

BIOGRAPHICAL SKETCH

NAME		POSITION TITLE	
Ganapati P. Patil		Distinguished Professor of Mathematical Statistics	
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
University of Michigan, Ann Arbor	Ph.D.	1959	Mathematics
Indian Statistical Institute, Calcutta	D.Sc.	1975	Statistics
University of Parma, Italy	Honorary	1988	Biological Sciences
University of Poona, India	Honorary	1989	Letters

A. Positions and Honors.

(Selected from a large list of positions and honors <http://www.stat.psu.edu/~gpp/director.htm>)

Positions and Employment

1986-1988	Visiting Professor of Biostatistics, Harvard School of Public Health, Harvard University
1964-1990	Professor of Mathematical Statistics, Penn State University
1984-	Director, Center for Statistical Ecology and Environmental Statistics, Penn State University
1990-	Distinguished Professor of Mathematical Statistics, Penn State University

Other Selected Experience and Professional Memberships

1967-1972	Fellow: Institute of Mathematical Statistics; American Statistical Association; American Association of the Advancement of Science; and International Statistical Institute
1969-1977	Principal Investigator, National Institutes of Health: Characterizations of Probability Distributions
1969-1991	Founder: Statistical Ecology Section, International Association for Ecology and Ecological Society of America; Statistics and Environment Section, American Statistical Assoc
1965,70,75 81,94	Editor: Classical and Contagious Discrete Distributions, Random Counts in Scientific Work, Statistical Distributions, Statistical Ecology, Multivariate Environmental Statistics
1982	Member, Committee on Environmental Health Risk Assessment, Electric Power Research Inst
1982	Member, Advisory Committee on Indoor Radon Exposure Assessment, Gas Research Institute
1988	Member, Peer Review Panel, Spatial Statistics Research Program, EPA
1990	Member, Peer Review Panel, Risk Assessment Guidance for Superfund, EPA
1994-	Editor, Environmental and Ecological Statistics; Advisory Board, Environmetrics
1999	Chair, MARMAP System for Ecosystem Health, International Congress for Ecosystem Health
2002	Chair, Special Invited Session on MARMAP System, Joint Statistical Meetings, New York City

Honors

1969-1990	Chair, Liaison Committee of the International Statistical Institute, International Association for Ecology, and International Biometric Society, with DR Cox, Bertil Matern, Chris Pielou, and CR Rao on the Committee
1986-1994	Inaugural Distinguished Statistical Ecologist Award, International Association for Ecology; Inaugural Distinguished Achievement Medal for Statistics and the Environment, ASA
1994	Chair and MC: Silver Jubilee of Statistical Ecology at American Statistical Association; International Association for Ecology, and International Environmetrics Society
1996	Invited Author, International Biometric Society, 50 th Anniversary Celebration, Advances in Biometry, Peter Armitage and H.A. David, eds.
2000-	Member, UNEP Science Advisory Board, Nobel Laureate Mario Molina in Chair

B. Selected peer-reviewed publications (in chronological order). (Publications selected from 300 peer-reviewed disciplinary and cross-disciplinary publications. <http://www.stat.psu.edu/~gpp/publicat.htm>)

1. Patil, GP. Minimum variance unbiased estimation and certain problems of additive number theory. *Annals of Mathematical Statistics* 1963;34:1050-1056.
2. Patil GP, Stiteler WM. Concepts of aggregation and their quantification: A critical review with some new results and applications. *Researches in Population Ecology* 1974;15:238-254.
3. Patil, GP, Rao, CR. Weighted distributions and size biased sampling with applications to wildlife populations and human families. *Biometrics* 1978; 34:179-189.
4. Patil GP, Taillie C. Diversity as a concept and its measurement. *Journal of the American Statistical Association* 1982; 77:548-567.
5. Patil GP, Rao CR, Zelen M. Weighted distributions. In *Encyclopedia of Statistical Sciences*, Volume 9, S Kotz and NL Johnson, eds. John Wiley, New York 1988;565-571.
6. Laird N, Patil GP, Taillie C. Comment on 'S. Iyengar and J. B. Greenhouse, Selection models and the file drawer problem.' *Statistical Science* 1988;3(1):126-128.
7. Linder E, Patil GP, Suter G. Errors in variables analysis of extrapolation procedures in environmental toxicology. In *Multivariate Environmental Statistics*, G. P. Patil and C. R. Rao, eds. Elsevier 1993; 227-254.
8. Talwalker S, Patil GP, Taillie C. Qualitative and quantitative assessment of the risk from the exposure to fetotoxic chemical compounds. *Environmental and Ecological Statistics*; 1995;2(1), 71-79.
9. Patil GP. Statistical ecology, environmental statistics, and risk assessment. In *Advances in Biometry: 50 Years of the International Biometric Society*, P Armitage and HA David, eds. Wiley 1996;213-240.
10. Kaur A, Gregori D, Patil GP, Taillie C. Ecological applications of generalized linear models and quasi-likelihood methods: An overview. *Statistica Applicata* 1996;8(1):59-82.
11. Myers WL, Patil GP, Joly K. Echelon approach to areas of concern in synoptic regional monitoring. *Environmental and Ecological Statistics*1997;4(2):131-152.
12. Johnson GD, Myers WL, Patil GP, Walrath D. Multiscale analysis of the spatial distribution of breeding bird species richness using the echelon approach. In *Assessment of Biodiversity for Improved Forest Planning*, P Bachmann, M Kohl, and R Paivinen, eds. Kluwer 1998;135-150.
13. Myers WL, Patil GP, Taillie C. Conceptualizing pattern analysis of spectral change relative to ecosystem status. *Ecosystem Health* 1999;5(4):285—293.
14. Patil GP, Myers WL. Environmental and ecological health assessment of landscapes and watersheds with remote sensing data. *Ecosystem Health* 1999;5(4):221—224.
15. Kurihara K, Myers WL, Patil GP. Echelon analysis of the relationship between population and land cover pattern based on remote sensing data. *Community Ecology* 2000;1(1):103—122.
16. Patil GP, Myers WL, Luo Z, Johnson GD, Taillie C. Multiscale assessment of landscapes and watersheds with synoptic multivariate spatial data. *Mathematical and Computer Modeling* 2000;32:257-272.
17. Patil GP, Johnson GD, Myers WL, Taillie C. Multiscale statistical approach to critical-area analysis and modeling of watersheds and landscapes. In *Statistics for the 21st Century: Methodologies for Applications of the Future*, CR Rao and GJ Szekely, eds. Marcel Dekker 2000;293-310.
18. Patil GP, Taillie C. A multiscale hierarchical Markov transition matrix model for generating and analyzing thematic raster maps. *Environmental and Ecological Statistics* 2001;8(1):71—84.
19. Johnson GD, Myers WL, Patil GP. Predictability of surface water pollution loading in Pennsylvania using watershed-based landscape measurements. *J American Water Resources Assoc* 2001;37:821—835.
20. Banga S, Patil GP, Taillie C. Likelihood contour method for the calculation of asymptotic upper confidence limits on the risk function for quantitative responses. *Risk Analysis*;2001:21(4), 613—623.
21. Banga S, Patil GP, Taillie C. Direct calculation of likelihood-based benchmark dose levels for quantitative responses. *Environmental and Ecological Statistics*;2002:9(3) (In press).
22. Myers WL, Patil GP. Echelon analysis. In *Encyclopedia of Environmetrics*, Volume 2. A El-Shaarawi and WW Piegorisch, eds. John Wiley & Sons, UK 2002;583—586.
23. Patil GP, Brooks RP, Myers WL, Taillie C Multiscale advanced raster map analysis system for measuring ecosystem health at landscape scale—A novel synergistic consortium initiative. In *Managing for Healthy Ecosystems*, D. Rapport, W. Lasley, D. Rolston, O. Nielsen, and C. Qualset. CRC Press; 2002. (In press).
24. Patil GP, Brooks RP, Myers WL, Rapport DJ, Taillie C. Ecosystem health and its measurement at landscape scale: Towards the next generation of quantitative assessments. 2002 *Ecosystem Health* (In press).

C. Research Support

Ongoing Research Support

R-82868401 Brooks (PI)

2/19/01-2/18/05

U.S.EPA

Development, Testing and Application of Ecological and Socioeconomic Indicators for Integrated Assessment of Aquatic Ecosystems of the Atlantic Slope in the Mid-Atlantic

The role of the co-investigator is to be the statistical arm to the research consortium with emphasis on geospatial data analysis and interpretation at the landscape scale. The project involves hotspot detection, delineation, and prioritization at the watershed scale for regions of the United States Atlantic Slope.

Role: Co-Investigator

Completed Research Support

DEB-9524722 Patil (PI)

10/1/95—3/31/99

National Science Foundation

Multi-scale Statistical Approach to Critical-Area Analysis and Modeling of Watersheds and Landscapes.

The goal of this foundational project was to conceptualize and construct multiscale statistical methods and tools for pre-classification and post-classification remote sensing data at watershed scales. The emphasis was on detection and delineation of critical areas for ecological integrity and water quality. The echelon analysis that has led to the proposed tree-structured spatial scan statistic was conceptualized, developed, and applied for the first time in this project.

Role: PI

R 825385 Patil (PI)

1/1/97—12/31/99

U.S. EPA

Statistical Issues Related to the Implementation of Benchmark Dose Method.

The goal of this project was to develop statistical methods and tools to help implement benchmark dose. The project introduced likelihood contour methods for the calculation of asymptotic upper confidence limits on the risk function of quantitative responses.

Role: PI

CR825506 Patil (PI)

10/1/97—9/30/00

U.S. EPA

Research and Outreach on Observational Economy, Environmental Sampling and Risk Assessment Statistics.

The goal of this project was to advance novel and innovative methods of observational economy, such as composite sampling, ranked set sampling, cluster adaptive sampling and encounter sampling for cost-effective monitoring and assessment. The risk assessment methods involving generalized linear models were systematically used for the first time in this project within the ecological context.

Role: PI

FP/1020-00-01-2218 Patil (PI)

6/1/01—12/31/01

United Nations Environment Program

Statistical Methodology for Integration of Environmental Indicators.

The goal of this project was to rank and prioritize countries of the world based on the nationwide land, air, and water indicators of human environment interface. The project pursued prioritization of countries without having to composite/integrate the three basic indicators. The partial order set procedures with Hasse diagrams led to cumulative rank frequency distributional innovations. Additional thrust was on early warning assessment.

Role: PI

Overall: The research effort over the last five year period has been instrumental to the formulation of the proposed tree-structured spatial scan statistic for disease surveillance and elevated rate area identification.