Dilip Venugopal Ph. D.

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Profile

- Broadly trained scientist and policy professional with expertise leading and coordinating research, and socio-environmental synthesis.
- Analyst with demonstrated ability to critically evaluate scientific literature, synthesize findings, and effectively communicate complex concepts to diverse audiences.
- 12 years of project management experience, and expert grant writer and reviewer; successfully obtained $3M grants, and managed procurement, budgeting, and reporting.
- Skilled in partnership-building, strategic thinking, and liaising effectively with internal and external stakeholders.
- Strong quantitative analytical skills, and data management and visualization skills including database management, spatial analysis and statistical modeling.
- International work experiences spanning diverse ethnic, linguistic and cultural contexts across varied institutions.
- United States citizen with active public trust security clearance.

Technical Skills

Programming and coding (R, Python, C++, HTML)

General and relational database management (MS Access, Oracle Business Intelligence, MySQL)

Geographical information systems and remote sensing data management and analysis (ArcGIS, IDRISI, Quantum GIS, GRASS GIS & R)

Statistical analysis and modeling (R, SAS, SPSS) - multivariate and univariate techniques, generalized linear models, non-linear and linear mixed effects modeling, cumulative link models, factor analysis, geo-spatial statistics, timeseries analysis and predictive modeling.

Data manipulation and visualization (R, ArcGIS, Tableau)

Productivity software - Microsoft Office (Word, Excel, Powerpoint), Apache OpenOffice, LyX, LibreOffice, Adobe (Acrobat, Premiere, Photoshop, Illustrator), GIMP

Operating Systems - Linux, Windows

Professional experience

AAAS Science & Technology Policy Fellow September 2015 - Current
Transportation & Climate Division, Office of Transportation & Air Quality

U.S. Environmental Protection Agency

- Analyze, verify and develop biofuels policies, presentations (position papers, briefing packages) to EPA leadership and policy makers.
- Scientific and policy lead, and contributing author on EPA's Report to Congress on the environmental impacts of biofuels.

- Statistical analysis (spatial modeling in R & ArcGIS, time series analysis and mixed effects models in R) quantifying environmental and land use change impacts from biofuels.
- Automated raster image processing in R for quantifying land use (crop acreage & forest loss) and bioclimatic conditions in Brazil during 2000-2014.
- Predictive modeling green house gas emissions from crop expansion *vis-à-vis* biofuel policies, through life cycle analysis.

□ Provide strategic, analytical and technical inputs to programs and policies tackling climate change, and health impacts due to emissions from transportation sector.

- Analyzed emissions and created remedial scenarios with reference to Volkswagen Clean Air Act violations.
- Co-chair, EPA's climate change adaptation mapping group - coordinate and develop a web-based geo-spatial application.
- Scientific lead, modeling and mitigating food waste management emissions.
- Designed and created several Tableau dashboards and stories; Used custom GeoSpatial layers for marine ports and fence-line communities environmental justice issues, and for community outreach resources.
- Progam evaluation for projects in the National Clean Diesel Campaign.
- Curate, ensure data quality and manage database of diesel emission reduction projects.

□ Analyzed and published the role of climate change for agricultural pest management, and developed biotechnology regulatory policies and actions.

□ Reviewed grant proposals on climate change and sustainable crop/livestock production, and food processing and food safety for National Academy of Sciences implemented U.S. - Egypt Science and Technology (S&T) Joint Fund.

Post Doctoral Research Associate June 2014 - August 2015
Department of Entomology, University of Maryland

□ Co-Directed a multi-institutional, collaborative $2.7M research project; developed and delivered strategies for managing invasive pests in agricultural commodities.

□ Designed and conducted field surveys, performed statistical analysis in R (linear and non-linear mixed effects models) and published three journal articles, and 5 presentations on managing insect pests including invasive species on agricultural commodities.

Graduate Research Assistant August 2009 - June 2014
Department of Entomology, University of Maryland

□ Secured grants, managed 4 field research projects leading 14 field assistants and developed strategies for managing invasive stink bugs in field crops.

□ Derived land use configuration and temperature conditions in study area through automated processing and interpolation of spatial data layers in ArcGIS Model Builder.

□ Quantitatively analyzed the role of bio-climate, topography, and landscape configuration and composition on the spatial patterns of stink bug diversity and abundance in mid-Atlantic soybean fields.

□ Completed network analysis for stream distances in ArcGIS (Network Analyst) and determined the role of ecosystem processes (habitat filtering and adult dispersal) on stream insect communities in watersheds of Chesapeake Bay in an urbanizing landscape.

- Authored six peer reviewed articles; three outreach and extension articles related to agricultural pest management. Disseminated and shared findings of research to stakeholders at grower meetings, crop boards, and professional conferences through 15 presentations.
- Delivered short lectures, led discussion groups, oversaw laboratory procedures, graded reports and exams, and addressed student concerns for four undergraduate biological science courses.

Assistant Engineer March 2008 - June 2009
Dept. of Ecology, *Institut Français de Pondichéry,* Puducherry, India

- Managed a spatial database with diversity and richness of 464 tropical tree species across 102 plots spread over 22,000 sq. km in a biodiversity hotspot.
- Georeferenced and interpolated soil quality, disturbance attributes, rainfall and drought conditions for the study area, in ArcGIS.
- Analyzed data through multivariate statistics, published two journal articles and delivered two presentations on patterns in tropical tree communities.

Research Associate January 2007 - December 2007
Foundation for Ecological Research, Advocacy & Learning, Puducherry, India

- Led a team of 6 members for ₹10 million project on vulnerability and habitat restoration along the Coromandel Coast of India funded by United National Development Program (UNDP).
- Analyzed coastal vulnerability and distribution of coastal forest habitats using satellite imagery (Landsat) and geospatial layers
- Designed and executed social and ecological surveys and assessments; prioritized through spatial models (ArcGIS model builder), designed and demonstrated coastal habitat restoration projects.
- Developed partnerships and cooperative arrangements with agencies (e.g. Tamil Nadu Forest Department, UNDP), and coordinated stakeholder engagement and meetings.
- Negotiated restoration strategies, and with community participation implemented pilot restoration for 20 ha of tropical dry evergreen forest and stabilized 20 ha of sand dunes.

Research Associate November 2005 - January 2007
Group for Nature Preservation and Education, Chennai, India

- Led a research team with 4 members and documented role of agroforests in maintaining reptilian diversity in fragments of tropical evergreen forests in a biodiversity hotspot.
- Estimated and published an article on the population density of three species of lizards, and role of agroforesty plantations and management practices.
- Designed a literature review study, and authored 4 publications on the natural history, distribution, taxonomy and conservation status of 496 reptile species of India.

Research Associate January 2003 - November 2005
Foundation for Ecological Research, Advocacy & Learning, Puducherry, India

- Managed a 8 member research team, built capacity and developed protocols for wildlife management through long-term wildlife population monitoring.

- Used Random Forest algorithm and Decisions Trees in R to cluster habitat associations of large herbivorous mammal species.
- Published referred article, technical report and presented findings on the site occupancy and preferred habitats of the large mammalian herbivores.
- Organized 3 training workshops and trained volunteers, forest department staff, students, and field assistants (80 participants) for estimating abundance of large mammalian herbivores.

Awards

International Integrated Pest Management Award of Recognition - StopBMSB program.

Excellence in Extension and Outreach Award - Dept. of Entomology, Univ. of Maryland.

Invited Panelist

Integrating science into policy and speaking the language of policy makers. International Association for Landscape Ecologists US (US-IALE) meeting. 11 Apr 2017. Baltimore, MD.

STDs, HIV, Mosquitoes, and Zika (Podcast). Sci on the Fly. American Association for the Advancement of Science. 20 Oct 2016.

Exploring the world of science policy. Rising Environmental Leaders Program, Stanford Woods Institute for the Environment. 25 Mar 2016. Washington DC.

Publications (Selected) Google Scholar - https://goo.gl/bTvSOf; ResearchGate - https://goo.gl/X27ZK0

Publications – 23 refereed articles; 2 book chapters; 2 conference proceedings; 13 non-refereed scientific reports; 2 thesis and dissertation; 10 extension articles including maps and posters

VENUGOPAL, P.D and G. P. Dively. 2017. Climate change, transgenic corn adoption, and field-evolved resistance in corn earworm. Royal Society Open Science 4 (6):17210.

VENUGOPAL, P.D., et al. 2008. Restoration of tropical dry evergreen forests. Pgs.129-158 In Studies on vulnerability and habitat restoration along the Coromandel Coast., eds. Bhalla, R. S., Ram, S., and V. Srinivas. 1st ed. UNDP/UNTRS & FERAL, Pondicherry, India.

Presentations (Selected)

Presentations – 18 conference; 10 invited; 6 agricultural extension; 3 training workshops; 4 working groups; 3 environmental policy; 2 panelist

VENUGOPAL, P.D. (invited) Biofuel feedstock production and practices: environmental and ecological concerns. Presented to Senior Leadership Team (Office and Divisional Directors) EPA-OAR-OTAQ.Washington, D.C. Sep 2016.

VENUGOPAL, P. D. (invited) Spatial modeling. Presented at American Association for Advancement of Science, Science & Technology Policy Fellowships, Big Data Affinity Group. May 2016.

Academic training

Doctor of Philosophy	Entomology	University of Maryland, College Park, USA	2014
Master of Science	Ecology	Pondicherry University, Puducherry, India	2001
Bachelor of Science	Major - Zoology Ancillaries - Botany, Chemistry	University of Madras, Chennai, India	1998