

Curriculum Vitae

Publications

Education and Degrees

- **B.Sc. 1971 (Mathematics and Applied Mathematics)**
- **B.Sc. Hons 1972 (Applied Mathematics)**
- **Ph.D. 1976 (Modeling and Control of Birth and Death Processes)** (above degrees from the University of the Witwatersrand, Johannesburg, South Africa.)
- **D.Sc. 1995 (Kin recognition and Chemosensory Communication in the Honey Bee, *Apis mellifera*)** Senior Doctorate from the University of Cape Town, South Africa)

Summary of Professional Experience and Awards

- **Research Scientist, 1974-1979: National Research Institute for Mathematical Sciences, CSIR, Pretoria, South Africa.**
- **Postdoctoral Associate, July-Dec. 1976: College of Forestry and Natural Resources, Colorado State University, Fort Collins, Colorado**
- **Postdoctoral Associate, Jan.-July 1977: Department of Mechanical Engineering, University of California, Berkeley, California**
- **University of California 1979-present:**
 - 79-83 Assistant Biomathematician
 - 83-87 Associate Biomathematician
 - 87-present Biomathematician and Professor
 - 96-2001 Chair, Division of Insect Biology
 - 2005-2006 Chair, Division of Organisms and Environment
- **Consultant 1981-1987:** (Consultant to Northwest and Alaska Fisheries Center, NMFS, Seattle and to the Canadian Department of Fisheries and Oceans)
- **Congressional Review Committee 1997:** (Member of Congressionally Mandated NRC Committee to review NMFS Stock Assessments of the US NE Groundfish Fisheries)
- **Resource Modelers' Association**
 - Director Jan 1991 to Dec 1994
 - President: Jan 1995 to Dec 1996
 - Past President Jan 1997 to Dec 1997
- **Alexander von Humboldt Research Award for Senior U.S. Scientists, 1993**
- **Elected Fellow, American Association for the Advancement of Sciences, 1997**
- **UC Berkeley Chancellor's Professor 1998-2001**
- **Fellow, California Academy of Sciences, 2000**
- **Research Fellow of the Stellenbosch Institute for Advanced Studies, 2001/2**
- **Distinguished Scientist Lecture, Trinity University, San Antonio, Texas, 2002**

- **Extraordinary Professor, University of Pretoria and Fellow of the Mammal Research Institute at the University of Pretoria, 2002**
- **Fellow of the Royal Society South Africa, 2003**
- **Australian Math. Sciences Inst. and the Australian Research Council's Centre of Excellence in the Math. & Stats. of Complex Systems Visiting Lecturer, 2004**
- **Founding Organizer and Trustee of the South African Centre of Epidemiological Modeling and Research, 2004+**
- **Visiting Fellow, Institute of Advanced Studies at the Hebrew University of Jerusalem, 2006-2007**
- **EDITORIAL:**
- - **Editor of Book Series, Biological Resource Management, Oxford University Press, New York. Titles include:**
 - P. Workman, 1986. Range Economics
 - A. M. Starfield and A. Bleloch, 1986. Building Models for Wildlife Management
 - B. R. Hazell and R. D. Norton, 1986. Mathematical Programming for Economic Analysis
 - C. J. Walters, 1986. Adaptive Management of Renewable Resources
 - J. Buongiorno, and J. K. Gilles, 1987. Forest Management
 - G. L. Swartzman and S. Kaluzny, 1987. Ecological Simulation Primer
 - A. Robinson, 1987. Host Management in Crop Pathosystems
 - C. R. Carroll, J. J. Vandermeer and P. M. Rosset (editors), 1990. Agroecology
 - C. D. Oliver and B. D. Larson, 1990. Forest Stand Dynamics
 - R. E. Plant and N. D. Stone, 1991. Knowledge Based Systems in Agriculture
 - N. F. Payne, 1992. Techniques for Wildlife Habitat Management of Wetlands
 - G. Carlson, et al., 1993. Agriculture, Environmental and Resource Economics
 - N. F. Payne and F. C. Bryant, 1994. Techniques for Wildlife Habitat Management of Uplands.
 - A. D. Laderman, editor, 1998. Coastally Restricted Forests.
 - T. J. Quinn and R. B. Deriso, 1999. Quantitative Fish Dynamics.
 - **Book Editor 1993-1997 and Biology Editor 1999- for the journal Natural Resource Modeling**
 - **Editorial Board 1999-present, Annales Zoologici Fennici**
 - **Editorial Board 1994-1997, Ecological Applications**
 - **Editorial Board 2006-present, Israel Journal of Ecology and Evolution**
 - **Editorial Board 2006-present, Environmental Monitoring and Assessment**
 - **Editorial Board 2006-present, PLoS ONE**
 - **Editorial Board 2008-present, Epidemics: The Journal and Conference on Infectious Disease Dynamics**
 - **Editorial Board 2008-present, Journal of the Royal Society Interface**
 - **Senior Advisory Council 2008-present, Natural Resource Modeling**

Grants in the past 18 years:

- **2008-2012 NIH/NSF EEID Program:** The ecology of environmentally maintained episodic anthrax in Etosha, Namibia.
- **2003-4 Ellison Medical Foundation:** Partial support for Short Course in Epidemiological Modelling at the African Institute for Mathematical Sciences and Workshop on HIV-AIDS
- **2003-2008 James S. McDonnell Foundation:** Merging Dynamical Systems Modeling and Analysis at Different Levels of Biological Organization
- **2002-2006 NSF Grant DEB-0221768.** Biocomplexity: Analysis of factors determining the ecological function and resilience of microbial communities. (Co-PI, with Jill Banfield as PI and Mary Power as a second Co-PI)
- **2000-2005 NIH (co-PI , PI Travis Porco)** Evolutionary effects of public health control measures
- **2000-2005 NSF,** Metapopulation models and control of TB in African buffalo
- **1998-2001 DARPA,** Integrated micropipette electrode arrays for measuring olfactory response patterns in the insect brain
- **1998/9 NSF Grant INT-98-07938,** A computational analysis of olfactory processing in the insect antennal lobes
- **1998-1999 NSF Grant INT-9731004,** Workshop on the Scientific Underpinnings of Community Based Management of Wildlife in Southern Africa.
- **1995-1996: NSF Grant INT--941772,** South African Resource Analysis Workshop
- **1992-1994: NSF Grant DEB--9220863,** Sex-ratio variation of herbivores and parasites in a three-trophic level system
- **1992: Grant IBN--9246576,** Research Experience for Undergraduate Supplement to IBN--9009197
- **1990-94: NSF Grant IBN--9009197,** Worker policing behavior in social hymenoptera perception: empirical honey bee studies and neural network models
- **1989-91: California Sea Grant, 35-MA-N** (associated with W.M. Hanemann and A.C. Fisher who are the PI's). The benefits and costs of managing environmental variability in the California Central Valley chinook salmon fishery
- **1988-89: NSF Grant BNS--8809728,** Chemosensory information processing using the honey bee as a model system
- **1986-89: A. P. Sloan Foundation,** Application of non-linear population models in biology and demography (Ken Wachter,co-PI)
- **1986-88: NSF Grant BNS--8510837,** Kin recognition in the honey bee *Apis mellifera*: origin and perception of pheromones; acceptance of queens
- **1986-88: NSF Grant DMS 85--11717,** Application of optimization theory to the management of nonlinear age structured biological resources