



Vitor Hugo Freitas Gomes (Gomes, V. H. F.)

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Google scholar: https://scholar.google.com/citations?user=-_BihaoAAAAJ&hl=en&oi=ao

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Resume

Doctorate in Environmental Sciences (Federal University of Pará), Master's in Management and Local Development (Federal University of Pará, CAPES 5) (2012), and Graduation in Data Processing (Centro Universitário do Pará). Winner of the 2019 CAPES Thesis Award in the area of Environmental Sciences. Experience in development projects, environmental sciences, data analysis, distribution modeling, climate change and tree species of Pan-Amazonian tree flora. Member of the Amazonian Tree Diversity Network – ATDN.

Education

2014–2018 Doctorate in Environmental Science, Universidade Federal do Pará (UFPA), Belém, Brazil (Obtained with honor, including a Sandwich no Naturalis Biodiversity Center)

2010–2012 Masters in Local Development, Universidade Federal do Pará (UFPA), Belém, Brazil.

2002–2006 Degree in Data Processing, Centro Universitário do Pará (CESUPA), Belém, Brazil.

Current and previous positions

2022–Present Member of the Steering Committee of the Pará State Systems on Climate Change (COGES-CLIMA), Belém, Pará.

2022–2024 Post-Doctorate fellow, working on climate change effects on ecosystem services and edible species. Biodiversity and Ecosystem Services Group. Instituto Tecnológico Vale (ITV). Supervisor: Tereza Cristina Giannini.

2020–Present Professor in Tropical Botany. Universidade Federal Rural da Amazônia (UFRA), Belém, Pará, Brazil.

2020–Present Strategy and Institutional Relations Advisor. Economic Development Company of Pará (CODEC), Belém, Pará, Brazil.

2020–2021 Post-Doctorate fellow, working on climate change effects over Amazonian tree flora according to the Paris Agreement. Institute of Geosciences, Universidade de Federal do Pará (UFPA), Belém, Brazil. Field: Environmental Science. Supervisors: Ima Célia Guimarães Vieira and Hans ter Steege.

2019–Present Professor in Computer Science, teaching program languages paradigms, statistical modelling, digital logic and image processing, algorithms, scientific methodology (undergraduate disciplines), Centro Universitário do Pará, Belém, Brazil.

2018–2019 Development Manager. Economic Development Company of Pará (CODEC), Belém, Pará, Brazil.

2014–2018 Professor. National School of Insurance, teaching Informatics and Rural Insurance, Belém, Pará, Brazil. Posições

Teaching activities

- 2021–Present Professor, Ecology, Management and Conservation (Masters/Doctorate), UFRA/MPEG, Belém, Brazil.
- 2021–Present Professor, Statistical Modeling (Masters/Doctorate), UFRA/MPEG, Belém, Brazil.
- 2021–Present Professor, Species Distribution Modeling (Masters/Doctorate), UFRA/MPEG, Belém, Brazil.
- 2019–Present Professor, Scientific Methodology Algorithms (Undergraduate), CESUPA, Belém, Brazil
- 2019–Present Professor, Algorithms (Undergraduate), CESUPA, Belém, Brazil
- 2019–Present Professor, Digital Logic (Undergraduate), CESUPA, Belém, Brazil
- 2019–Present Professor, Programming Languages Paradigm (Undergraduate), CESUPA, Belém, Brazil
- 2019–Present Professor, Statistical Modeling (Undergraduate), CESUPA, Belém, Brazil
- 2019–Present Professor, Image Processing (Undergraduate), CESUPA, Belém, Brazil
- 2019–Present Professor, Research Methodology (Undergraduate), CESUPA, Belém, Brazil
- 2016 Assistant professor, Tropical Ecology (Undergraduate), Caxiuanã, Brazil.
- 2014–2018 Professor, Informatics (Short Course, × 4), FUNENSEG, Belém, Brazil

Languages

Portuguese (native), English (advanced), Spanish and Dutch (basic)

Peer-reviewed publications

- Luize, B.G., Bauman, D., ter Steege, H., Palma’Silva, C., do Amaral, I.L., ... **Gomes, V. H. F.**, *et al.* Geography and ecology shape the phylogenetic composition of Amazonian tree communities. *Journal of Biogeography*, v. 00, p. 1-22, 2024.
- Householder, J.E., Wittmann, F., Schöngart, J., Piedade, M.T.F., ... **Gomes, V. H. F.**, *et al.* One sixth of Amazonian tree diversity is dependent on river floodplains. *Nature Ecology & Evolution*, v. 1, p. 1, 2024.
- Cooper, D.L.M., Lewis, S.L., Sullivan, M.J. P., Prado, P.I., ter Steege, H., ... **Gomes, V. H. F.**, *et al.* Consistent patterns of common species across tropical tree communities. *Nature*, v. 1, p. 1-10, 2024.
- Correa, D.F., Stevenson, P.R., Umaña, M. N., Coelho, L. de S., **Gomes, V. H. F.**, *et al.* Geographic patterns of tree dispersal modes in Amazonia and their ecological correlates. *Global Ecology and Biogeography*, v. 32, p. 49-69, 2023.
- Paracampo, A., Maia, U. M., **Gomes, V. H. F.**, De Sousa Miranda, L., Giannini, T. C. New geographic record in eastern Amazon Forest and potential distribution of *Amphidecta calliomma* (Lepidoptera: Nymphalidae). *Ecology and Evolution*, v. 13, p. 1-6, 2023.
- Pos, E., De Souza Coelho, L., De Andrade Lima Filho, D., Salomão, R. P., Amaral, I. L., De Almeida Matos, F. D., Castilho, C. V., Phillips, O. L., Guevara, J. E., De Jesus Veiga Carim, M. López, D. C., Magnusson, W. E., Wittmann, F., Irumé, M. V., Martins, M. P., Sabatier, D., Da Silva Guimarães, J. R., Molino, J.-F., Bánki, O. S., Piedade, M. T. F., Pitman, N. C. A., Mendoza, A. M., Ramos, J. F., Hawes, J. E., Almeida, E. J., **Gomes, V. H. F.**, *et al.* Unraveling Amazon tree community assembly using Maximum Information Entropy: a quantitative analysis of tropical forest ecology. *Scientific Reports*, v. 13, p. 2859, 2023.

- ter Steege, H., Fortes, E. A., Rozendaal, D.M.A., Erkens, R. H. J., Sabatier, D., Aymard, G., Duijm, E., Eurlings, M., Grewe, F., Pombo, M. M., **Gomes, V. H. F.**, Mansano, V. de F., De Oliveira, S. M. Molecular phylogeny and evolution of inflorescence types. *American Journal of Botany*, 2023.
- Peripato, V., Levis, C., Moreira, G. A., Gamerman, D., Ter Steege, H., Pitman, N. C. A., Souza, J. G., Iriarte, J., Robinson, M., **Gomes, V. H. F.**, *et al.* More than 10,000 pre-Columbian earthworks are still hidden throughout Amazonia. *Science*, v. 382, p. 103-109, 2023.
- Carvalho, R. L., Resende, A. F., Barlow, J., França, F. M., Elias, F. Silveira, J. M. Stegmann, L., Baccaro, F. B., Juen, L., Schiatti, J., Aragão, L., Berenguer, E., Castello, L., Costa, F. R. C. Guedes, M. L., Leal, C. G., Lees, A. C., Isaac, V., Nascimento, R. O., Phillips, O. L., Schmidt, F. A., ter Steege, H., Vaz-De-Mello, F., Venticinque, E. M., Vieira, I. C. G., **Gomes, V. H. F.** et al. , Pervasive gaps in Amazonian ecological research. *Current Biology*, v. 33, p. 1-10, 2023.
- Correa, D. F., Stevenson, P. R., Umaña, M. N., Coelho, L. de S., Salomão, R. P.... & **Gomes, V.H.F.** (2022). Geographic patterns of tree dispersal modes in Amazonia and their ecological correlates. *Global Ecol Biogeogr*, 32:49–69. <https://doi.org/10.1111/geb.13596>
- ter Steege, H., Prado, P. I., de Lima, R. A., Pos, E., de Souza Coelho, L., **Gomes, V. H. F.**, ... & Phillips, O. L. (2020). Biased-corrected richness estimates for the Amazonian tree flora. *Scientific Reports*, 10(1), 1-13.
- Gomes, V.H.F.**, Mayle, F.E., Gosling, W.D., Vieira, I.C.G., Salomão, R.P., ter Steege, H. Modelling the distribution of Amazonian tree species in response to long-term climate change during the Mid-Late Holocene. *Journal of Biogeography*. 2020, 47: 1530– 1540
- Salomão, R. P., Hage, A. L. F., Brienza Júnior, S., Salomão, G. N., **Gomes, V. H. F.** Espécies estruturantes para a restauração florestal de áreas mineradas. *Brazilian Journal of Development*, v. 5, p. 876-886, 2019.
- Salomão, R. P., **Gomes, V. H. F.**, Brienza Júnior, S., Salomão G. N., Hage, A. L. F. Indicadores de sustentabilidade da restauração florestal em áreas mineradas na Amazônia. *Brazilian Journal of Development.*, v. 5, p. 1251-1259, 2019.
- ter Steege, H., Henkel, T. W., Helal, N., Marimon, B. S., Marimon-Junior, B. H., **Gomes, V.H.F.**, ... & Salomão, R. P. (2019). Rarity of monodominance in hyperdiverse Amazonian forests. *Scientific reports*, 9(1), 1-15.
- Gomes, V. H.F.**, Vieira, I. C., Salomão, R. P., & ter Steege, H. (2019). Amazonian tree species threatened by deforestation and climate change. *Nature Climate Change*, 9(7), 547-553.
- Gomes, V. H.F.**, Ijff, S. D., Raes, N., Amaral, I. L., Salomão, R. P., de Souza Coelho, L., ... & Guevara, J. E. (2018). Species Distribution Modelling: Contrasting presence-only models with plot abundance data. *Scientific reports*, 8(1), 1-12.
- ter Steege, H., Sabatier, D., Mota de Oliveira, S., Magnusson, W. E., Molino, J. F., **Gomes, V. H. F.**, ... & Salomão, R. P. (2017). Estimating species richness in hyper-diverse large tree communities. *Ecology*, 98(5), 1444-1454.
- Salomão, R. P., Santana, A. C., Brienza Júnior, S., **Gomes, V. H. F.** Análise fitossociológica de floresta tropical primária densa da Amazônia e determinação de espécies-chave através de análise multivariada. *Boletim do Museu Paraense Emílio Goeldi - Ciências Naturais*, v. 07, p. 57-102, 2012.

Manuscripts submitted and in preparation

- Gomes, V.H.F.** Andrino, C. O., Barbosa-Silva, R. G., Acosta, A. L., González-Chaves, A., Gianinni, T. C. Food insecurity under climate change: plants of the future in the Amazonian biome. Manuscript submitted. *Annals of Botany*.
- Gomes, V.H.F.**, Vieira, I. C. G., Gianinni, T. C., ter Steege, H. Climate change effects over Amazonian tree flora according to the Paris Agreement. Manuscript in prep.

- Gomes, V.H.F.**, Gianinni, T. C., Aguirre-Gutierrez, J., ter Steege, H. Global change impacts on ecosystem services provided by amazonian tree species. Manuscript in prep.
- McGlone, M. Richardson, Queenborough, S.A. do Amaral, I.L., ..., **Gomes, V.H.F.**, *et. al.* Sexual systems in the Amazonian tree flora. Manuscript in prep.
- ter Steege, H., Aguirre-Gutierrez, J., Poorter, L. Baraloto, C., ..., **Gomes, V.H.F.**, *et. al.* Functional trait composition of the Amazon tree flora. Manuscript in prep.

Book chapters

- Gomes, V. H. F.**, Salomão, R. P., Amaral, D. D., Hage, A. L. F. 2018. A megadiversidade arbórea da Amazônia e a domesticação das espécies. In: O Jornal. (Org.). *Anuário do Pará 2019-2020*, v. 9, p. 1048-1053.
- Gomes, V. H. F.**, Salomão, R. P., ter Steege, H., Lage, A. L. F. 2016. Biodiversidade invisível: o desafio da descoberta de milhares de novas espécies arbóreas da Amazônia. *Anuário do Pará 2016-2017*, v. 7, p. 807-810.
- Salomão, R. P., **Gomes, V. H. F.**, Rosa, N. A., Precinato, R. S. 2015. Evolução da dinâmica do reflorestamento e da regeneração natural em área de restauração florestal. In: Salomão, R. P. (Org.). *Restauração florestal de precisão: dinâmica e espécies estruturantes*. 1ed. Saarbücken, Deutschland: Novas Edições Acadêmicas, v. 1, p. 186-220.

Translations

- ter Steege, H.; Vaessen, R. W.; Cárdenas-López, D.; Sabatier, D.; Antonelli, A.; Oliveira, S. M. Pitman, N.; Jørgensen, P. M.; Salomão, R. P. & Gomes, V. H. F. 2017. A descoberta da flora arbórea da Amazônia com uma lista atualizada de todos os taxa arbóreos conhecidos. *Boletim do Museu Paraense Emílio Goeldi. Ciências Naturais* 11(2): 231-261. Translated from Scientific Reports 6: 29549. DOI: <http://dx.doi.org/10.1038/srep29549>, under Creative Commons Attribution 4.0.

Reviews activities

- 2024.** PhD jury member, Environmental Sciences Program, University of the State of Pará, Belém, Brazil.
- 2023.** PhD jury member, Tropical Botany Program, Rural Federal University of Amazonia, Belém, Brazil.
- 2023.** MSc jury member, Tropical Botany Program, Rural Federal University of Amazonia, Belém, Brazil.
- 2023.** MSc jury member, Environmental Sciences Program, University of the State of Pará, Belém, Brazil.
- 2022.** MSc jury member, Tropical Botany Program, Rural Federal University of Amazonia, Belém, Brazil.
- 2022.** MSc jury member, Environmental Sciences Program, University of the State of Pará, Belém, Brazil.
- 2021.** MSc jury member, Tropical Botany Program, Rural Federal University of Amazonia, Belém, Brazil.
- 2021.** MSc jury member, Environmental Sciences Program, University of the State of Pará, Belém, Brazil.
- 2020.** MSc jury member, Tropical Botany Program, Rural Federal University of Amazonia, Belém, Brazil.

2019. MSc jury member, Environmental Sciences Program, University of the State of Pará, Belém, Brazil.

2019. MSc jury member, Tropical Botany Program, Rural Federal University of Amazonia, Belém, Brazil.

2019-2023. Reviewer of 11 manuscripts in the following peer reviewed journals: Nature Climate Change, Annals of Forest Science, Biodiversity and Conservation, Environmental Conservation, Plant Ecology and Diversity, Diversity and Distributions, Global Change Biology, Global Ecology & Conservation, Journal of Biogeography, Scientific Reports, Theoretical and Applied Climatology

Inter-disciplinary activities

2015-2017. Invited expert, Development and availability of free software access for restoration of degraded legal reserve (arl) and permanent preservation (app) areas in Amazonia.

2010-2015. Invited expert, Monitoring of environmental programs in the biotic environment of Alcoa, Juruti, Brazil.

2010. Invited expert, Ecological-economic Zoning of the State of Pará, Belém, Brazil. Role: Responsible for data of the expansion and recovery of ecological-economic macrozoning in the State of Pará.

Invited presentations

Gomes, V. H. F. 2020. What pollen can tell us about Amazonian tree species distribution? In: Palynology Talks - The Palynological Society, Online event in attention to COVID-19 Pandemic.

Gomes, V. H. F. 2019. Global changes and their impact on Amazonian biodiversity. In: I Seminário PPGBE - 2019 of the Emilio Goeldi Museum, Belém, Brazil.

Prizes and awards

2019 CAPES 2019 Thesis Award, Winner of the 2019 Capes Thesis Prize for the best thesis in Environmental Science, Federal University of Pará, Belém, Brazil.

Funding

2020. Coordination for the Improvement of Higher Education Personnel (CAPES), “Quantification of the climate change effects over Amazonian tree flora according the Paris Agreement”. Grant number 88887.509407/2020-00, Post-doctorate research (R\$ 49.200,00).

2015–2016. National Council for Scientific and Technological Development (CNPq), ‘Amazonian tree species barcode (Barcoding Caxiuanã)’. Grant no. 203102/2015-0, Doctorate research developed abroad (R\$ 135.870,00)

2014–2018. National Council for Scientific and Technological Development (CNPq), ‘Impacts of climate change and deforestation on Amazonian tree flora’. Grand by Social Demand Program, Doctorate research (R\$ 79.200,00).

Supervisions

Current. Inaê Vilhena de Souza. Mudanças climáticas na Amazônia. Início: 2023. Dissertação (Mestrado em Ciências Biológicas) - Universidade Federal Rural da Amazônia. (Orientador). Master’s dissertation, Universidade Federal Rural da Amazônia (supervisor).

2023. Abimael Ferreira de Oliveira. Aprendizagem imersiva: como os ambientes de simulação gráfica ajudam os estudantes a aprender usando programação. Undergraduate project, Centro Universitário do Pará (supervisor).

- 2023.** Carlos Eduardo Nylander Bitencourt Dias and Rafael Luís Carvalho Barros. Revisão sobre a evolução do uso de machine learning na análise de impactos ambientais na Amazônia. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2023.** Eduardo Maeda de Oliveira Araújo. Potenciais e oportunidades da inteligência artificial para o mercado varejista. 2023. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2023.** Ocivaldo Bruno Nascimento dos Santos. Criando hábitos saudáveis com o uso da tecnologia: uma abordagem inovadora para melhorar a qualidade de vida. 2023. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2022.** André Akira Prazeres Yamase. “O uso da tecnologia Blockchain na educação”. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2022.** Larissa Nascimento Negrão. O uso da realidade virtual na reabilitação fisioterápapêutica: Uma revisão sistemática. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2022.** Renan Figueiredo Carneiro. Experiência acadêmica e profissionais no curso de bacharelado em ciência da computação - Portfólio. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2021.** André Paes de Lima Soares e Isabelle Tavares Silva Santos, Uma análise da prática de qualidade de software em pequenas e médias empresas em relação a startups. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2021.** Victória de Paula Paiva Teresawa, “Seleção de espécies para a restauração florestal na Floresta Nacional de Carajás sob cenários de mudanças climáticas”. Master’s dissertation, Universidade Federal Rural da Amazônia (supervisor).
- 2020.** Alvaro Somensi Magnenti and Vitor Henrique Moreira de Souza, MonumApp - Aplicação para o reconhecimento de monumentos históricos em Belém. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2020.** Anne Beatriz Martins Goncalves. Weebbooks - Biblioteca e rede social para os amantes da leitura. Undergraduate project, Centro Universitário do Pará (supervisor).
- 2020.** Camila Fernandes Barra. Composição florística arbórea da Floresta Nacional do Saracátaquera. Master’s dissertation, Universidade Federal Rural da Amazônia (co-supervisor).
- 2018.** Letícia Porto Picanço. Rastreamento do câncer de colo do útero na Amazônia Ocidental. Undergraduate project, Universidade Estadual do Pará (co-supervisor).
- 2017.** André Luis Ferreira Hage. Seleção de espécies estruturantes para a restauração de passivos ambientais em áreas no Nordeste do Pará. Undergraduate project. Universidade Estadual do Pará (co-supervisor).