

Robbie Hart

Assistant Curator, High Elevation Ecology and Ethnobotany
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EDUCATION

2015 **Ph.D. in Biology (Ecology, Evolution and Systematics)**, University of Missouri-St. Louis
2004 **B.A. in Linguistics**, Swarthmore College, PA
2000 **Associate of Arts with Honors**, Peninsula College, WA

POSITIONS HELD

2016 – **Assistant Curator** (William L. Brown Center, Missouri Botanical Garden, St. Louis MO)
I currently design and manage programs in high elevation plant ecology, climate change, and ethnobotany, with emphasis on building research around a Himalayan subnetwork of plots within the Global Observation Research Initiative in Alpine Environments (GLORIA) network. In our subnetwork, which spans Nepal, Bhutan and China, we monitor dynamics of and connections between vegetation, climate and ethnobotanical practice. I also work to further quantitative methods for analysis of local ecological knowledge, primarily drawing data from montane and alpine environments.

2013 – 2015 **Research Specialist** (William L. Brown Center, Missouri Botanical Garden).
Research in high elevation plant ecology, climate change, and ethnobotany, including analyzing data for Himalayan GLORIA plots.

2008 – 2012 **Ph.D. Fellow** (National Science Foundation ‘Southwest China IGERT’)
Research to understand ecological factors, livelihood strategies and governance structures impacting biodiversity and economic development in Himalayan China.

2006 – 2008 **Research Consultant** (Living Tongues Institute for Endangered Languages)
Research, quantitative analyses, and editing focusing on endangered language diversity.

2006 – 2008 **Administrative Services Manager** (North Olympic Library System, Port Angeles WA)
Development of grants, liaison with board and community, supervising administrative workers. Assisting in strategic planning, budgeting, labor negotiations, director hire, and rebranding.

2004 – 2006 **Research Assistant** (Swarthmore College, Swarthmore PA)
Research, editing, and graphics for *When Languages Die* (David Harrison, Oxford University Press, 2007).

PUBLICATIONS

Refereed journal articles

2018 **R Hart** and J Salick. ‘Vulnerability of phenological progressions over season and elevation to climate change: Rhododendrons of Mt. Yulong’ *Perspectives in Plant Ecology, Evolution and Systematics*. doi: 10.1016/j.ppees.2018.09.001

2018 **R Hart** and S Ranjitkar ‘Monitoring rhododendron flowering times in a changing climate’. *Rhododendrons International* 3.

- 2018 RW Bussmann, NY Paniagua Zambrana, C Romero, **R Hart**. 'Astonishing diversity — the medicinal plant markets of Bogotá, Colombia'. *Journal of Ethnobiology and Ethnomedicine* 14:43. doi: 10.1186/s13002-018-0241-8
- 2018 NY Paniagua Zambrana, RW Bussmann, **R Hart**, AL Moya Huanca, GO Soria, MO Vaca, DO Álvarez, JS Morán, MS Morán, S Chávez, BC Moreno, GC Moreno, O Roca & E Siripi. 'To list or not to list? The value and detriment of freelisting in ethnobotanical studies'. *Nature Plants* 4:201–204. doi: 10.1038/s41477-018-0128-7
- 2018 NY Paniagua Zambrana, RW Bussmann, **R Hart**, AL Moya Huanca, GO Soria, MO Vaca, DO Álvarez, JS Morán, MS Morán, S Chávez, BC Moreno, GC Moreno, O Roca & E Siripi. 'Research Methods Leading to a Perception of Knowledge Loss—One Century of Plant Use Documentation Among the Chácobo in Bolivia'. *Economic Botany*. doi:10.1007/s12231-018-9401-y
- 2018 RW Bussmann, NY Paniagua Zambrana, **R Hart**, AL Moya Huanca, GO Soria, MO Vaca, DO Álvarez, JS Morán, MS Morán, S Chávez, BC Moreno, GC Moreno, O Roca & E Siripi. 'Who should conduct ethnobotanical studies? Effects of different interviewers in the case of the Chácobo Ethnobotany project'. *Journal of Ethnobiology and Ethnomedicine* 14:9. doi: 10.1186/s13002-018-0210-2
- 2017 **R Hart** and J Salick. 'Dynamic ecological knowledge systems amid changing place and climate: Mt. Yulong rhododendrons'. *Journal of Ethnobiology* 37: 21-36. doi: 10.2993/0278-0771-37.1.21
- 2017 H Sher, RW Bussmann & **R Hart**. 'Promoting Sustainable Use of Medicinal and Aromatic Plants for Livelihood Improvement and Biodiversity Conservation under Global Climate Change, through Capacity Building in the Himalaya Mountains, Swat District, Pakistan'. *Annals of the Missouri Botanical Garden* 102: 309-15. doi: 10.3417/D-16-00001A
- 2017 NY Paniagua Zambrana, RW Bussmann, **R Hart**, AL Moya Huanca, GO Soria, MO Vaca, DO Álvarez, JS Morán, MS Morán, S Chávez, BC Moreno, GC Moreno, O Roca & E Siripi. 'Traditional knowledge hiding in plain sight – twenty-first century ethnobotany of the Chácobo in Beni, Bolivia'. *Journal of Ethnobiology and Ethnomedicine* 13:57. doi: 10.1186/s13002-017-0179-2
- 2016 **R Hart**, EM Georgian, & J Salick. 'Fast and Cheap in the Fall: Phylogenetic determinants of late flowering phenologies in Himalayan *Rhododendron* (Ericaceae)'. *American Journal of Botany* 103: 198-206. doi: 10.3732/ajb.1500440
- 2016 RW Bussmann, NY Paniagua-Zambrana, S Sikharulidze, Z Kikvidze, D Kikodze, D Tchelidze, M Khutsishvili, K Batsatsashvili & **R Hart**. 'A comparative ethnobotany of Khevsureti, Samtskhe-Javakheti, Tusheti, Svaneti, and Racha-Lechkhumi, Republic of Georgia (Sakartvelo), Caucasus'. *Journal of Ethnobiology and Ethnomedicine* 12: 43. doi: 10.1186/s13002-016-0110-2
- 2016 RW Bussmann, NY Paniagua Zambrana, LA Moya Huanca & **R Hart**. 'Changing markets - medicinal plants in the markets of La Paz and El Alto, Bolivia'. *Journal of Ethnopharmacology*. doi: 10.1016/j.jep.2016.07.074
- 2016 RW Bussmann, NY Paniagua-Zambrana, S Sikharulidze, Z Kikvidze, D Kikodze, D Tchelidze, K Batsatsashvili & **R Hart**. 'Medicinal and Food Plants of Svaneti and Lechkhumi, Sakartvelo (Republic of Georgia), Caucasus'. *Medicinal and Aromatic Plants*. doi: 10.4172/2167-0412.1000266
- 2016 H Sher, RW Bussmann, **R Hart** & HJ de Boer. 'Traditional use of medicinal plants among Kalasha, Ismaeli and Sunni groups in Khyber Pakhtunkhwa province, Pakistan'. *Journal of Ethnopharmacology*. doi: 10.1016/j.jep.2016.04.059.
- 2015 RJ Thoni & **R Hart**. 'Repatriating a lost name: notes on McClelland and Griffith's *Cobitis boutanensis* (Cypriniformes: Nemacheilidae)'. *Zootaxa* 3999: 291 – 294.
- 2014 S Ranjitkar, R Kindt, NM Sujakhu, **R Hart**, W Guo, XF Yang, KK Shrestha, JC Xu & E Luedeling. 'Separation of the bioclimatic spaces of Himalayan tree rhododendron species predicted by ensemble suitability models'. *Global Ecology and Conservation* 1: 2 – 12.

2014 **R Hart**, J Salick, S Ranjitkar, and Xu JC. 'Herbarium specimens show contrasting phenological responses to Himalayan climate'. *PNAS* 111: 10615 – 10619.

Publications — book chapters

2018 J Salick, A Byg, K Konchar and **R Hart**. 'Coping with Climate: Innovation and Adaptation in Tibetan Land Use and Agriculture. In *Indigenous Knowledge and Climate Change*. D Nakashima and J Rubin (eds), pp. 123 – 141. Cambridge University Press.

2014 **R Hart**, W Law and P W Jackson. 'Biocultural collections for conservation'. In *Curating Biocultural Collections*, J Salick, K Konchar and M Nesbitt (eds.), pp. 329 – 346. Kew Press.

2007 **R Hart**. 'Written Word, Oral World'. In *Book of Peoples of the World*, Wade Davis, K. David Harrison and Catherine Herbert Howell (eds.), pp. 252-255. National Geographic Society.

Publications — books & theses

2015 *Climate-driven Change in Himalayan Rhododendron Phenology*. Doctoral Dissertation, Department of Biology, University of Missouri - St. Louis.

2004 *Up and Down the Mountain*. BA Thesis, Department of Linguistics, Swarthmore College, PA.

Publications — book reviews

2016 **R Hart**. 'Food and Environment in Early and Medieval China. (E.N. Anderson).' *Economic Botany* 70: 92.

Publications — in press

R Hart and RW Bussmann. 'Trans-Himalayan transmission, or convergence? *Stauntonia* (Lardizabalaceae) as an ethnoveterinary medicine.' *Medicina nei Secoli*.

J Salick, **R Hart** and Li S.-Y. 'Naxi Cosmology of Mt. Yulong sacred sites with caveats for conservation'. *Royal Scottish Geographical Journal*.

RESEARCH FUNDING

Current

2017 – 2018 'Climate change across borders: transboundary patterns in Himalayan alpine vegetation and ethnobotany impacts' National Geographic Committee for Research and Exploration (PI) \$35,720.

2018 'Climate change impacts on Himalayan alpiners' Alpine Garden Society (PI) £2,500.

Recent

2016 – 2017 'Climate change in the high Himalaya: effects on alpine vegetation and ethnobotany' National Geographic Committee for Research and Exploration (PI) \$35,322.

2013 'A comparative ethnobotany of rhododendrons in northwest Yunnan, China' Garden Club of America Anne S. Chatham Fellowship in Medicinal Botany (PI) \$4,000.

2012 – 2013 'Climate-driven change in Himalayan Rhododendron phenology' University of Missouri - St. Louis Biology Department Raven Fellowship (Dissertation Fellow) \$9,500.

2008 – 2011 'Biodiversity Conservation and Sustainable Development in Southwest China' National Science Foundation Interdisciplinary Graduate Education & Research Traineeship (Trainee) \$160,000 (amount to RH including tuition reimbursement, stipend and associated research grants).

2011 'Climate driven phenological change in Himalayan rhododendrons' The Explorers Club (PI) \$1,000.

2010 'Climate change impacts on distribution, phenology and pollination of *Rhododendron*' University of Missouri TransWorld Airlines Scholarship (research and merit scholarship) (PI) \$7,000.

2009 – 2010 ‘Climate change impacts on phenology of Himalayan *Rhododendron* species’
Whitney Harris World Ecology Center (PI) \$7,000.

RESEARCH EXPERIENCE

2016 – 2018 **Mt. Meili, China, Langtang & Kanchenjunga, Nepal, and Jomolhari, Bhutan**
Led ecological and ethnobotanical fieldwork at 15 mountain summits with methodology of the Global Observation Research Initiative in Alpine Environments (GLORIA) to track the effects of climate change on alpine plant communities and local ethnobotanical traditions. Collection and curation of botanical specimens; installation of and analysis of data from temperature loggers.

2009 – 2013 **Mt. Yulong, Lijiang County, China**
Ph.D. fieldwork: ecological & ethnoecological research on phenology of montane plants; ethnobotany with local communities; collection of botanical, entomological, and plant DNA specimens; experimental work on pollination, temperature, and phenology.

2009 – 2013 **Deqen, Weixi and Shangrila Counties, China**
Ecological and ethnobotanical fieldwork at 11 mountain summits with GLORIA methods to track the effects of climate change on alpine plant communities and local ethnobotanical traditions.

2003 **Ilam, Nepal**
Linguistic and sociolinguistic documentation of indigenous minority language Bantawa Rai.

TEACHING AND MENTORING EXPERIENCE

Missouri Botanical Garden

2014, 2016, 2018 Mentored National Science Foundation Research Experience for Undergraduates (NSF REU) students in ethnobotany and ecology projects

2015 – 2018 Guest lectures for NSF REU seminar series

2017 Taught workshop ‘R for ethnobotanical data analysis’

University of Missouri - St. Louis

2016 – 2017 Committee member for Rinchen Namgay, M.S. 2017 (Biology Dept.)

2014, 2015 Guest lectures for ‘Global Climate Change’ (Biology Dept.)

2014 Co-taught workshop ‘Statistical Analysis in R’

2010, 2011 Mentored undergraduate research in climate change ecology

2009, 2010 Teaching Assistant for ‘General Biology’ lab and lecture (Biology Dept.)

Washington University in St. Louis

2014 – Co-organizer for ‘Ethnobiology Journal Club’ (Biology/Anthropology Depts.)

2018 Lab rotation host for James Lucas (Biology Ph.D student)

2011, 2015 Guest lectures for ‘Plants and People’ (Anthropology Dept.)

Other institutions

2017 Taught ‘Estadística avanzada en etnoecología cuantitativa y el uso de R’ course at Universidad Nacional Mayor de San Marcos, Peru

2017, 2014, 2012 Guest lectures for ‘Ethnobiology’ at St. Louis University

2017 Guest lecture for ‘Taxonomy and Environment’, Tribhuvan University, Nepal

2016 Taught ‘Advanced quantitative methods for ethnoecology using R’ course at Universidad Mayor de San Andrés, Bolivia.

2016 Led 'Monitoring climate impacts on mountain vegetation' classroom & field-based training, Tribhuvan University, Nepal

2015 Co-taught 'Traditional ecological knowledge and landscape stewardship' field course, Lae Technical University, Papua New Guinea

Teaching and mentoring – other institutions

2010 – 2012 Mentored undergraduates in ecological and ethnobotanical field research, Lijiang Alpine Botanic Garden, Yunnan, China

2004 Teaching Assistant for 'Linguistics field methods' lab and discussion, Swarthmore College.

2003 Teaching Assistant for 'Marine biology' discussion and field, Swarthmore College.

CONFERENCE ACTIVITY

2018 'Dynamic ecological knowledge systems amid changing place and climate: Mt. Yulong rhododendrons'. 59th Meeting of the Society of Economic Botany, Madison, Wisconsin.

2017 1) 'Phenological progressions of Mt. Yulong Rhododendron flowering over season and elevation' and 2) 'Ethnobotany of climate change in the greater Himalayan Region: a 3000 km transect'. XIX International Botanical Congress, Shenzhen, China.

2017 'Ethnobotany of climate change in the greater Himalayan Region'. 58th Meeting of the Society of Economic Botany, Bragança, Portugal.

2017 'Connecting climate change and biocultural diversity - East Himalayan GLORIA'. Eastern Himalayan Naturenomics Forum, Guwahati, India.

2015 1) 'Change in the Himalayan climate II: alpine community composition', and 2) 'Sacred Mt. Yulong & Naxi perceptions of biodiversity conservation'. 3rd Global Change and the World's Mountains conference, Perth, Scotland.

2015 'Climate change in the high Himalaya: monitoring changes in alpine vegetation and ethnobotany'. Creating a Global Network of Mountain Observatories workshop, Gothic, Colorado.

2014 1) Co-chair, 'Mountain Ethnobiology' session, 2) 'Climate impacts on *Rhododendron* phenology: insights from traditional ecological knowledge and natural history collections', and 3) 'GLORIA resurveys of three Himalayan target areas', Mountain Observatories: a global fair and workshop on social-ecological systems. Reno, Nevada.

2014 1) Co-chair, 'Himalayan Climate Change and Ethnobotany' session, 2) 'Climate change impacts on *Rhododendron* phenology: insights from historical collections, observational studies, and traditional ecological knowledge', and 3) 'Ethnobotany of climate change in the Eastern Himalaya: a 2,000 km transect, and two sites in Bhutan' at the 14th Congress of the International Society for Ethnobiology, Bumthang, Bhutan.

2012 'Rhododendron phenologies changing with climate'. 13th Congress of the International Society for Ethnobiology, Montpellier, France.

2010 'Past collections offer clues to the future of Himalayan rhododendrons' [Poster]. 2nd Global Change and the World's Mountains conference, Perth, Scotland.

AWARDS AND HONORS

2018 BioOne Ambassador Award

2013 University of Missouri - St. Louis Biology Department Raven Fellowship

2011 University of Missouri TransWorld Airlines Merit Scholarship
2010 Graduate Teaching Excellence Award, University of Missouri - St Louis
2009 & 2010 Honorable mention, NSF Graduate Research Fellowship Program
2001 – 2004 Swarthmore College Class of 1925 Scholarship

INVITED TALKS

2018 Washington University in St. Louis – Living Earth Collaborative Seminar
2018 Field Museum – Seventh John Armour Seminar
2018 & 2014 Southern Illinois University – St. Louis Ecology, Evolution and Conservation Retreat
2018 & 2014 St. Louis University – Biology Departmental Seminar
2017 Ashoka Trust for Research in Ecology and the Environment, Bangalore
2017 University of Arkansas for Medical Sciences – College of Pharmacy Seminar Lecture Series
2017 Holden Arboretum – Scientist Lecture Series
2015 Royal Botanic Garden Edinburgh
2015 Washington University in St. Louis – Tibetan Plateau Symposium
2013 & 2010 Lijiang Alpine Botanic Garden, Chinese Academy of Sciences
2011 Academy of Science St. Louis – Science Cafe

PROFESSIONAL

Committee membership

2018 – Ethics Committee, Society of Ethnobiology
2018 – Steering Committee, Rhododendron Research Network
2018 – Advisory Board, Southern Illinois University Interdisciplinary Research and Informatics Scholarship Center
2013 – 2015 Executive Committee, Whitney R. Harris World Ecology Center

Grant review

2018 – Chair, Richard Evans Schultes Award Committee, Society for Economic Botany
2016 – 2017 Richard Evans Schultes Award Committee, Society for Economic Botany
2014 – 2017 National Geographic Society Committee for Research and Exploration
2014 & 2015 Whitney R. Harris World Ecology Center
2014 University of Missouri Research Board

Peer review

American Journal of Botany; Alpine Botany; Annals of Botany; Arctic, Antarctic and Alpine Research; Journal of Biogeography; Biological Conservation; Climatic Change; Climate Research; Ecography; Economic Botany; Environment and History; Frontiers in Plant Science; Journal of Ecology; Journal of Ethnobiology and Ethnomedicine; Global Change Biology; Human Ecology; New Phytologist; Novon; Oecologia; PLOS One; PNAS

Society membership

Botanical Society of America; Ecological Society of America; Explorers Club; Society for Economic Botany; Society of Ethnobiology