

RAKAN A. ZAHAWI

CHARLES DARWIN FOUNDATION, AVENIDA CHARLES DARWIN S/N, PUERTO AYORA, GALÁPAGOS, ECUADOR

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EDUCATION

2003 Ph.D. Plant Biology, University of Illinois at Urbana-Champaign.

1997 M.S. Plant Biology, University of Illinois at Urbana-Champaign.

1992 B.S. Botany, University of Texas at Austin.

Language Skills: Spanish, French, Arabic, some Italian.

RESEARCH INTERESTS

- Design and evaluation of cost-effective restoration strategies that facilitate or accelerate forest recovery in degraded habitats, particularly in the Neotropics
- Forest dynamics and plant succession in fragmented landscapes
- Vegetative propagation of tropical trees and their application in restoration
- Design and implementation of conservation initiatives in the Neotropics

PROFESSIONAL EXPERIENCE & APPOINTMENTS

2021 – present Executive Director. Charles Darwin Foundation, Puerto Ayora, Galápagos. Provide oversight and direction for all activities: long-term vision; research; management of departments and >100 staff; natural history collections; fundraising efforts.

2018 – present Cooperating Graduate Faculty (18-23); Affiliate Research & Graduate Faculty (23-). School of Life Sciences, University of Hawai'i at Mānoa.

2007 – 2025 Assistant (07-16) and Associate (16-21) Researcher; Adjunct Professor (21-25). Environmental Studies Department, University of California, Santa Cruz.

2017 – 2021 Director. Lyon Arboretum, University of Hawai'i at Mānoa. Provide oversight and direction for all activities including long-term vision; management of departmental units; plant collections; and engage in research, fundraising, and teaching.

2004 – 2016 Adjunct Faculty. Department of Biology, Duke University, North Carolina.

2006 – 2016 Director. Las Cruces Biological Station & Wilson Botanical Garden, Organization for Tropical Studies, San Vito, Costa Rica. Oversee all station and garden activities; foster research growth and develop long-term vision, fundraise, conduct research, teach (visiting courses), supervise station staff with >30 employees.

2014 – 2016 Visiting Professor. American University of Beirut (AUB), Lebanon. Taught two of the following upper division undergraduate courses per semester (Tropical Forest Ecology; Restoration Ecology; Plant Systematics). Assembled all courses taught.

2013 Co-Chair. Association for Tropical Biology and Conservation (ATBC) 50th Congressional meeting. 900 participants. San José, Costa Rica.

2008 Workshop coordinator. *Developing the Las Cruces Biological Station as a center for research on tropical forest conservation and restoration in multi-use landscapes*. 100 participants; 1 week. NSF-funded. Las Cruces, Costa Rica (Zahawi & Holl 2008).

2003 – 2005 Resident Professor. Organization for Tropical Studies, Costa Rica. One of 3 faculty responsible for co-teaching the Duke-OTS Undergraduate Semester Abroad Program, including design and oversight of student field research projects. Responsibilities also included management of course logistics.

2004 – 2006	<u>Coordinator Earthwatch volunteers.</u> Coto Brus County, Costa Rica. Supervision of Earthwatch groups to establish current long-term research. Three field seasons.
2003	<u>Botanical field assistant.</u> Illinois Natural History Survey, Champaign, Illinois. Vegetation surveys of permanent plots to monitor the effects of fire treatment on prairie and upland forest groves in Illinois.
2002 – 2003	<u>Assistant to herbarium curator.</u> Illinois Natural History Survey, Champaign, Illinois.
1999	Identify, process, mount, and label all incoming and outgoing plant specimens.
1997 – 1998	<u>Botanical field assistant.</u> New Mexico State University, Las Cruces, New Mexico. Vegetation surveys of permanent plots to monitor desertification at the Jornada Long-Term Ecological Research Station.
1994	<u>Botanical field assistant.</u> Universidad de San Carlos, Guatemala. Assisted in the collection of plant specimens with potential medicinal properties.
1992 – 1994	<u>Landscaper.</u> Native Plant Landscaping Co., Austin, Texas. Co-founded company to use flora of central Texas as an alternative to contemporary landscaping practices.

FELLOWSHIPS AND GRANTS

2025	COMON Foundation, Floreana Ecological Restoration Project, €1.2M.
2023	UH-Mānoa Provost supplemental funding to NSF-IRES (see below) \$100,000. Int. Research Experience for Students (IRES), National Science Foundation, \$298,926.
2020	Research Award, Ecology Cluster, National Science Foundation, \$247,109.
2018	Stanley Smith Horticultural Trust, \$15,000.
2017	World Wildlife Fund, <i>supplement</i> \$4,000. March Conservation Fund, \$10,000. World Wildlife Fund, \$16,460. REU Supplement for Ecology Cluster award, National Science Foundation, \$8,158.
2015	Stanley Smith Horticultural Trust, \$20,000. Field Station & Marine Labs Grant (FSML), National Science Foundation, \$186,297. Research Award, Ecology Cluster, National Science Foundation, \$400,000.
2014	CSBR Supplement, National Science Foundation, \$19,942.
2012	Biological Research Collections (CSBR), National Science Foundation, \$153,792.
2010	Stanley Smith Horticultural Trust, \$20,000. Field Station & Marine Labs Grant (FSML), National Science Foundation, \$149,405.
2009	Research Award, Ecology Cluster, National Science Foundation, \$333,992.
2007	Stanley Smith Horticultural Trust, \$20,000. Int. Research & Education Workshop, National Science Foundation, \$48,099. Field Station & Marine Labs Grant (FSML), National Science Foundation, \$146,164.
2006	Stanley Smith Horticultural Trust, \$20,000. Research Award, Earthwatch Institute, \$18,500.
2005	Research Award, Ecology Cluster, National Science Foundation, \$299,957. Research Award, Earthwatch Institute, \$18,500.
2004	Research Award, Earthwatch Institute, \$18,500.
2003	Summer Fellowship Award, Department of Plant Biology, U. Illinois, \$1,680.
2001	Clark Summer Fellowship Award, School of Life Sciences, U. Illinois, \$2,500. Research Board Award, Graduate College, U. Illinois, \$7,000.
2000	Doctoral Dissertation Improvement Grant, National Science Foundation, \$9,693.

- Organization for Tropical Studies Research Fellowship, \$3,000.
 Research Board Award, Graduate College, U. Illinois, \$16,386.
 1999 Dissertation Travel Grant, Graduate College, U. Illinois, \$4,530.
 Summer Research Fellowship, School of Integrative Biology, U. Illinois, \$2,000.
 Clark Research Support Grant, School of Life Sciences, U. Illinois, \$775.
 1996 Tinker Grant, Center for Latin American & Caribbean Studies, U. Illinois, \$1,400.
 Sigma Xi Research Society, \$475.
 1995 Summer Scholarship Award, Department of Plant Biology, U. Illinois, \$2,500.

PUBLICATIONS

- Chave, J., R.A. Zahawi, *and 300+ coauthors*. 2026. Tree diversity across major biomes in tropical America. *Nature*. *In preparation*.
- Werden, L.K, K.D. Holl, M. San José, F.H. Joyce, J.L Reid, R.J. Cole, J.A. Rosales, and R.A. Zahawi. 2026. The multi-decadal fingerprint of restoration treatments, environment, and surrounding landscape on tropical forest recovery. *In preparation*.
- Ceccarelli, V., R.A. Zahawi, *and 758 coauthors*. 2026. Tree hyper-dominance across tropical and subtropical America. *Communications Biology*. *In review*.
- Trujillo Miranda, A.L., D. Cantos, J. Karubian, L. Browne, R.A. Zahawi and L.S. Comita. 2026. Edge effects on palm seedling recruitment and survival: the interplay of species traits, local neighborhood and local landscape cover. *Journal of Ecology*. *In review*.
- Joyce, F.H., A.J. Kulikowski, R.J. Cole, J.A. Rosales, F. Oviedo-Brenes, R.A. Zahawi, and K.D. Holl. 2026. Tree recruitment dynamics over two decades of tropical forest restoration. *npj Biodiversity*. *In review*.
- Cole, R.J., G. Quirós-Cedeño, R.A. Zahawi, L. Briggs, and L.K. Werden. 2026. Soil amendments for scaling assisted forest restoration on degraded tropical lands. *Restoration Ecology*. *In review*.
- Aparicio Vera, S., C. Aulestia, F. Castillo, J. Karubian, R.A. Zahawi, S. Entrekin, R. Viani and J.L. Reid. 2026. Assay of native Chocoan trees for their capacity to regenerate from large cuttings. *Restoration Ecology*. *In review*.
- Zahawi, R.A. and L.K. Werden. 2026. Identifying ecologically relevant structural metrics from consumer-grade drone imagery for monitoring long-term forest recovery. *Ecological Informatics*. *In review*.
- Joyce, F.H., R.A. Zahawi, L.K. Werden, S. Zarges, M.P. Ferreira, A.M. Almeyda Zambrano, E.N. Broadbent, J.A. Rosales, and K.D. Holl. 2026. Aboveground biomass accumulation over two decades across a gradient of tropical forest restoration interventions. *Global Change Biology*. <https://doi.org/10.1111/gcb.71054>.
- Trujillo Miranda, A.L., A. Tame-Ibáñez, D. Cantos, J. Karubian, L. Browne, N. González, R.A. Zahawi and L.S. Comita. 2026. Landscape forest cover, not edge contrast, modulates edge effects on palm diversity. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.70432>.
- San-José, M., L.K. Werden, K.D. Holl, J.A. Rosales, and R.A. Zahawi. 2026. Restoration fosters later-successional seed rain, yet large seeds remain scarce after two decades. *Oikos*. <https://doi.org/10.1002/oik.11914>.

- Jones, S.H., D. Franco-Mena, D. Zambrano Cantos, J.C. Loor Velez, F. Velásquez-Espín, J.M. Guayasamin, and R.A. Zahawi. 2026. Shade cacao plantations provide little conservation benefit for forest-dependent amphibians in the Ecuadorian Chocó. *Biotropica*. <https://doi.org/10.1111/btp.70196>.
- Schubert, S.C., R.A. Zahawi, F. Oviedo-Brenes, J.A. Rosales, and K.D. Holl. 2026. Restoration method influences spatial patterns of tree seedling and sapling recruitment in the second decade of tropical forest recovery. *Applied Vegetation Science*. <https://doi.org/10.1111/avsc.70058>.
- Carrasco-Rueda, F., C. Cardelús R.A. Zahawi, and 21 co-authors. 2025. ATBC Code of Conduct. *Biotropica*. <https://doi.org/10.1111/btp.70090>.
- Brodie, J.F., F. Carrasco-Rueda.... R.A. Zahawi, and 23 co-authors. 2025. ATBC Code of Ethics. *Biotropica*. <https://doi.org/10.1111/btp.70091>.
- Joyce, F.H., R.A. Zahawi, and K.D. Holl. 2025. Lower-intensity restoration interventions drive greater seedling establishment for later-successional tree species in the second decade of tropical forest recovery. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.70116>.
- Ruiz, G. M., A. Brante, J. T. Carlton, A. L. Freestone, I. Keith, ...R.A. Zahawi, and 60 others. 2025. COMBINA: coastal ocean marine biosecurity international network of the Americas. *Biological Invasions*. <https://doi.org/10.1007/s10530-025-03663-9>.
- Lackmann, J.A., E.P. Fernandez-Barrancos, R.A. Zahawi, and L. Aldrich-Wolfe. 2025. Restoration plantations accelerate recovery of fungal communities from dead woody debris in southern Costa Rica. *Global Ecology and Conservation*. <https://doi.org/10.1016/j.gecco.2025.e03487>.
- Schubert, S.C., R.A. Zahawi, F. Oviedo-Brenes, J.A. Rosales, and K.D. Holl. 2024. Active restoration increases tree species richness and recruitment of large-seeded taxa after 16-18 years. *Ecological Applications*. <https://doi.org/10.1002/eap.3053>.
- Werden, L.K., R.J. Cole, K. Schöenhofer, K.D. Holl, R.A. Zahawi, C. Averill, D. Schweizer, J.C. Calvo-Alvarado, D. Hamilton, F.H. Joyce, M. San-José, F. Hofhansl, L. Briggs, D. Rodríguez, J. Tingle, F. Chiriboga, E.N. Broadbent, G.J. Quirós-Cedeño, and T.W. Crowther. 2024. Assessing innovations to improve forest restoration outcomes at large scale. *One Earth*. <https://doi.org/10.1016/j.oneear.2024.07.011>.
- Joyce, F.H., B.M. Ramos, R.A. Zahawi, and K.D. Holl. 2024. Vertebrate seed predation limits recruitment of later-successional species in tropical forest restoration sites. *Biotropica*. <https://doi.org/10.1111/btp.13381>.
- Holl, K.D. J.L. Reid, R.A. Zahawi, L. Pugliese de Siquiera, and P.H.S. Brancalion. 2024. A call for practical spatially patterned restoration methods. *Restoration Ecology*. <https://doi.org/10.1111/rec.14266>.
- Jones, S.H., D. Franco-Mena, D. Zambrano Cantos, J.C. Loor Velez, C. Aulestia, R.A. Zahawi, and J.M. Guayasamin. 2024. Range expansion for the Critically Endangered Bilsa white-chested frog (*Dendrobatidae: Leucostethus bilsa*), demonstrating the importance of small forest reserves in the Ecuadorian Chocó. *Check List*. <https://doi.org/10.15560/20.4.853>.
- Joyce, F.H., J.A. Rosales, K.D. Holl, R.A. Zahawi, A. Bui, and J.L. Reid. 2024. Active restoration facilitates recovery of tropical forest bird assemblages over two decades. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2024.110593>.
- Schweizer, D., R.J. Cole, L.K. Werden, G. Quiros, D. Rodriguez, K. Navarro, J.M. Esquivel, S. Max, F.E. Chiriboga, R.A. Zahawi, K.D. Holl, and T.W. Crowther. 2024. Review and assessment of

- smartphone apps for forest restoration monitoring. *Restoration Ecology*.
<https://doi.org/10.1111/rec.14136>.
- Ortega, M.A., L. Cayuela, D.M. Griffith, A. Camacho, I.M. Coronado, R.F. del Castillo, B.L. Figueroa, W. Fonseca, C. Garibaldi, D.L. Kelly, S.G. Letcher, J.A. Meave, L. Merino-Martín, V.H. Meza, S. Ochoa-Gaona, M. Olvera-Vargas, N. Ramírez-Marcial, F.J. Tun-Dzul, M. Valdez-Hernández, E. Velázquez, D.A. White, G. Williams-Linera, R.A. Zahawi, and J. Muñoz. 2024. Climate change increases threat to plant diversity in tropical forests of Central America and southern Mexico. *PLoS One*. <https://doi.org/10.1371/journal.pone.0297840>.
- Blake, S., F. Cabrera, G. Rivas-Torres, S.L. Deem, A. Nieto-Claudin, R.A. Zahawi, and G. Bastille-Rousseau. 2024. Invasion by *Cedrela odorata* threatens long distance migration of Galapagos tortoises. *Ecology and Evolution*. <https://doi.org/10.1002/ece3.10994>.
- Tucker, N.I.J., S. Elliott, K.D. Holl, and R.A. Zahawi. 2023. Restoring tropical forests: Lessons learned from case studies on three continents *In* Florentine Singarayer, Gibson-Roy, Paul, and Dixon, Kingsley and Broadhurst Linda (Eds.) *Ecological Restoration: Moving Forward Using Lessons Learned*. Publisher: Springer Nature Switzerland AG 2023. ISBN 978-3-031-25411-6 ISBN 978-3-031-25412-3 (eBook). <https://doi.org/10.1007/978-3-031-25412-3>.
- Holl, K.D. and R.A. Zahawi. 2023. Restoring tropical forests: Is planting clusters of trees a cost-effective and ecologically-sound strategy to restore tropical forest? OCELOTS [Online Content for Experiential Learning of Tropical Systems]. QUBES Educational Resources. <http://dx.doi.org/10.25334/FOWZ-VR28>.
- Kulikowski II, A.J., R.A. Zahawi, L.K. Werden, K. Zhu, and K.D. Holl. 2022. Restoration interventions mediate tropical tree recruitment dynamics over time. *Philosophical Transactions of the Royal Society B*. <https://doi.org/10.1098/rstb.2021.0077>.
- Werden, L.K., S. Zarges, K.D. Holl, C.L. Oliver, F. Oviedo-Brenes, J.A. Rosales, and R.A. Zahawi. 2022. Assisted restoration interventions drive functional recovery of tropical wet forest tree communities. *Frontiers in Forests and Global Change*. <https://doi.org/10.3389/ffgc.2022.935011>.
- San-José, M., L.K. Werden, F. Joyce, J. Leighton Reid, K.D. Holl, and R.A. Zahawi. 2022. Effects of landscape structure on restoration success in tropical premontane forest. *Scientific Reports*. 12:13452. <https://doi.org/10.1038/s41598-022-16542-3>.
- Jones, A.F., A.S. Hadley, K. Bonner, R.A. Zahawi, W.D. Robinson, U.G. Kormann, and M.G. Betts. 2022. Elevated plant inbreeding in *Heliconia tortuosa* is determined by tropical forest stand age, isolation, and loss of hummingbird functional diversity. *Molecular Ecology*. <http://doi.org/10.1111/mec.16607>.
- Kulikowski II, A.J., R.A. Zahawi, and K.D. Holl. 2022. Effects of insect herbivory on tropical seedling mortality in restored and remnant forest. *Restoration Ecology*. <http://dx.doi.org/10.1111/rec.13467>.
- Reid, J.L., R.A. Zahawi, D.A. Zárrate-Chary, J.A. Rosales, K.D. Holl, and U.G. Kormann. 2021. Multi-scale habitat selection of key frugivores predicts recruitment of large-seeded trees in tropical forest restoration. *Ecosphere*. <https://doi.org/10.1002/ecs2.3868>.
- Díaz-Páez, M., L.K. Werden, J. Usuga, R.A. Zahawi, and J. Polanía. 2021. Vegetative propagation of native tree species: an alternative restoration strategy for the tropical Andes. *Restoration Ecology*. <http://doi.org/10.1111/rec.13611>.

- Zahawi, R.A., L.K. Werden, M. San-José, J. Flores, J.A. Rosales, and K.D. Holl. 2021. Proximity and abundance of mother trees affects recruitment patterns in a long-term tropical forest restoration study. *Ecography*. <https://doi.org/10.1111/ecog.05907>.
- San-José, M., L.K. Werden, C.J. Peterson, F. Oviedo-Brenes, and R.A. Zahawi. 2021. Large tree mortality leads to major above-ground biomass decline in a tropical forest reserve. *Oecologia*. <https://doi.org/10.1007/s00442-021-05048-w>.
- Werden, L.K., K.D. Holl, J.M. Chaves-Fallas, F. Oviedo-Brenes, J.A. Rosales, and R.A. Zahawi. 2021. Degree of intervention affects interannual and within-plot heterogeneity of seed arrival in tropical forest restoration. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.13907>.
- Sato, A., T. Ticktin, L. Alapai, E. von Allmen, W. Brawner, Y. Carter, K. Carter, R. Keakealani, A. Medeiros, and R.A. Zahawi. 2021. Biocultural restoration of Hawaiian tropical dry forests. *Pacific Conservation Biology*. <https://doi.org/10.1071/PC20084>.
- Wilson, S.J., N.S. Alexandre, K.D. Holl, J.L. Reid, R.A. Zahawi, D. Celentano, S.S. Sprenkle Hyppolite, and L. Werden. 2021. Applied nucleation restoration guide for tropical forests. *Conservation International*. <https://www.conservation.org/research/applied-nucleation-report>.
- Cole, R.J., and R.A. Zahawi. 2021. Coffee pulp accelerates early tropical forest succession on old fields. *Ecological Solutions and Evidence*. <https://doi.org/10.1002/2688-8319.12054>.
- Fagan, M.E., J.L. Reid, and R.A. Zahawi. 2020. RE: No Bonn Challenge restoration commitment exceeds a country's potential area. *Science e-letter*.
- Zahawi, R.A., J.L. Reid, and M.E. Fagan. 2020. Potential impacts of COVID-19 on tropical forest recovery. *Biotropica*. <https://doi.org/10.1111/btp.12851>.
- Powers, J.S., E.M. Bruna, A. Campos-Arceiz, P. Delamonica Sampaio, S.J. DeWalt, L.G. Lohmann, and R.A. Zahawi. 2020. Tropical biology in the time of the COVID-19 pandemic. *Biotropica*. <https://doi.org/10.1111/btp.12802>.
- Holl, K.D., J.L. Reid, R.J. Cole, F. Oviedo-Brenes, J.A. Rosales, and R.A. Zahawi. 2020. Applied nucleation facilitates tropical forest recovery: lessons learned from a 15-year study. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.13684>.
- Werden, L.K., K.D. Holl, J.A. Rosales, J.M. Sylvester, and R.A. Zahawi. 2020. Effects of dispersal- and niche-based factors on tree recruitment in tropical wet forest restoration. *Ecological Applications*. DOI: <https://doi.org/10.1002/eap.2139>.
- Werden, L.K., N.C. Sugii, L. Weisenberger, M.J. Keir, G. Koob, and R.A. Zahawi. 2020. *Ex-situ* conservation of threatened plants in island biodiversity hotspots: a case study from Hawai'i. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2020.108435>.
- Fagan, M.E., J.L. Reid, M.B. Holland, J.G. Drew, and R.A. Zahawi. 2020. How feasible are global forest restoration commitments? *Conservation Letters*. <https://doi.org/10.1111/conl.12700>.
- Fagan, M.E., J.L. Reid, and R.A. Zahawi. 2019. Forests: optimizing carbon uptake. *Nature* 570:446.
- Cadavid-Florez, L., J. Laborde, and R.A. Zahawi. 2019. Using landscape composition and configuration metrics as indicators of woody vegetation attributes in tropical pastures. *Ecological Indicators*. DOI: <https://doi.org/10.1016/j.ecolind.2019.01.072>.

- Reid, J.L., M.E. Fagan, J. Lucas, J. Slaughter, and R.A. Zahawi. 2018. The ephemerality of regenerating secondary forests in southern Costa Rica. *Conservation Letters*. DOI: <https://doi.org/10.1111/conl.12607>.
- Zahawi, R.A. and J.L. Reid. 2018. Tropical secondary forest enrichment with giant stakes of keystone species. *PECON*. <https://doi.org/10.1016/j.pecon.2018.06.001>.
- Holl, K.D., J.L. Reid, F. Oviedo-Brenes, A.J. Kulikowski, and R.A. Zahawi. 2018. Rules of thumb for predicting tropical forest recovery. *Applied Vegetation Science*. <https://doi.org/10.1111/avsc.12394>.
- Reid, J.L., M.E. Fagan, and R.A. Zahawi. 2018. Positive site selection bias in meta-analyses comparing natural regeneration to active forest restoration. *Science Advances*. <https://doi.org/10.1126/sciadv.aas9143>.
- Holl, K.D. and R.A. Zahawi. 2018. Applied nucleation is a straightforward, cost-effective restoration approach: reply to Ramírez-Soto et al. (2018). *Restoration Ecology*. <https://doi.org/10.1111/rec.12701>.
- Lanuza, O., F. Casanoves, D. Delgado, D. Celentano, R.A. Zahawi, & K.D. Holl. 2018. Litter and nutrient dynamics shift in tropical restoration sites after a decade of recovery. *Biotropica*. <https://doi.org/10.1111/btp.12533>.
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- Reid, J.L., S.J. Wilson, G.S. Bloomfield, M.E. Cattau, M.E. Fagan, K.D. Holl, and R.A. Zahawi. 2017. How long do restored ecosystems persist? *Annals of the Missouri Botanical Garden* 102:258-265.
- Holl, K.D., J. M. Chaves-Fallas, F. Oviedo-Brenes, J.L. Reid, and R.A. Zahawi. 2017. Tropical forest restoration strategies affect biodiversity recovery more strongly than does landscape forest cover. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.12814>.
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- Reid, J.L., K.D. Holl, and R.A. Zahawi. 2015. Seed dispersal limitations shift over time in tropical forest restoration. *Ecological Applications* 25:1072-1082.
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- Zahawi, R.A., J.P. Dandois, K.D. Holl, D. Nadwodny, J.L. Reid, and E.C. Ellis. 2015. Using lightweight unmanned aerial vehicles to monitor tropical forest recovery. *Biological Conservation* 186:287-295.
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- Reid, J.L., E.K. Holste, K.D. Holl, and R.A. Zahawi. 2014. Does any bat box facilitate forest recovery? – Reply to Kelm. *Biological Conservation* 170:330-331.
- Holl, K.D. and R.A. Zahawi. 2014. Factors explaining variability in woody above-ground biomass accumulation in restored tropical forest. *Forest Ecology and Management* 319:36-43.
- Holl, K.D., V. M. Stout, J.L. Reid, and R.A. Zahawi. 2013. Does applied nucleation enhance habitat heterogeneity and tree diversity in restored tropical pasture? *Oecologia* 173:569-578.
- Reid, J.L., E.K. Holste, and R.A. Zahawi. 2013. Artificial bat roosts did not accelerate forest recovery in abandoned pastures in southern Costa Rica. *Biological Conservation* 167:9-16.
- Zahawi, R.A., K.D. Holl, R.J. Cole, and J.L. Reid. 2013. Testing applied nucleation as a restoration strategy to facilitate tropical forest recovery. *Journal of Applied Ecology* 50: 88-96.
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- research and conservation in the tropics. *In* J. Dengler, J. Oldeland, F. Jansen, M. Chytry, J. Ewald, M. Finckh, F. Glöckler, G. Lopez-Gonzalez, R. K. Peet, J. H. J. Schaminée (eds). Vegetation databases for the 21st century. *Biodiversity & Ecology* 4: 211–224.
- Reid, J.L., J.B.C. Harris, and R.A. Zahawi. 2012. Avian habitat preference in tropical forest restoration in southern Costa Rica. *Biotropica* 44:350-359.
- Lindell, C.A., R.J. Cole, K.D. Holl, and R.A. Zahawi. 2012. Migratory bird species in young tropical forest restoration sites: effects of vegetation height, planting design, and season. *Bird Conservation International* 22:94-105.
- Celentano, D., R.A. Zahawi, B. Finegan, F. Casanoves, R. Ostertag, R.J. Cole, and K.D. Holl. 2011. Restauración ecológica de bosques tropicales en Costa Rica: efecto de diferentes modelos en la producción, acumulación y descomposición de hojarasca. *Revista de Biología Tropical* 59:1323-1336.
- Holl, K.D., R.A. Zahawi, R.J. Cole, R. Ostertag, and S. Cordell. 2011. Planting seedlings in plantations versus tree islands as a large-scale tropical forest restoration strategy. *Restoration Ecology* 19: 470-479.
- Celentano, D., R.A. Zahawi, B. Finegan, R. Ostertag, R.J. Cole, and K.D. Holl. 2011. Litterfall dynamics and nutrient cycling under different strategies for tropical forest restoration. *Biotropica* 43:279-287.
- Cole, R., K.D. Holl, C.L. Keene, and R.A. Zahawi. 2011. Direct seeding of late successional trees to restore tropical montane forest. *Forest Ecology and Management* 261:1590-1597.
- Zahawi, R.A. and K.D. Holl. 2010. Bridging the gap between scientific research and tropical forest restoration: a multi-faceted research, conservation, education, and outreach program in southern Costa Rica. *Ecological Restoration* 28:143-146.
- Sady, G.C., K.D. Holl, R.A. Zahawi, and R.J. Cole. 2010. Germination and survival of four early successional tree species in tropical montane forest restoration. *Ecological Restoration* 28:121-124.
- Cole, R.J., K.D. Holl, and R.A. Zahawi. 2010. Seed rain under different restoration strategies in a complex tropical agricultural landscape. *Ecological Applications* 20:1255-1269.
- Morrison, E., C.A. Lindell, K.D. Holl, and R.A. Zahawi. 2010. Patch-size effects on avian foraging behaviour: implications for tropical forest restoration design. *Journal of Applied Ecology* 47:130-138.
- Zahawi, R.A. and K.D. Holl. 2009. Comparing the performance of tree stakes and seedlings to restore abandoned tropical pastures. *Restoration Ecology* 17:854-864.
- Fink, R.D., C.A. Lindell, E.B. Morrison, R.A. Zahawi and K.D. Holl. 2009. Patch size and tree species influence the number and duration of bird visits in restoration plots in southern Costa Rica. *Restoration Ecology* 17:479-486.
- Zahawi, R.A. and K.D. Holl. 2008. Tropical forest restoration research opportunities in southern Costa Rica. *Ecological Restoration* 26:299-300.
- Reid, J.L., J.B.C. Harris, L.J. Martin, J.R. Barnett, and R.A. Zahawi. 2008. Distribution and abundance of nearctic-neotropical songbird migrants in a forest restoration site in southern Costa Rica. *Journal of Tropical Ecology* 24:685-688.

- Zahawi, R.A. 2008. Instant trees: using giant vegetative stakes in tropical forest restoration. *Forest Ecology and Management* 255:3013-3016.
- Schlawin, J.R. and R.A. Zahawi. 2008. 'Nucleating' succession in recovering neotropical wet forests: the legacy of remnant trees. *Journal of Vegetation Science* 19:485-492.
- Goldsmith, G.R. and R.A. Zahawi. 2007. The function of stilt roots in the growth strategy of *Socratea exorrhiza* (Arecaceae) at two neotropical sites. *Revista de Biología Tropical* 55:787-793.
- García-C.J.M. and R.A. Zahawi. 2006. Predation by a Blue-crowned motmot on a hummingbird. *The Wilson Bulletin* 118:261-263.
- Zahawi, R.A. and C.K. Augspurger. 2006. Tropical forest restoration: tree islands as recruitment foci in degraded lands of Honduras. *Ecological Applications* 16:464-478.
- Zahawi, R.A. 2005. Establishment and growth of living fence species: an overlooked tool for the restoration of degraded areas in the tropics. *Restoration Ecology* 13:92-102.
- Zahawi, R.A. and C.K. Augspurger. 1999. Early plant succession in abandoned pastures in Ecuador. *Biotropica* 31:540-552.

UNDERGRADUATE PUBLICATIONS

- Gonzalez-Sulser, A. and J. Thompson. 2004. Defense efficiency of *Acacia collinsii* by *Pseudomyrmex spinicola* and *Pseudomyrmex flavicornis*. *PennScience* 3(1):14-16.

TEACHING EXPERIENCE

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|-------------|--|
| 2006 – 2016 | Guest lecturer for visiting courses, Las Cruces Biological Station. |
| 2014 – 2016 | Visiting Professor, American University of Beirut, Lebanon [semester-long courses: Plant Systematics, Restoration Ecology, Tropical Forest Ecology]. Four semesters. |
| 2011 | Co-taught and developed curriculum for 9-month naturalist guide course, Las Cruces Biological Station. |
| 2003 – 2005 | Professor, Organization for Tropical Studies, Undergraduate Semester Abroad Program. Co-taught 5 semesters [Fundamentals of Tropical Biology; Field Research in Tropical Biology; Environmental Science and Policy]. |
| 1995 – 2003 | Teaching Assistant, University of Illinois [Intro Plant Biology (2 Semesters); Plant Systematics (4 Semesters); Evolutionary Survey of the Plant Kingdom (1 Semester)]. |

AWARDS – Research and Teaching

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|-------------|---|
| 2017 | Society for Ecological Restoration Theodore M. Sperry Award in recognition of <i>a significant and enduring contribution to advancing restoration science or practice through the development of new methods, tools, techniques or strategies</i> . |
| 2016 | Editor's Award for "Tropical forest restoration enriches vascular epiphyte recovery"; article published in <i>Applied Vegetation Science</i> . |
| 2015 | Elsevier Publisher's Atlas Research Award for "Using lightweight unmanned aerial vehicles to monitor tropical forest recovery"; article published in <i>Biological Conservation</i> . |
| 2014 – 2016 | Ranked excellent by students in following courses (AUB): <i>Restoration Ecology</i> (3 semesters); <i>Tropical Ecology</i> (3 semesters); <i>Vascular Plants</i> (2 semesters). |

2002	University of Illinois Department of Plant Biology Teaching Award.
1995 – 2003	Ranked excellent by students in the following courses (Illinois): <i>Introductory Plant Biology</i> (2 semesters); <i>Plant Systematics</i> (3 semesters).

SERVICE AND DEVELOPMENT

Advisory Roles - *students*

2022 – <i>present</i>	Committee for Alma Trujillo, Ph.D. candidate at Yale University.
2021 – <i>present</i>	Chair, committee for Holden Jones, Ph.D. candidate at University of Hawai'i.
2020 – 2024	Committee for Francis Joyce, Ph.D. candidate at University of California, Santa Cruz.
2020 – <i>incomp</i>	Committee for Fiorella Durán, M.Sc. candidate at U. Nacional de Costa Rica.
2019 – 2025	Committee for Julia Douglas, Ph.D. candidate at University of Hawai'i.
2019 – 2022	Committee for Zoe Hastings, Ph.D. graduate at University of Hawai'i.
2019 – 2022	Committee for Kelsey Brock, Ph.D. graduate at University of Hawai'i.
2019 – 2020	Committee for Aimee Sato, M.Sc. graduate at University of Hawai'i.
2012 – 2020	Committee for Liliana Cadavid Flórez. Ph.D. graduate, Instituto de Ecología (INECOL) A.C., Xalapa, Mexico.
2017 – 2019	Committee for Pia Ruisi-Besares, M.Sc. graduate at University of Hawai'i.
2017 – 2019	Committee for Monica Diaz, M.Sc. graduate at Universidad Nacional de Colombia.
2016 – 2017	Research experience mentor (Costa Rica) and committee for Alma Trujillo. M.Sc. graduate from the Instituto de Ecología (INECOL) A.C., Xalapa, Veracruz, Mexico.
2014 – 2017	Committee for Leland Werden, Ph.D. graduate, University of Minnesota.
2014 – 2017	Committee for Marcela Navarro, M.Sc. graduate from University of Costa Rica.
2014 – 2016	Committee for Estefania Fernandez, M.Sc. graduate, University of Montpellier, France.
2006 – 2016	Course advisor to the NSF-funded NAPIRE (Native American and Pacific Islander Research Experience) program based at Las Cruces, Costa Rica.
2012 – 2013	Research experience and thesis advisor for Corinna Eckert, University of Applied Sciences Eberswalde / HNEE Eberswalde, Germany.
2009 – 2013	Committee for Leighton J. Reid. Ph.D. graduate, University of California, Santa Cruz.
2008 – 2010	Committee for Danielle C. Celentano. M.Sc. graduate in Biology at CATIE (Centro Agronómico Tropical de Investigación y Enseñanza), Costa Rica.
2004	Research Experience for Undergraduates (NSF-REU) mentor for Justin Schlawin at La Selva Biological Station, Puerto Viejo, Costa Rica.

Advisory Roles - *other*

2022 – <i>present</i>	Associate Editor, <i>Frontiers in Forests and Global Change</i> .
2019 – <i>present</i>	Councilor, Undergraduate Research Opportunities Program, UH Mānoa.
2017 – <i>present</i>	Subject Editor, <i>Biotropica</i> .
2019 – 2023	Secretary, Association for Tropical Biology and Conservation (ATBC).
2017 – 2022	Chair, Neotropical Chapter Association for Tropical Biology and Conservation (ATBC).
2018 – 2021	Councilor, Laukahi Hawai'i Plant Conservation Network.

2016 – 2018 Councilor, Association for Tropical Biology and Conservation (ATBC).
 2011 – 2016 Supervisory Committee, 2nd US – Costa Rican Debt for Nature swap.
 2007 – 2016 Science Committee *ex-officio* member Organization for Tropical Studies.
 2010 – 2015 Advisory Committee, Amistosa (Amistad – Osa) Biological Corridor, Costa Rica.
 12; 13; 18; 20; 21 National Science Foundation – Biology Division Advisory Panelist.
 2011 – 2012 Restoration Ecology Consultant, ICE – Costa Rican National Electricity Company.

Society Memberships

1997 – *present* Association for Tropical Biology and Conservation (ATBC).
 2003 – *present* Ecological Society of America (ESA).
 1995 – *present* Society for Ecological Restoration (SER).
 2006 – *present* San Vito Bird Club, Honorary Member, San Vito, Costa Rica.

Proposal and Manuscript Reviews

Acta Oecologica, African Journal of Ecology, Agriculture Ecosystems & Environment, Agroforestry Systems, Applied Vegetation Science, Austral Ecology, Biodiversity & Conservation, Biological Journal of the Linnaean Society, Biotropica, Bosque, Brazilian Journal of Botany, Canadian Journal of Forest Research, Chilean National Science & Technology Commission, Conservation Science and Practice, Czech Science Foundation, Ecography, Ecological Applications, Ecological Economics, Ecological Engineering, Ecological Indicators, Ecological Restoration, Ecology, Ecology & Evolution, Ecology Letters, Ecosistemas, Environmental Monitoring & Assessment, Forest Ecology & Management, Frontiers in Ecology & the Environment, Frontiers in Forests and Global Change, Interface Focus, International Journal of Applied Earth Observations & Geoinformation, International Journal of Ecology, Journal of Applied Ecology, Journal of Arid Environments, Journal of Ecology, Journal of Environmental Management, Journal of Plant Ecology, Journal of Tropical Ecology, Journal of Vegetation Science, Land Degradation & Development, Landscape Ecology, Landscape and Urban Planning, National Science Foundation, Natural Environment Research Council, Nature Ecology & Evolution, Natureza & Conservação, Netherlands Organization for Scientific Research, PeerJ, People & Nature, Perspectives in Ecology & Conservation, Philosophical Transactions B, Plant Biology, PLoS One, Proceedings B, Restoration Ecology, Revista de Biología Tropical, Science, Science of Nature (Naturwissenschaften), Science for the Total Environment, Scientific Reports, Sustainability, Trends in Ecology and Evolution, Tropical Conservation Science, Tropical Ecology, Universitas Scientiarum.

Invited Symposia and Workshops (selected)

The Role of Restoration in Preserving Plant Diversity. Invited seminar speaker. 9-11 April 2025. Virginia Tech University, Blacksburg, Virginia.

Challenges to Conservation in the Tropics. Invited seminar speaker. 19-20 April 2023. Tulane University, New Orleans, Louisiana.

43rd Darwin Festival invited 'Founder's Lecture' speaker 8 February 2022. 'The role of restoration in preserving plant biodiversity'. Virtual platform hosted by Salem State University, Massachusetts.

Simposio de Investigación: Ciencia y Desarrollo Comunitario. Invited speaker 27 October 2021. Virtual platform hosted by Area de Conservación de La Amistad Pacífico, Costa Rica.

Reforestation for Biodiversity, Carbon Capture, and Livelihoods Conference. Invited speaker and panelist 24-26 February 2021. Virtual platform hosted by Kew Royal Botanic Gardens and Botanic Gardens Conservation International, UK.

26th International Society of Tropical Foresters Conference. Restoration for what and for whom? Invited plenary panelist 30 Jan-1 Feb, 2020. Yale U., New Haven, Connecticut.

Hawaii Museum Association. Directors Roundtable. 11-12 April, 2019, Bishop Museum, Honolulu, Hawaii.

4th Xishuangbanna International Symposium. Saving all the plants in a changing world. Plenary speaker. 3-6 January, 2019. Xishuangbanna Tropical Botanical Garden (XTBG), China.

Scaling up: Using small-scale restoration to plan large-scale resilience. Ecological Society of America Symposium. Invited speaker. 4-9 August, 2018. New Orleans, Louisiana.

Hawaii Museum Association. Directors Roundtable. 4-5 May, 2018, East-West Center, Honolulu, Hawaii.

Nahelehele Dryland Forest Symposium. Keynote speaker. 9 February, 2018. Kona, Hawaii.

FAO Forest and Landscape Restoration Mechanism. Webinar. 30 November, 2017.

Conservation and Restoration Course. Invited speaker. 5-8 June, 2017. Universidad Nacional de Colombia – Medellín.

V Congreso Estudiantil Colombiano de Ciencias Forestales. Invited speaker. 28-30 July, 2016. Universidad Nacional de Colombia – Medellín.

Conservation and Restoration Course. Invited speaker. 21-30 May, 2016. Universidad Nacional de Colombia – Medellín.

Monitoring forest restoration. Environmental Leadership & Training Initiative, Yale School of Forestry and Environmental Studies. Invited speaker. 27-29 Nov, 2015. Manila, Philippines.

Encontro de Morungaba sobre a Mata Atlântida do Sul da Bahia. Invited speaker. 7-10 May, 2015. Morungaba, Brazil.

Innovative practices in rewilding tropical ecosystems workshop. Invited speaker. 23-25 January, 2015. Conservación Osa, Piro Research Station, Costa Rica.

3rd Xishuangbanna International Symposium. Botanical gardens and climate change. Plenary speaker. 13-16 January, 2014. Xishuangbanna Tropical Botanical Garden (XTBG), China.

Invited seminar speaker. 13-18 September, 2013. University of Georgia, Athens.

EcoSummit Congress. Invited symposium speaker. Long-term ecological research and tropical field stations. Columbus, Ohio 1-5 October, 2012.

VI Student Colloquium. Invited speaker. Ecology of tropical forests. 6-8 October, 2011. Institute of Ecology, Xalapa, Mexico.

BIOTREE-NET. Consolidation of Central American forest inventories in a single database to promote regional research and conservation initiatives. 23-25 March, 2010. Granada, Spain; 27 May – 3 June, 2012, Panama City, Panama.

Invited seminar speaker. 27 September, 2010. University of California, Santa Cruz.

Workshop participant “Neotropical secondary forest regeneration: Integrating ecological processes across multiple scales” 27-31 October, 2009. Morelia, Mexico.

ABSTRACTS AT SCIENTIFIC MEETINGS (*selected*)

- Zahawi, R.A. 2025. Threats and challenges in the Galapagos Islands with a view to long-term conservation. ATBC, Oaxaca, Mexico.
- Schubert, S.C., R.A. Zahawi, F. Oviedo-Brenes, and K.D. Holl. 2023. Tree recruitment patterns across a gradient of tropical forest restoration intervention after 18 years. ATBC Coimbatore, India.
- Werden, L.K., K.D. Holl, and R.A. Zahawi. 2019. Effects of dispersal- and niche-based factors on tree recruitment in tropical wet forest restoration. ATBC Antananarivo, Madagascar.
- Zahawi, R.A. and J.L. Reid. 2018. Tropical secondary forest enrichment using giant stakes of keystone figs. ATBC, Kuching, Malaysia.
- Reid, J.L., M.E. Fagan, M.E. Cattau, and R.A. Zahawi. 2017. The ephemerality of secondary forests in southern Costa Rica. SER, Foz du Iguasu, Brazil.
- Zahawi, R.A., F. Oviedo-Brenes, G. Duran, U. Kormann, and C.J. Peterson. 2017. Large-scale shifts in community composition and biomass loss in a forest fragment after 40 years. ATBC, Mexico.
- Mohan, J., S. Khan, M. Machmuller, P. Frankson, and R.A. Zahawi. 2016. Potential resilience of low-latitude ecosystems to climate change – how much and how long? AGU, San Francisco.
- Zahawi, R.A., J.P. Dandois, K.D. Holl, D. Nadwodny, J.L. Reid, and E.C. Ellis. 2015. Using lightweight unmanned aerial vehicles to monitor tropical forest recovery. ATBC, Hawai'i.
- Zahawi R.A., C. Eckert, L. Schwanitz, M. Chaves, and K.D. Holl. 2013. Effect of restoration treatment, parent tree, and site on tropical forest tree seedling growth. SER Madison, WI.
- Reid, J.L., E.K. Holste, and R.A. Zahawi. 2011. Artificial bat roosts: a viable tool for tropical forest restoration? SER, Merida, Mexico.
- Zahawi, R.A., K.D. Holl, R.J. Cole, R. Ostertag, and S. Cordell. 2009. Growth and development of seedlings planted in plantations and tree islands to facilitate tropical forest recovery. ESA Albuquerque, NM.
- Cole, R.J., K.D. Holl, and R.A. Zahawi. 2009. Seed dispersal to tree islands planted to restore tropical forest in a complex agricultural landscape. ESA Albuquerque, NM.
- Lindell, C.A., R.A. Zahawi, R.J. Cole and K.D. Holl. 2008. Planting design and time since planting influence use of tropical restoration sites by neotropical migrant birds. ESA Milwaukee, WI.
- Zahawi R.A. and K.D. Holl. 2007. An ecological and economic comparison of living fence species and seedlings in tropical forest restoration. ESA/SER San José, CA.
- Zahawi, R.A. 2006. Tropical pasture restoration: tree islands as recruitment foci in degraded lands in Honduras. 1) ESA conference: Ecology in an Era of Globalization, Merida, Mexico. 2) LTER All Scientists, Estes Park, Colorado.
- Zahawi, R.A. and C.K. Augspurger. 2002. ‘Living fence’ species as forest regeneration foci in abandoned pastures in Honduras. ESA/SER, Tucson, AZ.
- Zahawi, R. A. 2001. El poder de islas de árboles como focos de regeneración en pastos abandonados en Honduras. V Mesoamerican Society for Biology and Conservation. San Salvador, El Salvador.
- Zahawi, R.A. 1999. Early plant succession in abandoned pastures in Ecuador. [1st public pres.]

- 1) XVIth International Botanical Congress, St. Louis, Missouri.
- 2) 'Restoration for the New Millenium' Symposium, San Juan, Puerto Rico.