

Nirmal K. Bhagabati, Ph.D.

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Driving impactful outcomes through natural resources conservation and sustainable development

Strategic program manager and leader with 15+ years of experience driving environmental conservation outcomes through data-driven decision-making and innovative partnerships. Expert in biodiversity conservation, ecosystem services and natural capital assessments, nature-based solutions, and sustainable infrastructure development, with proven success managing multi-million-dollar international initiatives. Leveraged spatial analysis and artificial intelligence to solve complex environmental challenges across Asia, Latin America, and Africa.

Core Competencies:

Program Management | Fundraising | Project Management | Biodiversity and Natural Resources Conservation | Sustainability | Sustainable Infrastructure | Nature-based Solutions | Ecosystem Services and Natural Capital | Bioinformatics | Geospatial analysis | GIS | ArcGIS | Geographic Information Systems | Watershed and Hydrology Modeling | International Development | Data Analysis | Program Design and Implementation | Strategic Planning | Research | Training | Strategic Partnerships | Stakeholder Engagement | Public Relations | Public Speaking

PROFESSIONAL EXPERIENCE

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID), Washington DC

Natural Resources Officer, Biodiversity Division

2022 – Present

Led programs and provided technical expertise on biodiversity and environmental conservation to a global network of over 500 staff. Compiled and analyzed performance metrics and work plans to improve operations, supervised research projects, and led communities of practice and knowledge-sharing across sectors.

- Managed a five-year \$25 million international partnership on Countering Nature Crime related to deforestation, wildlife, timber and fisheries. Oversaw work plans, annual reports and performance metrics to achieve scalable impacts.
- Analyzed over 20 global geographic datasets to develop recommendations for USAID's investments in biodiversity conservation. Led a stakeholder working group to refine recommendations, resulting in [a policy paper](#) to guide over \$300 million / year of global investments.
- Developed a framework paper on "[Integrating Environmental Protection and Social Inclusion when Designing and Implementing Energy Infrastructure Projects](#)". Organized five webinars and discussion groups (100+ participants) to help USAID staff apply the paper's recommendations. Raised \$250,000 for a sustainable infrastructure guidance toolkit.
- Advised USAID offices in Bangladesh, Papua New Guinea, and Tanzania on strategic investments exceeding \$20 million.

WORLD WILDLIFE FUND (WWF), Washington DC

Lead Specialist, Natural Capital and Sustainable Infrastructure

2008 – 2022

Led strategy development and geospatial and economic assessments related to ecosystem services + natural capital (values of nature to people and economies) and sustainable infrastructure to inform policy and decision-making in [Indonesia](#), [Myanmar](#), Cambodia, Uganda, Peru, Colombia and Nepal.

- Led an international team in developing an [artificial intelligence \(AI\)-based tool](#) that monitored 80,000+ websites and 1000+ sites across India and Nepal, saving 30+ hours of human hours weekly and enabling early intervention in environmentally risky infrastructure projects.
- Collaborated with the Smithsonian Institution to rapidly crowdsource geospatial data on environmental impacts of infrastructure using Google Earth Engine; trained 50+ Myanmar government officials and civil society representatives to use this approach.
- Partnered with the Natural Capital Project at Stanford University to test and deploy InVEST, a geospatial analysis software package for natural capital assessments, helping establish InVEST as one of the leading software tools for assessing natural capital.
- Contributed to funding proposals that raised over \$10 million for sustainable transportation infrastructure programs in multiple countries.

- Secured \$90,000 (including from Google AI for Social Good program) to develop and deploy data analytics tools for environmentally sensitive infrastructure planning.
- Spearheaded strategy development for a science program to support WWF’s sustainable infrastructure program. Developed performance metrics for the program based on a Theory of Change.

CONSERVATION INTERNATIONAL, Arlington, VA

Researcher, Center for Applied Biodiversity Science2007 – 2008

- Analyzed human impacts on global biodiversity using GIS (geographic information systems) and conservation planning software (C-Plan), resulting in award-winning presentation (best poster) at the Society for Conservation Biology 2008 annual meeting.

THE INSTITUTE FOR GENOMIC RESEARCH, Rockville, MD

Bioinformatics Analyst, Microarray Team2001 – 2006

- Developed software for data mining algorithms in Java for a leading open-source bioinformatics software (TM4 MeV) to analyze large datasets for biomedical research, which was used globally in 5000+ research publications.
- Analyzed genome data for biomedical research using statistical techniques and data mining algorithms.
- Trained over 200 biomedical researchers in the use of statistical techniques and data mining software.

STATE UNIVERSITY OF NEW YORK, Albany (1994 – 2000) and SMITHSONIAN INSTITUTION (2001)

Research Scientist

- Conducted research on ecology and population genetics of birds, resulting in five academic publications in prestigious journals; received two research grants.

STATE UNIVERSITY OF NEW YORK, Albany (1994 – 2000) and UNIVERSITY OF MARYLAND (2006 – 2008)

College Instructor

- Taught General Biology, Animal Behavior and Ecology to over 500 students ranging from first year to graduate school level.

EDUCATION

STATE UNIVERSITY OF NEW YORK, University at Albany| Ph.D., Biological Sciences

UNIVERSITY OF MARYLAND, College Park, Maryland | M.S., Sustainable Development and Conservation Biology

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani, India | M.Sc., Biological Sciences; B.E., Computer Science

SKILLS AND CERTIFICATIONS

Software: Ecosystem services mapping and analysis package (InVEST), Geographic Information Systems (ArcGIS, QGIS, Google Earth Engine), Generative AI tools (Copilot, ChatGPT), Programming languages and statistical data analysis packages (Java, SPSS, basic Python and R).

Certifications: Using the UN Biodiversity Lab to Monitor the Pulse of the Planet (2022), NASA. Federal Contracting Officer’s Representative Level 1 (2022), USAID. Using Google Earth Engine for Land Monitoring Applications (2021), NASA. Introduction to Python for Data Science (2016), edX and Microsoft Corporation.

Languages: English, Spanish (basic-to-intermediate), Hindi (fluent), Assamese (fluent).

PUBLICATIONS

(Complete publications list at <https://sites.google.com/view/nirmalb-pubs/home>)

- Keh, S. S., Shi, Z. R., Patterson, D. J., **Bhagabati, N.**, Dewan, K., Gopala, A., Izquierdo, P., Mallick, D., Sharma, A., Shrestha, P., & Fang, F. 2024. NewsPanda: Media Monitoring for Timely Conservation Action. Proceedings of the AAAI Conference on Artificial Intelligence, 37(13), 15528-15536. <https://doi.org/10.1609/aaai.v37i13.26841>
- Cross-Chapter Paper 7: Tropical Forests. In: Intergovernmental Panel on Climate Change (IPCC) Working Group 2 Sixth Assessment Report. 2022. <https://www.ipcc.ch/report/ar6/wg2/chapter/ccp7/> and [PDF here](#)
- Tallis, H., J. Fargione, E. Game, R. McDonald, L. Baumgarten, **N. Bhagabati, et al.** 2021. Prioritizing actions: spatial action maps for conservation. Annals of the New York Academy of Sciences. <https://doi.org/10.1111/nyas.14651>
- Helsingen, H., **N. Bhagabati**, and S. Won Myint, 2019. Valuing Nature in Myanmar as the Basis of Economic Development and Decision-Making. In: *Green Growth That Works*. IslandPress, Washington, DC. Eds: L. Mandle, Z. Ouyang, J. Salzman, G. Daily.
- Neugarten, R. A., P. Langhammer, F., E. Osipova, K. Bagstad, **N. Bhagabati**, et al. 2018. Tools for measuring, modelling, and valuing ecosystem services: guidance for Key Biodiversity Areas, natural World Heritage Sites, and protected areas, Gland, Switzerland. IUCN. <http://dx.doi.org/10.2305/IUCN.CH.2018.PAG.28.en>
- Mandle, L, S. Wolny, **N. Bhagabati**, H. Helsingen H, P. Hamel, et al. 2017. Assessing ecosystem service provision under climate change to support conservation and development planning in Myanmar. PLoS ONE 12(9): e0184951. <https://doi.org/10.1371/journal.pone.0184951>
- Helsingen, H., B. Milligan, M. Dailey and **N. Bhagabati**. 2017. *Greening China's Belt and Road Initiative in Myanmar*. WWF Myanmar.
- Mandle, L., S. Wolny, P. Hamel, H. Helsingen, **N. Bhagabati**, and A. Dixon. 2016. Natural Connections: How natural capital supports Myanmar's people and economy. WWF. [PDF here](#) and at <https://www.worldwildlife.org/publications/natural-connections-how-natural-capital-supports-myanmar-s-people-and-economy>
- Helsingen, H., S. Myint, **N. Bhagabati**, A. Dixon, N. Olwero, A. S. Kelly, and D. Tang. 2015. A better road to Dawei: Protecting wildlife, sustaining nature, benefiting people. WWF. [PDF here](#) and at <http://wwf.panda.org/?275790/REPORT-A-Better-Road-to-Dawei>
- Bhagabati, N. K.**, T. Ricketts, T. Barano, M. Conte, D. Ennaanay, O. Hadian, E. McKenzie, N. Olwero, A. Rosenthal, H. Tallis, and S. Wolny. 2014. *Ecosystem services reinforce Sumatran tiger conservation in land use plans*. Biological Conservation 169: 147–156.
- Rosenthal, A., G. Verutes, E. McKenzie, K. Arkema, **N. Bhagabati**, L. Bremer, N. Olwero, A. Vogl. 2014. Process Matters: A framework for conducting decision-relevant assessments of ecosystem services. Intl J. Biodiv, Ecosystem Services and Mgmt 11 (3). <https://doi.org/10.1080/21513732.2014.966149>
- Ruckelshaus, M, E. McKenzie, H. Tallis, A. Guerry, G. Daily, P. Kareiva, S. Polasky, T. Ricketts, **N. Bhagabati**, S. Wood, and J. Bernhardt. 2013. Notes from the field: Lessons learned from using ecosystem services to inform real-world decisions. Ecological Economics, 115: 11–21. <https://doi.org/10.1016/j.ecolecon.2013.07.009>
- Nelson, E., **N. Bhagabati**, D. Ennaanay, E. Lonsdorf, D. Pennington, M. Sharma, *Modeling Terrestrial Ecosystem Services*. 2013. In: Editor-in-Chief: Simon A. Levin, Editor(s)-in-Chief, Encyclopedia of Biodiversity (Second Edition), Academic Press, Waltham, Pages 347-361.
- S. Binder, A. Rosenthal, D. Miteva, S. Pattanayak, J. Johnson, R. Traldi, M. Anderson, D. Pennington, **N. Bhagabati**. 2013. Ecosystem services and human well-being: A Case Study in Jambi Province, Sumatra, Indonesia. (Report submitted to Rockefeller Foundation).

Bhagabati, N., A. Rosenthal, M. Conte, H. Tallis, D. Ennaanay, S. Wolny, N. Olwero, E. McKenzie, Suparmoko, A. Shapiro, O. Hadian, and T. Barano. 2012. [A Green Vision for Sumatra: Using ecosystem services information to make recommendations for sustainable land use planning at the province and district level](#). WWF Technical report.

Dean, A., A. Rosenthal, **N. Bhagabati**, K. Lyon, E. McKenzie, D. Prihatna, and A. van Paddenburg. 2012. [Building a Green Economy in Borneo: Assessing Outcomes for Ecosystem Services under Different Business and Policy Decisions](#). WWF Heart of Borneo Network Initiative.

Suarez, C., N. West, L. Naranjo, I. Niño, **N. Bhagabati**, C. Candelo, A. Rosenthal, E. McKenzie. 2011. Climate Adaptation in Colombia: designing an adaptive compensation and rewards program for ecosystem services. WWF case study.

UNEP-WCMC 2011. Developing ecosystem service indicators: experiences and lessons learned from sub-global assessments and other initiatives. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series no. 58. [PDF here](#) and at <http://www.cbd.int/doc/publications/cbd-ts-58-en.pdf>

Shapiro, A., **Bhagabati, N.** 2010. Earth observation data for mapping and evaluation of ecosystem services to improve human livelihoods and conserve species. Proceedings of the ESA Living Planet Symposium (SP-686), Bergen, Norway.

Bhagabati, N. 2010. InVESTing in Nature's Benefits: Biodiversity and People in Sumatra. WWF Focus Magazine, Vol. 32, No. 6 (November / December issue).

T. Yuri, R. W. Jernigan, R. T. Brumfield, **N. Bhagabati**, and M. J. Braun. 2009. The effect of marker choice on estimated levels of introgression across an avian (Pipridae: *Manacus*) hybrid zone. *Molecular Ecology* 18: 4888–4903.

Bhagabati, N. K. 2007. Conservation research in India. *Frontiers in Ecology and the Environment*. 5(3): 123.

Bhagabati, N.K., and Eric G. Horvath. 2006. Mexican Jay social group size varies with habitat in northeastern Mexico. *Journal of Field Ornithology* 77(2):104–110.

Malek, R.L., ..., **N. Bhagabati** et al. 2006. Physiogenomic resources for rat models of heart, lung and blood disorders. *Nature Genetics* 38: 234-239.

Saeed, A.I., ..., **N.K. Bhagabati** et al. 2006. TM4 microarray data analysis suite. Chapter 14. In *DNA Microarrays Part B. Databases and Statistics*. *Methods in Enzymology*, v. 411.

Bhagabati, N.K., J.L. Brown and B.S. Bowen. 2004. Geographic variation in Mexican jays (*Aphelocoma ultramarina*): local differentiation, polyphyly or hybridization? *Molecular Ecology* 13: 2721–2734.

Saeed, A.I., ..., **N. Bhagabati** et al. 2003. TM4: a free, open-source system for microarray data management and analysis. *Biotechniques* 34(2):374-378.

Brown, J.L., S. Li, and **N.K. Bhagabati**. 1999. Long-term trend toward earlier breeding in an American bird: a response to global warming? *Proceedings of the National Academy of Sciences, USA*. 96(10): 5565–5569.

Brown, J.L., and **N.K. Bhagabati**. 1998. Variation in mass, wing and culmen with age, sex and season in the Mexican jay (*Aphelocoma ultramarina*). *Journal of Field Ornithology*, 69(1):18–29.