • POSIZIONI PRECEDENTI

1992 -2004    Professore Associato  
                  Dip. Matematica, Università di Trento  
1983 -1992    Ricercatore  
                  Dip. Matematica, Università di Trento  
2016            Visiting Professor at Arizona State University, Tempe  
1997            Visiting Scholar, Fulbright Fellow  
                  Dept. Ecology and Evolutionary Biology, Princeton University  
1989            Visiting scholar, Cornell University

### • INTERESSI DI RICERCA

La mia attività di ricerca si è concentrata sull'applicazione di modelli matematici a fenomeni biologici, in particolare in ecologia ed epidemiologia; in questo ambito ho analizzato all'analisi della diffusione di malattie infettive umane, veterinarie e della fauna selvatica e dell'effetto dei parassiti sulle comunità ecologiche.

La mia ricerca ha spaziato, da un lato, dalla progettazione e selezione di modelli dettagliati adeguati per l'analisi di dati empirici, dall'altro, all'analisi qualitativa di modelli teorici finalizzati alla comprensione di modelli e tendenze generali, o alla previsione delle condizioni per il verificarsi di fenomeni inaspettati. Ho sempre cercato di mantenere il realismo biologico nei modelli teorici e di impiegare il potere del rigore e della semplicità matematici nell'analisi di modelli complessi.

Attualmente lavoro in tre aree principali:

- la dinamica delle infezioni trasmesse da vettori, in particolare quelle trasmesse da zanzare e zecche, considerando le loro interazioni ecologiche;
- l'analisi di modelli immuno-epidemiologici, ovvero dove la dinamica di trasmissione tra ospiti è accoppiata a interazioni immunologiche intra-ospite; lo scopo è soprattutto quello di illuminare le dinamiche delle epidemie multi-ceppo, e possibilmente dell'evoluzione dei patogeni;
- l'uso di tecniche di perturbazione singolare nell'analisi teorica di modelli epidemici.

### • INCARICHI

•  
2001 -            Editorial Board, Journal of Mathematical Biology  
2008 -            Editorial Board, Journal of Biological Dynamics  
2020 -            Editor for the *Mathematical Biosciences Subseries* of the Lecture Notes in Mathematics, Springer

Valutatore di progetti per

MIUR: CIVR 2005, Montalcini 2010, FIRB 2012, SIR 2014  
BBSRC, United Kingdom  
NWO, Netherlands  
NSF, USA  
Wellcome Trust

Hong Kong Research Council  
European Research Council (ERC)  
Novo Nordisk Foundation, Denmark  
Fulbright Scholar Program  
UKRI, United Kingdom

Advisor about Promotions for

University of Liverpool, UK  
University of Bath, UK  
University of Florida, Gainesville, USA  
University of Leeds, UK  
Centre de Recerca Matemàtica (CRM), Barcelona, Spain  
University of Stirling, UK  
University of Manchester, UK

External Reviewer and/or Committee Member for Ph.D. Thesis for

University of Liverpool, UK  
University of Turku, Finland  
Ecole Polytechnique Federale Lausanne, Switzerland  
The University of Queensland, Australia  
University of Utrecht, Netherlands  
Arizona State University, Tempe, USA  
Politecnico di Milano, Italy  
Università di Milano, Italy  
Università di Roma La Sapienza, Italy  
University of Helsinki, Finland

Reviewer for

American Naturalist; Applied Mathematical Modelling; Applied Mathematics Letters; Applied Mathematics and Optimization; Arabian J. of Mathematics; BMC Infectious Diseases; BMC Public Health; Bull. Mathematical Biology; Computational and Applied Mathematics; Discrete and Continuous Dynamical Systems B; Ecohydrology; Ecological Complexity; Ecological Modelling; Ecology; Ecology Letters; Eurosurveillance; Int. J. Parasitology; J. Animal Ecology; J. Applied Probability; J. Biological Dynamics; J. Difference Equations and Applications; J.R.S. Interface; J. Mathematical Analysis and Applications; J. Mathematical Biology; J. Theoretical Biology; Lancet Infectious Diseases; Mathematical Biosciences; Math. Biosciences and Engineering; Math. Medicine and Biology; Math. Methods in the Applied Sciences; Nature; Nonlinear Analysis RWA; Nonlinear Differential Equations and Applications; Nonlinear Dynamics; Parasites and Vectors; Parasitology; PLoS Neglected Tropical Diseases; PLoS NTD; PLoS One; Proc. Natl. Acad. Sciences; Proc. Royal Soc. A; Scientific Reports; SIAM Journal of Applied Mathematics; Theoretical Ecology; Theoretical Population Biology; Vector-Borne and Zoonotic Diseases

## • PUBBLICAZIONI RECENTI

Marini, G., Manica, M., Delucchi, L., Pugliese, A., & Rosà, R. (2021). Spring temperature shapes West Nile virus transmission in Europe. *Acta Tropica*, 215, 105796.

<https://doi.org/https://doi.org/10.1016/j.actatropica.2020.105796>

Jardón-Kojakhmetov, H., Kuehn, C., Pugliese, A., Sensi, M., 2021. A geometric analysis of the SIR, SIRS and SIRWS epidemiological models. *Nonlinear Anal. Real World Appl.* 58, 103220.

<https://doi.org/https://doi.org/10.1016/j.nonrwa.2020.103220>

- Coletti, R., Pugliese, A., Marchetti, L., 2020. Modeling the effect of immunotherapies on human castration-resistant prostate cancer. *J. Theor. Biol.* 110500.  
<https://doi.org/https://doi.org/10.1016/j.jtbi.2020.110500>
- A. Pugliese, Cenni su teoria ed utilizzo di modelli matematici per le epidemie. *Matematica, Cultura, Società - Rivista dell'Unione Matematica Italiana* 5, 5-15 (2020)
- Marini, G., Calzolari, M., Angelini, P., Bellini, R., Bellini, S., Bolzoni, L., Torri, D., Defilippo, F., Dorigatti, I., Nikolay, B., Pugliese, A., Rosà, R., Tamba, M., (2020). A quantitative comparison of West Nile virus incidence from 2013 to 2018 in Emilia-Romagna, Italy. *PLoS Negl. Trop. Dis.* 14, e0007953.
- Marini, G., Rosà, R., Pugliese, A., Rizzoli, A.; Rizzo, C.; Russo, F.; Montarsi, F.; Capelli, G., West Nile virus transmission and human infection risk in Veneto (Italy): a modelling analysis, *Scientific Reports* 8; 14005, (2018). - DOI: 10.1038/s41598-018-32401-6
- Pfab, F., Rossi Stacconi, M. V., Anfora, G., Grassi, A., Walton, V., & Pugliese, A. (2018). Optimized timing of parasitoid release: a mathematical model for biological control of *Drosophila suzukii*. *Theoretical Ecology*. **11**, 489–501 <https://doi.org/10.1007/s12080-018-0382-3>
- Tait, G., Grassi, A., Pfab, F., Crava, C.M.; Dalton, D.T.; Magarey, R.; Ometto, L.; Vezzulli, S.; Rossi-Stacconi, M.V.; Gottardello, A.; Pugliese, A.a; Firrao, G.; Walton, V.M.; Anfora, G., Large-scale spatial dynamics of *Drosophila suzukii* in Trentino, Italy. *J. of Pest Science*, v. 2018, (2018), 1-12. - DOI: 10.1007/s10340-018-0985-x
- Pugliese, A., & Milner, F. (2018). A structured population model with diffusion in structure space. *J. Math. Biol.* 77: 2079-2102 <https://doi.org/10.1007/s00285-018-1246-6>
- A. Lunelli, A. Pugliese. Final attack ratio in SIR epidemic models for multigroup populations, *Ricerche di Matematica* 67, 49-68 (2018). <https://doi.org/10.1007/s11587-017-0349-5>
- A. Pugliese, A. Gumel, F. Milner, J. Velasco-Hernandez. Sex-biased prevalence in infections with heterosexual transmission: a theoretical analysis, *Math. Biosci. Eng.* 15: 125-140 (2018)  
doi:10.3934/mbe.2018005
- Marziano, V., Pugliese, A., Merler, S., Ajelli, M.. Detecting a Surprisingly Low Transmission Distance in the Early Phase of the 2009 Influenza Pandemic. *Scientific Reports*, 7(1), 12324 (2017)  
<https://doi.org/10.1038/s41598-017-12415-2>
- P. Moschini, D. Bisanzio and A. Pugliese, A Seasonal Model for West Nile Virus, *Math. Model. Nat. Phenom.*12: 58-83 (2017), DOI: <https://doi.org/10.1051/mmnp/201712205>
- V. Clamer, A. Pugliese, D. Liessi, D. Breda, Host coexistence in a model for two host–one parasitoid interactions, *J. Math. Biol.* 75: 419–441 (2017), doi:10.1007/s00285-016-1088-z

- G. Marini, R. Rosà, A. Pugliese, H. Heesterbeek, Exploring vector-borne disease ecology in multi-host communities: a case study of West Nile virus, *Journal of Theoretical Biology* 415: 58-69 (2017), doi: 10.1016/j.jtbi.2016.12.009,
- I. Marinelli, A. van Lier; H. E de Melker, A. Pugliese, M. van Boven, Estimation of age-specific rates of reactivation and immune boosting of the varicella zoster virus. *Epidemics* 19:1-12 (2017), doi: 10.1016/j.epidem.2016.11.001
- F. Pfab; O. Diekmann; S. Bhattacharya.; A. Pugliese, Multiple coexistence equilibria in a two parasitoid-one host model, *Theor. Pop. Biol.* 113:34–46 (2017), DOI: 10.1016/j.tpb.2016.10.002
- V. Clamer, I. Dorigatti, L. Fumanelli, A. Pugliese, Estimation of infection transmission in influenza outbreaks in schools, *Theoretical Biology and Medical Modelling* 13: 19 (2016). doi: 10.1186/s12976-016-0045-2
- Guzzetta G, Montarsi F, Baldacchino FA, Metz M, Capelli G, Rizzoli A, Pugliese A, Rosà R, Poletti P, Merler S. Potential Risk of Dengue and Chikungunya Outbreaks in Northern Italy Based on a Population Model of *Aedes albopictus* (Diptera: Culicidae). *PLoS Negl Trop Dis* 10(6): e0004762 (2016). doi: 10.1371/journal.pntd.0004762
- G. Marini, P. Poletti, M. Giacobini, A. Pugliese, S. Merler, R. Rosà. The Role of Climatic and Density Dependent Factors in Shaping Mosquito Population Dynamics: the Case of *Culex Pipiens* in Northwestern Italy . *PLoS ONE* 11(4): e0154018 (2016). doi: 10.1371/journal.pone.0154018
- Betta, M.; Laurino, M.; Pugliese, A.; Guzzetta, G.; Landi, A.; Manfredi, P. Perspectives on optimal control of Varicella and Herpes Zoster by mass routine Varicella vaccination, *Proc. R. Soc. B* 283: 20160054 (2016), doi:10.1098/rspb.2016.0054

Autore di 94 publications on the Scopus database; h-index 22 (Scopus), 23 (WoS), 30 (Google Scholar).  
 Lista completa disponibile a <http://www5.unitn.it/People/it/Web/Persona/PER0003043#PRODOTTI>  
 Guardare anche <http://orcid.org/0000-0002-3512-8560> o <http://www.researcherid.com/rid/E-1905-2011>

#### • CONFERENZE A INVITO RECENTI

- 09/02/2010 Media briefing on EU Research on Influenza: New results, new challenges. Legnaro (PD), Italy
- 31/5-4/6 2010 Conference on Computational and Mathematical Biology (CMPD 3), Bordeaux, 31/5-4/6 2010, Bordeaux, France (plenary lecture)
- 21/6/2010 Colloquium at Finnish Mathematical Society, Helsinki, Finland
- 24/9/2010 Conference “Health Threats in the European Union”, Brescia, Italy
- 19-20/10/2010 ECDC modelling meeting, Stockholm, Sweden
- 1/3/2011 JRC Seminar, Ispra, Italy
- 9-11/3/2011 UCID Symposium, Utrecht, Netherlands
- 06/04/2011 Trimester on “Probability and Discrete Mathematics in Mathematical Biology, National University Singapore
- 7-9/6/2011 ECDC/WHO Annual meeting of the European Influenza Surveillance Network, Lublijana, Slovenia

27/6-1/7/2011 ECMTB 2011, Krakow, Poland  
 11-15/7/2011 Exploratory Workshop on Emerging Infectious Diseases and Mathematical Modelling, Barcelona, Spain  
 14-15/11/2011 ECDC modelling meeting, Stockholm, Sweden  
 4-8/6/2012 BIOCAMP 2012, Vietri (SA), Italy  
 5-7/9/2012 workshop "Epidemics on networks: current trends and challenges", Girona,, Spain  
 10-13/9/2012 Meeting of Moroccan Society Applied Mathematics, Marrakech, Morocco (plenary lecture)  
 15-16/10/2012 EU Clustering and Communication Meeting. Luxemburg  
 21/11/2012 DIDE Seminar, Imperial College, London  
 15-19/4/2013 Workshop "Mathematics and Biology: a Roundtrip in the Light of Suns and Stars", Leiden, Netherlands  
 30/5-2/6/2013 Conference CMPD4, Taiyuan, China  
 16-18/9/2013 XXIII Convegno SIItE, Ancona, Italy  
 10-12/2/2014 Fifth Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Lisbon, Portugal (plenary lecture)  
 25-29/8/2014 International Conference MPDE'14 (Models in Population Dynamics and Ecology), Torino, Italy (plenary lecture)  
 24-28/8/2015 AIM Workshop on "Mathematics inspired by immuno-epidemiology", San José, CA, USA  
 31/8-4/9/2015 Workshop "Mathematical and Computational Epidemiology of Infectious diseases", Erice (TP), Italy  
 21-25/9/2015 Vito Volterra Symposium on Mathematical Models in Ecology, within the 13<sup>th</sup> European Ecological Federation Conference, Rome, Italy  
 25/3/2016 Mathematical Biology Seminar, Arizona State University, Tempe, AZ, USA  
 2-6/5/2016 Workshop "Global change impact for diseases and alien species expansion", AIMS, Muizenberg, Sudafrica (short course)  
 16/5/2016 BioMath Forum Lecture Series, University of Pretoria, Sudafrica  
 28/7/2016 Minisymposium Infectious Mathematics Workshop, Utrecht University, Paesi Bassi  
 11-15/7/2016 Minisymposium "Recent Developments in Immuno-Epidemiological Modeling" at the 10<sup>th</sup> European Conference on Mathematical and Theoretical Biology, Nottingham, UK  
 30/1-3/2/2017 Eighth Workshop Dynamical Systems Applied to Biology and Natural Sciences, Evora, Portugal  
 7-9/2/2018 Ninth Workshop Dynamical Systems Applied to Biology and Natural Sciences, Torino  
 27/2/2018 Seminar on Mathematical Biology, University of Helsinki, Finland  
 26-30/3/2018 Workshop "Disease Ecology and Eco-epidemiology", Mathematical Biosciences Institute, Columbus, USA  
 16-18/5/2018 Workshop "Populations in epidemics and ecology: Modeling and numerical simulations.", BCAM, Bilbao  
 4-8/6/2018 Conference "New Trends in Mathematical Biology", CRM, Barcelona  
 23-27/7/2018 11th European Conference on Mathematical and Theoretical Biology, Lisbon (plenary lecture)  
 28/8-5/9/2018 2nd Erice International Conference on Mathematical and Computational Epidemiology, Erice (TP)  
 8-11/10/2018 Workshop Accademia dei Lincei - IAC,CNR "Mathematics for BioMedicine, Roma  
 3-6/2/2019 10th Conference on Dynamical Systems Applied to Biology and Natural Sciences, Napoli  
 21-24/6/2019 Distinguished Lectures, Laboratory for Industrial and Applied Mathematics, York University, Toronto  
 27-28/6/2019 Workshop on Mathematical Ecology, Fields Institute for Research in Mathematical Sciences, Queen's University, Canada  
 17-21/2/2020 Workshop on "Mathematical Modeling and Statistical Analysis of Infectious Disease Outbreaks", CIRM, Luminy, Marseille  
 18-20/5/2020 Workshop "Modeling the propagation of Covid-19", virtual workshop organized by Centre d'analyse et de mathématique sociales (CAMS), Paris  
 10/7/2020 1<sup>st</sup> on-line Colloquium of INdAM (National Institute of Advanced Mathematics), Rome  
 2-5/2/2021 12th Conference on Dynamical Systems Applied to Biology and Natural Sciences, Virtual  
 28/5/2021 Colloquio Matematico UMI

3-4/6/2021 Models4Life, Virtual Symposium organized by the Albanian Academy of Sciences  
13-17/6/2021 Virtual SMB 2021 Annual Meeting  
21-26/6/2021 8<sup>th</sup> European Congress of Mathematics

18 agosto 2021