

PREFACE: SPECIAL STATISTICAL ECOLOGY ISSUE

Statistical ecology is in a take-off stage both for reasons of societal challenge and information technology. It is becoming clear that statistical ecology is requiring more and more of non-traditional statistical and ecological approaches. This is partly because ecological and environmental studies involve space, time, and innovative sampling and monitoring. Also, statistical ecology must satisfy public policy responsibility in addition to disciplinary and interdisciplinary research.

The year 1994 marked the 25th year of statistical ecology with reference to the First International Symposium on Statistical Ecology held at Yale in 1969 with G. P. Patil, E. C. Pielou, and W. E. Waters as three co-chairs representing the fields of statistics, theoretical ecology, and applied ecology, with Professor Patil as the Symposium Director. Over the past twenty-five years, statistical ecology has had a major impact on the collection, analysis, and interpretation of data on various fields of application and their theory. While much progress has been made in the past, the future promises even more rapid developments as sophisticated computing technology is utilized to apply newly developed statistical methods to increasingly detailed data bases for community and population studies in both space and time.

It is no wonder that the statistical ecology section of the International Association for Ecology and the related Liaison

Committee on Statistical Ecology of the International Association for Ecology, International Statistical Institute, and the International Biometric Society have been around as the International Statistical Ecology Program since their inception in 1969. Now the Ecological Society of America has a statistical ecology section, and we have a new cross-disciplinary journal, *Environmental and Ecological Statistics*, published by Chapman and Hall. It was a wonderful feeling at the 1994 Manchester International Ecological Congress to witness a successful and impressive celebration of the Silver Jubilee of Statistical Ecology with Professor G. P. Patil as its chair and the master of ceremonies.

It is a great pleasure and honor for COENOSSES to have Professor G. P. Patil, the founder and the father figure of statistical ecology, do this special statistical ecology issue in conjunction with the silver jubilee of statistical ecology. Interestingly, this is also the year when his home based programs in statistical ecology and environmental statistics at Penn State complete their 25 years. The papers for this issue have been reviewed and revised with a view to introduce our readership to the research, training, and outreach program at the unique and well-known Penn State Center for Statistical Ecology and Environmental Statistics of which Professor Patil has been the founder director, principal investigator, and distinguished professor.

L. Orlóci, Editor-in-Chief

PROFILE: GUEST EDITOR, PROFESSOR G. P. PATIL



Biographical: Dr. G. P. Patil is Distinguished Professor of Mathematical Statistics and Founder Director of the Penn State Center for Statistical Ecology and Environmental Statistics. He has received Ph.D. in Mathematics, Michigan; D.Sc. in Statistics, Indian Statistical Institute; Hon. D.Sc. in Biological Sciences, Parma, Italy; and Hon. D.Litt, Poona, India. He has been a founder member and sponsor of the statistical ecology sections of International Association for Ecology and the Ecological Society of America, and of the Statistics and the Environment Section of American Statistical Association. He is past Chair of the Section of Statistics and the Environment of the American Statistical Association and the Founder Chair of its Committee on Fellows and Awards. He is Editor-in-Chief of *Environmental and Ecological Statistics*, published by Chapman and Hall, and serves on the Editorial Advisory Board of *Environmetrics*, a Journal of the International Environmetrics Society. He is the first in mathematical statistics to receive a most significant paper award of American Fisheries Society. He is the first recipient of the distinguished statistical ecologist award of the International Association for Ecology. He has been a fellow of the Institute of Mathematical Statistics, American Statistical Association, American Association of the Advancement of Science, International Statistical Institute, a founder fellow of the National Institute of Ecology, India, a founder member of the Board of International Center for Theoretical and Applied Ecology, Trieste, Italy, a founder member of the Standing Committee on Environmental Statistics of the International Statistical Institute, and a visiting Professor of Biostatistics at Harvard.

Over the past twenty-five year period, Dr. Patil has been in the forefront of research and outreach in statistical ecology, environmental statistics, and quantitative risk analysis.

He is author and co-author of 200 research publications in professional journals and in refereed volumes. He is author, co-author, editor, and co-editor of twenty-five monographs and cross-disciplinary volumes.

Subject areas of his research and teaching interest include: Mathematical and Applied Statistics, Statistical Ecology, Environmental Statistics, Statistical Distributions in Scientific Work, Risk Analysis, Multiple Time Series, Spatial Statistics and Geographic Information Systems, Errors in Variables Analysis, Survey Design and Sampling, Environmental Sampling and Observational Economy, Site Characterization and Evaluation, Diversity Measurement and Comparison, Small and Skew Data, Encountered Data and Interpretation, Combining Environmental Information, Environmental Indicators and Statistics in Environmental Policy. He has directed several satellite programs, institutes and workshops related to statistical ecology, environmental statistics and statistical distributions in scientific work and has edited several books on these topics, including sampling biological populations, spatial statistics and statistical distributions, ecological diversity in theory and practice, etc. From time to time, he has served on advisory committees and participated in program formulation and research workshops of several federal and state government agencies and environmental research institutes and industries.

First Advanced Institute on Statistical Ecology was held at Penn State under his direction in 1972 with NSF support, and he was the principal lecturer (10 lectures) for the 1986 NSF-CBMS Regional Research Conference on Mathematical Stochastics of Species Abundance and Community Composition. With him as the chair and the Master of Ceremonies, the Silver Jubilee of Statistical Ecology has been recently celebrated in 1994 at the American Statistical

Association, the International Environmetrics Society, and the International Association for Ecology in its International Ecological Congress.

Related Honors: (1) Statistical advisor and member, agency-wide statistics review committee, Office of the Assistant Administrator, Office of Policy, Planning, and Evaluation, EPA (1974); (2) Chair, National Surface Water Survey Review Committee and member, American Statistical Association Peer Review Committee for the EPA National Acid Precipitation Assessment Program, 1984-1985; (3) Member, Program Committee, Oceans 1986: United States National Monitoring Strategies, 1985-1987; (4) Representative of the Commonwealth of Pennsylvania, Chesapeake Bay Stock Assessment Program, NOAA and EPA, 1985-1992, Monitoring, Sampling, and Assessment in the Chesapeake; (5) United States Representative, North Atlantic Free Trade Agreement (NAFTA) Initiative on Environmental Statistics and Reporting, 1993-1996; (6) Most Significant Paper Award, American Fisheries Society, for a risk analysis related paper, 1987; (7) Invited speaker, EPA Regional Risk Assessment Conference, Chicago, 1990; invited speaker and moderator, EPA Workshop on Environmental Monitoring and Assessment, Chapel Hill, NC, 1995; (8) International

Society for Ecological Modeling, ISEM-95, Beijing, China, Vice President, Ecological Statistics, Biodiversity, and Sustainable Development (1995); (9) Air and Waste Management Association, inaugural keynote address on Innovative Statistical Mindsets and Novel Observational Approaches for Cost Effective Hazardous Waste Site Characterization and Evaluation, Washington DC, (1995); (10) International Statistical Institute, Chemometrics and Environmetrics, Bologna, chairman and moderator, panel discussion on Environmental Statistics for Year 2000; (11) American Statistical Association, Distinguished Achievement Medal, Statistics and the Environment (1993); (12) American Chemical Society, keynote address, Environmental Statistics, Assessment and Forecasting, Washington DC, (1992); (13) International Association for Ecology, plenary lecture on Statistical Ecology, International Ecological Congress (1986); (14) American Society of Testing Materials, inaugural keynote address, Statistics in Environmental Sciences, Philadelphia (1982); (15) Master of Ceremonies and Chair, Silver Jubilee of Statistical Ecology, International Association for Ecology, Manchester, UK, 1994.

L. Orlóci, Editor-in-Chief