

## Curriculum Vitae Robert Knight Colwell

**Personal**      *Postal Address:* Department of Entomology  
Museum of Natural History  
University of Colorado  
Boulder, CO 80309, U.S.A.

*E-mail:*      robertkcolwell@gmailcom      *Homepage:* <http://viceroy.colorado.edu/colwell>

**Education**    Ph.D.            1969    University of Michigan, Ann Arbor, MI, Ecology  
                  A.B.            1965    Harvard University, Cambridge, MA, Biology

### Affiliations and Professional Experience

2016-Present      Adjunct Professor, Tropical Forests and People Research Centre, University of the Sunshine Coast, Sippy Downs, Queensland, Australia

2012-Present      Museum Curator Adjoint in Entomology and Zoology, University of Colorado Museum of Natural History, Boulder

2014-Present      Distinguished Research Professor, University of Connecticut

2014-Present      Board of Trustees Distinguished Professor Emeritus, University of Connecticut

2001-2014        Board of Trustees Distinguished Professor, University of Connecticut

1989-2001        Professor, University of Connecticut

1982-1990        Professor, University of California at Berkeley

1976-1982        Associate Professor, University of California, Berkeley

1970-1976        Assistant Professor, University of California, Berkeley

2014-Present      Professor e Pesquisador Visitante Especial, Universidade Federal de Goiás, Brazil

2010-Present      International Collaborator, Center for Macroecology, Evolution and Climate, The Natural History Museum of Denmark, University of Copenhagen, Denmark

1983-1985        Vice Chair, Department of Zoology, U.C., Berkeley

1982                Acting Chair, Department of Zoology, U.C., Berkeley

1969-1970        Ford Postdoctoral Fellow, University of Chicago

1967-1969        NSF Graduate Fellowship, University of Michigan

1965-1966        Curatorial Associate in Ethnobotany, Harvard University

2014 (Jan-April)    CAPES Science Without Borders Fellow, Universidade Federal de Goiás, Brazil

2010 (Jan-April)    Visiting Professor, University of Copenhagen, Denmark

2009 (Oct-Nov)    Visiting Professor, National Autonomous University of Mexico, Morelia, Mexico

2002 (Jan-July)    Visiting Scientist, Rainforest Cooperative Research Centre, James Cook University, Cairns, Queensland, Australia

1969-Present      Visiting Professor, Organization for Tropical Studies Costa Rica (16 courses; Course Coordinator, 1 course)

2000 (December)    Visiting Professor, Instituto Humboldt, Villa de Leyva, Colombia

1994 (Spring)      Visiting Professor, University of Colorado

1989 (Fall)        Visiting Professor, Arizona State University

1985 (Summer)    Visiting Professor, Michigan State University

1982 (Fall)        Visiting Professor, Uppsala Univ., Uppsala, Sweden

1973 (Summer)    Visiting Professor, University of Texas at Austin

1973 (Fall)        Visiting Professor, Universidad de Chile (Santiago)

### Honors and Distinctions

Fellow, American Academy of Arts and Sciences, Elected 2011  
Fellow, Connecticut Academy of Arts and Sciences, Elected 1992  
Fellow, Connecticut Academy of Sciences and Engineering, Elected 2012  
Fellow, California Academy of Sciences, Elected 1986  
Fellow, American Association for the Advancement of Science, Elected 1986

Fellow, Ecological Society of America, Elected 2012  
 Fellow, American Society of Naturalists, Elected 1974

President's Award, American Society of Naturalists (for the best paper published in *The American Naturalist* in 2000), 2001  
 Distinguished Service Citation, Ecological Society of America, 1999

Distinguished Research Professor (UConn), 2014–Present  
 Distinguished Professor Emeritus (UConn), 2014–Present  
 Board of Trustees Distinguished Professor (UConn), 2001–2014  
 Alumni Association Faculty Research Award (UConn), 2000  
 Chancellor's Information Technology Award (U. Conn.), 1998  
 ComputerWorld/Smithsonian Information Technology Awards, Finalist, 1993

Huck Distinguished Lecturer in the Life Sciences, Pennsylvania State University, 2014  
 Invited Reviewer, 5<sup>th</sup> Assessment Report of the IPCC, Working Group II  
 Keynote Speaker, INTECOL, London, UK 2013  
 Invited Speaker, Sun Yat-Sen University, Guangzhou, China, 2011  
 Invited Speaker, Institute of Zoology, Chinese Academy of Sciences, Beijing, China, 2011  
 Keynote Speaker, International Biogeography Society, Heraklion, Crete, Greece, 2011  
 Invited Speaker, Royal Society, London, UK, October 2010  
 Keynote Speaker, Instituto de Ecología A.C. (INECOL) Student Colloquium, Xalapa, Mexico, 2010  
 Keynote Speaker, International Biogeography Society, Mérida, Mexico, 2009  
 Invited Speaker, National Academy of Science Sackler Colloquium, Irvine, CA 2008  
 Keynote Speaker, Zoological Society of London, UK, 2004  
 Invited Participant, First Okazaki Conference on Extinction, Okazaki, Japan, 2004  
 Keynote Speaker, Sociedad de Biología de Chile, Puyehue, Chile, 2003  
 Invited Speaker, International Congress of Acarology, Mérida, Mexico, 2002  
 Distinguished Lecturer, Universidad Nacional Autónoma de México, 1997  
 Helen P. Manglesdorf Distinguished Lecturer, University of North Carolina, 1990  
 Distinguished Visitor in Ecology, Arizona State University, 1989  
 GTE Foundation Lecturer, University of Florida, 1987  
 Distinguished Ecologist, Reed College, 1986  
 Distinguished Lecturer in Ecology, Michigan State University, 1981

Publication awards: *ISI Citation Classic* 1982 (Colwell and Futuyma 1971); *President's Award*, American Society of Naturalists (Colwell 2000); *ESI Hot New Paper in Environment and Ecology*, January 2002 (Colwell and Lees 2000); *National Museum of Natural History Science Achievement Award*, 2007 (Rahbek, Gotelli, Colwell, Entsminger, Rangel, and Graves); *ScienceWatch*, 20 Most-Cited Papers in Environment & Ecology, 1998-2008, October 2008 (Gotelli and Colwell 2001, the most cited paper in the history of *Ecology Letters*, as of 2011); as of December, 2014: total citations > 27,000 (> 15,000 since 2009), *h-Index* 52 (42 since 2009), *i10 index* 94 (77 since 2009).

Participant in six NCEAS (National Center for Ecological Analysis and Synthesis) and NESCent (National Evolutionary Synthesis Center) Workshops, Co-Organizer of one; participant in a Kavli Workshop (Royal Society), October 2010

Invited lectures at universities and professional society meetings throughout the US, as well as in Canada, Mexico, Costa Rica, Panama, Colombia, Brazil, Chile, UK, Denmark, Sweden, Finland, Germany, Netherlands, Switzerland, France, Italy, Tanzania, Madagascar, Israel, Japan, Taiwan, China, Singapore, Indonesia, and Australia

### Professional Service Highlights

President, American Society of Naturalists, 1998  
 Vice-President, Ecological Society of America, 1994-1995  
 Chair, MacArthur Award Committee, Ecological Society of America, 2002-2006  
 Chair, Publications Committee, Ecological Society of America, 1995-1999  
 Chair, Ecological Society of America, Special Committee on ESA Communications in the Electronic Age, 1994-1995

Faculty of 1000, 2006-2016 (resigned)  
 U. S. National Science Foundation, Ecology Review Panels, 2008 and 2012  
 Scientific Advisory Committee, State of São Paulo, BIOTA/FAPESP, 1998-2008  
 Advisory Committee, Parataxonomist Training Center, Madang, Papua New Guinea, 1999-Present  
 Senior Consultant, Key Centre for Biodiversity and Bioresources, Macquarie University, Australia, 1999-Present  
 Organization for Tropical Studies: Board of Directors, 1987-1989; La Selva Advisory Committee, 1986-1991; Research Committee, 1988-1996; 1998-Present; Informatics and Data Management Committee, 2002-Present; Assembly of Delegates, 1999-Present  
 Keystone National Biotechnology Forum, Keystone, Colorado, 1986-1991  
 US-Environmental Protection Agency, Biotechnology Science Advisory Committee, 1986-1989  
 U.S. National Committee of International Union of Biological Scientists (Appointed by the National Academy of Sciences), 1985-1991

### Editorial Service

Editor in Chief for Reviews and Syntheses, *Ecography*, 2014-present  
 Review and Synthesis Editor, *Ecography*, 2006-2013  
 Board of Reviewing Editors, *Science*, 2002-2005  
 Associate Editor, *Encyclopedia of Biodiversity*, 1999-2012  
 Editor, *Evolutionary Ecology Research*, 1998-Present  
 Editor, *Evolutionary Ecology*, 1986-1998  
 Associate Editor, *Biotropica*, 1993-1996  
 Associate Editor, *The American Naturalist*, 1980-1985; 1990-1994  
 Editorial Board, *Evolutionary Theory*, 1973-1990

### Teaching

#### **Research teaching**

Research advisor (major professor) for 27 completed Ph.D.s (19 at U. C. Berkeley, 7 at UConn, 1 at U. Federal de Goiás, Brazil) and 4 completed Masters (2 at Berkeley, 2 at UConn).

Former students hold (or have retired from) positions at (alphabetically within categories): California State U.–Los Angeles, Columbia U., Harvard U., North Carolina State U., Occidental College, U. California Berkeley, U. California Irvine, U. California Santa Cruz, U. Católica (Chile), U. Hawaii, U. Maine, U. Missouri-St., Louis, U. Puerto Rico, U. Washington, U.S. Air Force Academy, American Museum of Natural History, Conservation International, NASA, USDA, US-EPA, CSIRO (Australia), Universidade Federal de Goiás (Brasil), and the United Nations (UNDP)

#### **Recent classroom teaching (until 2013)**

Until retirement in 2013, at UConn: General Ecology (undergraduate level), Population and Community Ecology (graduate core course), Evolution and Ecology of Communities (graduate level), Biodiversity Graduate Seminar  
 Since 2013: Graduate Seminar in Biogeography (Universidade Federal de Goiás, Brazil); lectures in Cross-disciplinary Palaeo-Environmental Research Training (XPERT) Network Summer School, U. Amsterdam

### Languages

Spanish (fluent reading, writing, and conversation), Portuguese (fluent reading, writing, and conversation), French (fluent reading, adequate in conversation)

### Research Funding

Continuous research funding from NSF/NIH/CAPES from 1970 through 2015

Most recent research awards:

2006-2010, NSF DEB- "Integrating Ecological and Evolutionary Processes in Stochastic Biogeographical Models" (P.I. and Project Director, \$207,566)

2009-2012, NSF DBI-0851290, "Extending Lifemapper to Enable Macroecological Research" (PI, \$151,415). Collaborative Research with James Beach, University of Kansas.

2013-2015, CAPES (Brazilian Federal Agency for the Support and Evaluation of Graduate Education) "Science Without Borders" Fellowship, 3 years, for research collaboration and graduate education in Brazil (\$20,000 per year)

Non-research award: NSF Graduate Research Training Program (1995-1999): \$555,000 Lead P.I.

## Research

**Interests** Species diversity, biogeography, and mechanisms of speciation  
Stochastic models in biogeography  
Global change biology  
Biodiversity inventories, databases, and statistical tools  
Evolutionary ecology, species interactions, and coevolution  
Ecology, evolution, and behavior of hummingbird flower mites

**Research Websites** Species richness estimation and similarity (<http://purl.oclc.org/EstimateS>)  
Arthropods of La Selva inventory (<http://purl.oclc.org/alas>)  
Null models in biogeography (<http://purl.oclc.org/RangeModel>)  
Biodiversity informatics (<http://viceroy.eeb.uconn.edu/Biota>)

## Publications (peer-reviewed)

### Edited Books

Levin, S., Ed., R. K. Colwell, G. Daily, L. J., H. A. Mooney, E. Schulze, and D. Tilman, Assoc. Eds. 2000. Encyclopedia of biodiversity. Academic Press, NY. (5 volumes, 4666 pp.) [Ed. for 25 articles on invertebrates.]

Levin, S., Ed., R. K. Colwell, G. Daily, S. Diaz, P. Kareiva, D. Karl, G. M. Mace, C. Perrings, D. Tilman, and M. G. Turner, Assoc. Eds. 2013. Encyclopedia of biodiversity, 2<sup>nd</sup> Edition. Academic Press, NY. [Ed. for 10 new articles and 25 revised articles]

### Monograph

Naskrecki, P., and R. K. Colwell. 1998. Systematics and host plant affiliations of hummingbird flower mites of the genera *Tropicoseius* Baker and Yunker and *Rhinoseius* Baker and Yunker (Acari: Mesostigmata: Ascidae). Thomas Say Publications in Entomology: Monographs. Entomological Society of America. 185 pp.

### Journal Publications

(Reverse chronological order, alphabetical by author within years. Peer-reviewed book chapters follow in a separate section.)

Connolly, S. R., S. A. Keith, R. K. Colwell, and C. Rahbek. 2017. Process, mechanism, and modeling in macroecology. *Trends in Ecology & Evolution*.

Chao, A., R. K. Colwell, C. H. Chiu, and D. Townsend. 2017. Seen once or more than once: applying Good–Turing theory to estimate species richness using only unique observations and a species list. *Methods in Ecology and Evolution*.

Pecl, G. T., M. B. Araújo, J. D. Bell, J. Blanchard, T. C. Bonebrake, I.-C. Chen, T. D. Clark, R. K. Colwell, F. Danielsen, B. Evengård, et al. 2017. Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being. *Science* **355**:eaai9214.

Chao, A., and R. K. Colwell. 2017. Thirty years of progeny from Chao's inequality: Estimating and comparing richness with incidence data and incomplete sampling. *Statistics and Operations Research Transactions (SORT)*.

Buchanan, B., A. Chao, C.-H. Chiu, R. K. Colwell, M. J. O'Brien, A. Werner, and M. I. Eren. 2017. Environment-induced changes in selective constraints on social learning during the peopling of the Americas. *Scientific Reports* **7**.

- Gavin, M. C., T. F. Rangel, C. Bowern, R. K. Colwell, K. R. Kirby, C. A. Botero, M. Dunn, R. R. Dunn, J. McCarter, M. T. Pacheco Coelho, and R. D. Gray. 2017. Process-based modelling shows how climate and demography shape language diversity. *Global Ecology and Biogeography* **26**:584-591.
- Colwell, R. K. 2016. Foreword. Pages 9-10 in T. Robillard, F. Legendre, C. Villemant, and M. Leponce, editors. *Insects of Mount Wilhelm Papua New Guinea*. Mémoires du Muséum national d'Histoire naturelle, Paris.
- Colwell, R. K., N. J. Gotelli, L. A. Ashton, J. Beck, G. Brehm, T. M. Fayle, K. Fiedler, M. L. Forister, M. Kessler, R. L. Kitching, P. Klimes, J. Kluge, J. T. Longino, S. C. Maunsell, C. McCain, J. Moses, S. Noben, K. Sam, L. Sam, A. M. Shapiro, X. Wang, and V. Novotny. 2016. Midpoint attractors and species richness: Modeling the interaction between environmental drivers and geometric constraints. *Ecology Letters* **19**:1009–1022.
- Brehm, G., P. D. Hebert, R. K. Colwell, M.-O. Adams, F. Bodner, K. Friedemann, L. Möckel, and K. Fiedler. 2016. Turning Up the Heat on a Hotspot: DNA Barcodes Reveal 80% More Species of Geometrid Moths along an Andean Elevational Gradient. *PLoS One* **11**:e0150327.
- Chan, W.-P., I.-C. Chen, R. K. Colwell, W.-C. Liu, C.-y. Huang, and S.-F. Shen. 2016. Seasonal and daily climate variation have opposite effects on species elevational range size. *Science* **351**:1437-1439.
- Cayuela, L., R. K. Colwell, and N. J. Gotelli. 2015. Ecological and biogeographic null hypotheses for comparing rarefaction curves. *Ecological Monographs* **85** 437-455.
- Chao, A., T. C. Hsieh, R. L. Chazdon, R. K. Colwell, and N. J. Gotelli. 2015. Unveiling the species-rank abundance distribution by generalizing the Good-Turing sample coverage theory. *Ecology* **96**:1189–1201.
- Eren, M. I., A. Chao, C. Chiu, R. K. Colwell, B. Buchanan, M. T. Boulanger, J. Darwent, and M. J. O'Brien. 2015. Statistical analysis of paradigmatic class richness supports greater Paleoindian projectile-point diversity in the Southeast. *American Antiquity*.
- Rangel, T. F., R. K. Colwell, G. R. Graves, K. Fučíková, C. Rahbek, and J. A. F. Diniz-Filho. 2015. Phylogenetic uncertainty revisited: Implications for ecological analyses. *Evolution* **69**:1301-1312.
- Slik, J. F.,..., R. K. Colwell, and 147 additional authors. 2015. An estimate of the number of tropical tree species. *Proceedings of the National Academy of Sciences* **112**:7472-7477.
- Bates, A. E., G. T. Peci, S. Frusher, A. J. Hobday, T. Wernberg, D. A. Smale, J. M. Sunday, N. A. Hill, N. K. Dulvy, and R. K. Colwell. 2014. Defining and observing stages of climate-mediated range shifts in marine systems. *Global Environmental Change* **26**:27-38.
- Chao, A., N. J. Gotelli, T. C. Hsieh, E. L. Sander, K. H. Ma, R. K. Colwell, and A. M. Ellison. 2014. Rarefaction and extrapolation with Hill numbers: a framework for sampling and estimation in species diversity studies. *Ecological Monographs* **84**:45–67.
- Colwell, R. K. and J. E. Elsensohn. 2014. EstimateS turns 20: statistical estimation of species richness and shared species from samples, with non-parametric extrapolation. *Ecography* **37**:609-613.
- Longino, J. T., M. G. Branstetter, and R. K. Colwell. 2014. How ants drop out: ant abundance on tropical mountains. *PLoS One* **9**:e104030.
- Sunday, J. M., A. E. Bates, M. R. Kearney, R. K. Colwell, N. K. Dulvy, J. T. Longino, and R. B. Huey. 2014. Thermal-safety margins and the necessity of thermoregulatory behavior across latitude and elevation. *Proceedings of the National Academy of Sciences* **111**:5610-5615.
- Wu, Y., R. K. Colwell, N. Han, R. Zhang, W. Wang, Q. Quan, C. Zhang, G. Song, Y. Qu, and F. Lei. 2014. Understanding historical and current patterns of species richness of babblers along a 5000-m subtropical elevational gradient. *Global Ecology and Biogeography* **23**:1167-1176.
- Gavin, M. C., C. A. Botero, C. Bowern, R. K. Colwell, M. Dunn, R. R. Dunn, R. Gray, K. R. Kirby, J. McCarter, A. Powell, T. F. Rangel, J. R. Stepp, M. Trautwein, J. L. Verdolin, and G. Yanega. 2013. Towards a mechanistic understanding of linguistic diversity. *Bioscience* **63**:524-535.
- Wu, Y., R. K. Colwell, C. Rahbek, C. Zhang, Q. Quan, C. Wang, and F. Lei. 2013. Explaining the

- species richness of birds along a subtropical elevational gradient in the Hengduan Mountains. *Journal of Biogeography* 40:2310-2323.
- Colwell, R. K., R. R. Dunn, and N. C. Harris. 2012. Coextinction and persistence of dependent species in a changing world. *Annual Review of Ecology, Evolution and Systematics* 43:183-203.
- Dornelas, M., A. E. Magurran, S. T. Buckland, A. Chao, R. L. Chazdon, R. K. Colwell, T. Curtis, K. J. Gaston, N. J. Gotelli, and M. A. Kosnik. 2012. Quantifying temporal change in biodiversity: challenges and opportunities. *Proceedings of the Royal Society B: Biological Sciences* 280 (1750).
- Eren, M. I., A. Chao, W. H. Hwang, and R. K. Colwell. 2012. Estimating the richness of a population when the maximum number of classes is fixed: a nonparametric solution to an archaeological problem. *PLoS One* 7(5):e34179-e34179.
- Colwell, R. K., A. Chao, N. J. Gotelli, S.-Y. Lin, C. X. Mao, R. L. Chazdon, and J. T. Longino. 2012. Models and estimators linking individual-based and sample-based rarefaction, extrapolation, and comparison of assemblages. *Journal of Plant Ecology* 5:3-21.
- Gotelli, N. J., A. Chao, R. K. Colwell, W. H. Hwang, and G. R. Graves. 2012. Specimen-based modeling, stopping rules, and the extinction of the Ivory-billed Woodpecker. *Conservation Biology* 26:47-56.
- Chazdon, R. L., A. Chao, R. K. Colwell, S.-Y. Lin, N. Norden, S. G. Letcher, D. B. Clark, B. Finegan, and J. P. Arroyo. 2011. A novel statistical method for classifying habitat generalists and specialists. *Ecology* 92:1332-1343.
- McCain, C. and R. K. Colwell. 2011. Assessing the threat to montane biodiversity from discordant shifts in temperature and precipitation in a changing climate. *Ecology Letters* 14:1236-1245.
- Rahbek, C. and R. K. Colwell. 2011. News and Views: Species loss revisited. *Nature* 473:288-289.
- Longino, J. T. and R. K. Colwell. 2011. Density compensation, species composition, and richness of ants on a neotropical elevational gradient. *Ecosphere* 2(3):art29. doi:10.1890/ES10-00200.1
- Colwell, R. K. and T. F. Rangel. 2010. A stochastic, evolutionary model for range shifts and richness on tropical elevational gradients under Quaternary glacial cycles. *Philosophical Transactions of the Royal Society B*. 365: 3695-3707.
- Chao, A., R. K. Colwell, C.-W. Lin, and N. Gotelli. 2009. Sufficient sampling for asymptotic minimum species richness estimators. *Ecology* 90:1125-1133.
- Colwell, R. K., N. J. Gotelli, C. Rahbek, G. L. Entsminger, C. Farrell, and G. R. Graves. 2009. Peaks, plateaus, canyons, and craters: The complex geometry of simple mid-domain effect models. *Evolutionary Ecology Research* 11:355-370.
- Colwell, R. K. and T. F. Rangel. 2009. Hutchinson's duality: the once and future niche. *PNAS* 106: 19651-19658.
- Dunn, R. R., N. C. Harris, R. K. Colwell, L. P. Koh, and N. S. Sodhi. 2009. The sixth mass coextinction: are most endangered species parasites and mutualists? *Proceedings of the Royal Society B: Biological Sciences* 276:3037-3045.
- Gotelli, N., M. J. Anderson, H. T. Arita, A. Chao, R. K. Colwell, S. R. Connolly, D. J. Currie, R. R. Dunn, G. R. Graves, J. L. Green, J. A. Grytnes, Y.-H. Jiang, W. Jetz, S. K. Lyons, C. M. McCain, A. E. Magurran, C. Rahbek, T. F. L. V. B. Rangel, J. Soberón, C. O. Webb, and M. R. Willig. 2009. Patterns and causes of species richness: a general simulation model for macroecology. *Ecology Letters* 12:873-886
- Kumar, A., J. T. Longino, R. K. Colwell, and S. O'Donnell. 2009. Elevational patterns of diversity and abundance of eusocial paper wasps (Vespidae) in Costa Rica. *Biotropica* 41:338-346.
- Stork, N. E., J. A. Coddington, R. K. Colwell, R. L. Chazdon, C. W. Dick, C. A. Peres, S. Sloan, and K. Willis. 2009. Vulnerability and resilience of tropical forest species to land-use change. *Conservation Biology* 23:1438-1447.
- Carranza, A., R. K. Colwell, and T. F. L. V. B. Rangel. 2008. Distribution of megabenthic gastropods along environmental gradients: the mid-domain effect and beyond. *Marine Ecology Progress Series* 367:193-202.

- Colwell, R. K. 2008. RangeModel: Tools for exploring and assessing geometric constraints on species richness (the mid-domain effect) along transects. *Ecography* 31:4-7.
- Colwell, R. K., G. Brehm, C. Cardelús, A. C. Gilman, and J. T. Longino. 2008. Global warming, elevational range shifts, and lowland biotic attrition in the wet tropics. *Science* 322:258-261.
- Sodhi, N. S., L. P. Koh, K. S.-H. Peh, H. T. W. Tan, R. L. Chazdon, R. T. Corlett, T. Lee, M., R. K. Colwell, B. W. Brook, C. H. Sekercioglu, and C. J. A. Bradshaw. 2008. Correlates of extinction proneness in tropical angiosperms. *Diversity and Distributions* 14:1-10.
- Brehm, G., R. K. Colwell, and J. Kluge. 2007. The role of environment and mid-domain effect on moth species richness along a tropical elevational gradient. *Global Ecology & Biogeography* 16:205-219.
- Horner-Devine, M. C., J. M. Silver, L. M. A. B. J. M. Bohannan, R. K. Colwell, J. A. Fuhrman, J. L. Green, C. R. Kuske, J. B. H. Martiny, L. Øvreås, A.-L. Reysenbach, and G. Muyzer. 2007. A comparison of taxon co-occurrence patterns for macro- and microorganisms. *Ecology* 88: 1345-1353.
- Lees, D. C., and R. K. Colwell. 2007. A strong Madagascan rainforest MDE and no equatorward increase in species richness: Re-analysis of "The missing Madagascan mid-domain effect," by Kerr J.T., Perring M. & Currie D.J (Ecology Letters 9:149-159, 2006). *Ecology Letters* 10:E4-E8.
- Naeem, S., R. Colwell, S. Díaz, J. Hughes, C. Jouseau, S. Lavorel, P. Morin, O. Petchey, and J. Wright. 2007. Predicting the ecosystem consequences of biodiversity loss: the BioMERGE framework. Pages 113-126 in J. G. Canadell, D. E. Pataki, and L. Pitelka, editors. *Terrestrial Ecosystems in a Changing World*.
- Rahbek, C., N. Gotelli, R. K. Colwell, G. L. Entsminger, T. F. L. V. B. Rangel, and G. R. Graves. 2007. Predicting continental-scale patterns of bird species richness with spatially explicit models. *Proceedings of the Royal Society of London Series B* 274:165-174.
- Rangel, T. F. L. V. B., J. A. F. Diniz-Filho, and R. K. Colwell. 2007. Species richness and evolutionary niche dynamics: a spatial pattern-oriented simulation experiment. *American Naturalist*. 170: 02-616.
- Cardelús, C., R. K. Colwell, and J. E. Watkins, Jr. 2006. Vascular epiphyte distribution patterns: explaining the mid-elevation richness peak. *J. Ecology* 94:144-156.
- Chao, A., R. L. Chazdon, R. K. Colwell, and T.-J. Shen. 2006. Abundance-based similarity indices and their estimation when there are unseen species in samples. *Biometrics* 62:361-371.
- Dunn, R. R., R. K. Colwell, and C. Nilsson. 2006. The river domain: why are there more species halfway up the river? *Ecography* 29:251-259.
- Martiny, J., B. Bohannan, J. Brown, R. Colwell, J. Fuhrman, J. Green, M. Horner-Devine, M. Kane, J. Krumins, and C. Kuske. 2006. Microbial biogeography: putting microorganisms on the map. *Nature Reviews: Microbiology* 4:102-112.
- Watkins, J. E., Jr., C. Cardelús, R. C. Moran, and R. K. Colwell. 2006. Diversity and distribution of ferns along an elevational gradient in Costa Rica. *American Journal of Botany* 93:73-83.
- Bunker, D. E., F. DeClerck, J. C. Bradford, R. K. Colwell, I. Perfecto, O. L. Phillips, M. Sankaran, and S. Naeem. 2005 (20 October). Species loss and aboveground carbon storage in a tropical forest. *Science (Express Reports)* 10.1126/science.1117682:1-5.
- Chao, A., R. L. Chazdon, R. K. Colwell, and T.-J. Shen. 2005. A new statistical approach for assessing compositional similarity based on incidence and abundance data. *Ecology Letters* 8:148-159.
- Colwell, R. K., C. Rahbek, and N. Gotelli. 2005. The mid-domain effect: there's a baby in the bathwater. *American Naturalist* 166:E149-E154.
- Mao, C. X., and R. K. Colwell. 2005. Estimation of species richness: mixture models, the role of rare species, and inferential challenges. *Ecology* 86:1143-1153.
- Mao, C. X., R. K. Colwell, and J. Chang. 2005. Estimating species accumulation curves using mixtures. *Biometrics* 61:433-441.
- Romdal, T. S., R. K. Colwell, and C. Rahbek. 2005. The influence of band sum area, domain extent and range sizes on the latitudinal mid-domain effect. *Ecology* 86:235-244.

- Colwell, R. K., C. X. Mao, and J. Chang. 2004. Interpolating, extrapolating, and comparing incidence-based species accumulation curves. *Ecology* 85:2717-2727.
- Colwell, R. K., C. Rahbek, N. J. Gotelli. 2004. The mid-domain effect and species richness patterns: What have we learned so far? *American Naturalist* 163:E1-E23.
- Jetz, W., C. Rahbek, and R. K. Colwell. 2004. The coincidence of rarity and richness and the potential signature of history in centres of endemism. *Ecology Letters* 7:1180-1191.
- Koh, L. P., R. R. Dunn, N. S. Sodhi, R. K. Colwell, H. C. Proctor, and V. S. Smith. 2004. Species coextinctions and the biodiversity crisis. *Science* 305:1632-1634.
- Longino, J., J. A. Coddington, and R. K. Colwell. 2002. The ant fauna of a tropical rainforest: estimating species richness three different ways. *Ecology* 83:689-702.
- Gotelli, N., and R. K. Colwell. 2001. Quantifying biodiversity: Procedures and pitfalls in the measurement and comparison of species richness. *Ecology Letters* 4:379-391.
- Colwell, R. K. 2000. A barrier runs through it...or maybe just a river (Commentary). *PNAS* 97:13470-13472.
- Colwell, R. K. 2000. Rensch's Rule crosses the line: Convergent allometry of sexual size dimorphism in hummingbirds and flower mites. *American Naturalist*. 156:495-510.
- Oliver, I., A. Pik, D. Britton, J. M. Dangerfield, R. K. Colwell, and A. J. Beattie. 2000. Virtual biodiversity assessment systems: the application of bioinformatics technologies to the accelerated accumulation of biodiversity information. *BioScience* 50:441-450.
- Colwell, R. K., and D. C. Lees. 2000. The mid-domain effect: geometric constraints on the geography of species richness. *Trends in Ecology and Evolution* 15:70-76.
- Chazdon, R. L., R. K. Colwell, and J. S. Denslow. 1999. Tropical tree richness and resource-based niches. *Science* 285:1459
- Colwell, R. K., and S. Naeem. 1999. Sexual sorting in hummingbird flower mites. *Annals of Entomological Society of America* 92:652-659.
- Longino, J. T. and R. K. Colwell. 1997. Biodiversity assessment using structured inventory: Capturing the ant fauna of a lowland tropical rainforest. *Ecological Applications* 7: 1263-1277..
- O'Connor, B. M., R. K. Colwell, and S. Naeem. 1997. The flower mites of Trinidad III. The genus *Rhinoiseius* (Acari: Ascidae). *Miscellaneous Publication No. 184. University of Michigan Museum of Zoology*. 32 pp.
- Colwell, R. K. 1995. Effects of nectar consumption by the hummingbird flower mite *Proctolaelaps kirmsei* on nectar availability in *Hamelia patens*. *Biotropica* 27: 206-217.
- Naskrecki, P., and R. K. Colwell. 1995. A new genus and two new species of Melicharini from Venezuela (Acari: Mesostigmata: Ascidae). *Annals of the Entomological Society of America* 88: 284-293.
- Ochoa, R., P. Naskrecki, and R. K. Colwell. 1995. *Excelsotarsonemus kaliszewskii*, a new genus and new species from Costa Rica (Acari: Tarsonemidae). *Internat. Journal of Acarology* 21:67-74.
- Colwell, R. K., and J. A. Coddington. 1994. Estimating terrestrial biodiversity through extrapolation. *Philosophical Transactions of the Royal Society (Series B)* 345:101-118. [Reprinted in D. L. Hawksworth, ed. *Biodiversity: Measurement and estimation*. Chapman and Hall, London.]
- Colwell, R. K., and G. C. Hurtt. 1994. Nonbiological gradients in species richness and a spurious Rapoport effect. *American Naturalist* 144: 570-595.
- Kremen, C., R. K. Colwell, T. L. Erwin, and D. D. Murphy. 1994. Arthropod assemblages: their use as indicators in conservation planning. *Conservation Biology* 7: 796-808.
- Colwell, R. K. 1992. Making sense of ecological complexity: A personal and conceptual retrospective. *Biotropica* 24: 226-232.
- Christiansen, K. M., R. K. Colwell, and M. J. Kaliszewski. 1992. Cellulose acetate electrophoretic techniques for the genetic analysis of individual ascid mites (Acari: Mesostigmata). *International Journal of Acarology* 18: 97-105.



- Kaliszewski, M. J., I. Chojnacki, J. Tobolewski, S. Seyoum, M. M. Kaliszewska, D. Stanton, and R. K. Colwell. 1992. Polymerase chain reaction and sequencing of mite DNA. *International Journal of Acarology* 18: 231-239.
- Tobolewski, J., M. J. Kaliszewski, R. K. Colwell, and J. H. Oliver. 1992. Detection and identification of mammalian DNA from the gut of museum specimens of ticks. *Journal of Medical Entomology* 29: 1049-1051.
- OConnor, B. M., R. K. Colwell, and S. Naeem. 1991. Flower mites of Trinidad II. The genus *Proctolaelaps* (Acari: Ascidae). *Great Basin Naturalist* 51: 348-376.
- Losos, J., S. Naeem, and Colwell, R. K. 1990. Hutchinsonian ratios and statistical power. *Evolution* 43: 1820-1826.
- Colwell, R. K. 1989. Hummingbirds of the Juan Fernandez Islands: natural history, evolution and population status. *Ibis* 131: 548-566.
- Tiedje, J. M., R. K. Colwell, Y. L. Grossman, R. E. Hodson, R. E. Lenski, R. N. Mack, and P. J. Regal. 1989. The planned introduction of genetically engineered organisms: ecological considerations and recommendations. *Ecology* 70: 298-315.
- Colwell, R. K. 1985. The evolution of ecology. *American Zoologist* 25: 771-777.
- Harvey, P. H., R. K. Colwell, J. W. Silvertown, and R. M. May. 1983. Null models in ecology. *Annual Review of Ecology and Systematics* 14: 189-211.
- Colwell, R. K. 1981. Group selection is implicated in the evolution of female biased sex ratios. *Nature* 290: 401-404.
- Wilson, D. S., and R. K. Colwell. 1981. Evolution of sex ratio in structured demes. *Evolution* 35: 882-897.
- Colwell, R. K. and S. Naeem. 1979. The first known species of hummingbird flower mite north of Mexico: *Rhinoseius epoecus* n. sp. (Mesostigmata: Ascidae). *Annals of the Entomological Society of America* 72: 485-491.
- Feinsinger, P., R. K. Colwell, J. Terborgh, and S. B. Chaplin. 1979. Elevation and the morphology, flight energetics, and foraging ecology of tropical hummingbirds. *American Naturalist* 113: 481-497.
- Feinsinger, P., and R. K. Colwell. 1978. Community organization among neotropical nectar-feeding birds. *American Zoologist* 18: 779-795.
- Inger, R. F., and R. K. Colwell. 1977. Organization of contiguous communities of amphibians and reptiles in Thailand. *Ecological Monographs* 47: 229-253.
- Colwell, R. K., and E. R. Fuentes. 1975. Experimental studies of the niche. *Annual Review of Ecology and Systematics* 6: 281-310.
- Colwell, R. K. 1974. Predictability, constancy, and contingency of periodic phenomena. *Ecology* 55: 1148-1153.
- Colwell, R. K., B. J. Betts, P. Bunnell, F. L. Carpenter, and P. Feinsinger. 1974. Competition for the nectar of *Centropogon valerii* by the hummingbird *Colibri thalassinus* and the flower-piercer *Diglossa plumbea*, and its evolutionary implications. *Condor* 76: 447-452.
- Colwell, R. K. 1973. Competition and coexistence in a simple tropical community. *American Naturalist* 107: 737-760.
- Colwell, R. K., and D. J. Futuyma. 1971. On the measurement of niche breadth and overlap. *Ecology* 52: 567-576. [An ISI Citation Classic. Reprinted, pp. 259-268 in Whittaker, R. H. and S. A. Levin (ed.). *Niche: theory and application*. Dowden, Hutchinson, and Ross, Stroudsburg, PA.]
- Hairston, N.G., J. D. Allen, R. K. Colwell, D. J. Futuyma, J. Howell, M. D. Lubin, J. Mathias and J. H. Vandermeer. 1968. The relationship between species diversity and stability: An experimental approach with Protozoa and bacteria. *Ecology* 49: 1091-1101.
- Redding, R., B. Prynne, and R. Colwell. 1964. The phenomenon of alternate sleep and wakefulness in the young dog. *Journal of the American Veterinary Medical Association* 144:605.

Colwell, R. K. 1963. A new type of electronic cable for chronic implantation in living tissue. *Journal of Applied Physiology* 18:1039-1040.

**Book Chapters (Peer reviewed)**

- Colwell, R. K. 2011. Biogeographical gradient theory. Pages 309-330 in S. M. Scheiner and M. R. Willig, editors. *The theory of ecology*. University of Chicago Press, Chicago.
- Gotelli, N. J. and R. K. Colwell. 2011. Estimating species richness. Pages 39-54 in A. E. Magurran and B. J. McGill, editors. *Frontiers in measuring biodiversity*. Oxford University Press, New York.
- Colwell, R. K. 2009. Biodiversity: concepts, patterns, and measurement. Pages 257-263 in S. A. Levin, editor. *The Princeton Guide to Ecology*. Princeton Univ. Press, Princeton, NJ.
- Chao, A., R. L. Chazdon, R. K. Colwell, and T.-J. Shen. 2005. Un nuevo método estadístico para la evaluación de la simultud en la composición de especies con datos de incidencia y abundancia. Pages 85-96 in G. Halffter, J. Soberón, P. Koleff, and A. Melic, editors. *Sobre diversidad biológica: el significado de la diversidades alfa, beta, y gamma*. m3m: Monografías Tercer Milenio, Zaragoza, Spain.
- Colwell, R.K. 2005. Estimation of species richness at large spatial scales: Potential, procedures, pitfalls. Pp. 1-5 in A. Bergamini, Ed. *Landscape scale biodiversity assessment, the problem of scaling*. European Platform for Biodiversity Research Strategy (EPBRS), Budapest, Hungary.
- Colwell, R. K., C. X. Mao, and J. Chang. 2005. Interpolando, extrapolando y comparando las curvas de acumulación de especies basadas en su incidencia. Pages 73-84 in G. Halffter, J. Soberón, P. Koleff, and A. Melic, editors. *Sobre diversidad biológica: el significado de la diversidades alfa, beta, y gamma*. m3m: Monografías Tercer Milenio, Zaragoza, Spain.
- Coddington, J. A., and R. K. Colwell. 2000. Arachnids. Vol. 1., Pp. 199-218 in S. Levin, ed. *Encyclopedia of biodiversity*. Academic Press, NY.
- Colwell, R. K. 2000. Hummingbirds and flower mites: Contrasts and conflicts between two nectarivores. Pp. 86-99 in M. A. S. Alves, J. M. C. Silva, M. Van Sluys, H. G. Bergallo and C. F. D. Rocha, eds. *A ornitologia no Brasil: pesquisa atual, conservação e perspectivas*. Anais do VII Congresso Brasileiro de Ornitologia. Rio de Janeiro.
- Colwell, R. K., and P. Naskrecki. 1999. The evolution of host-plant affiliation, body size and sexual dimorphism in hummingbird flower mites (Ascidae: *Rhinoseius* and *Tropicoseius*). Pp. 79-86 in G. R. Needham, R. Mitchell, D. J. Horn and W. C. Welbourn, eds. *Acarology IX, Volume 2: Symposia (IXth International Congress of Acarology)*. Ohio Biological Survey, Columbus, Ohio.
- Chazdon, R. L., R. K. Colwell, J. S. Denslow, and M. R. Guariguata. 1998. Statistical methods for estimating species richness of woody regeneration in primary and secondary rain forests of northeastern Costa Rica. Pp. 285-309 in F. Dallmeier and J. A. Comiskey, eds. *Forest biodiversity research, monitoring and modeling: Conceptual background and Old World case studies*. Parthenon Publishing, Paris.
- Tartowski, S. L., E. B. Allen, N. E. Barrett, A. R. Berkowitz, R. K. Colwell, P. M. Groffman, J. Harte, H. P. Possingham, C. M. Pringle, D. L. Strayer, and C. R. Tracy. 1997. Integration of Species and Ecosystem Approaches to Conservation. Pp. 187-192 in: Pickett, S.T.A., R. S. Ostfield, M. Shachak, and G. E. Likens (eds.) *The ecological basis of conservation: Heterogeneity, ecosystems, and biodiversity*. Proceedings of the Sixth Cary Conference, Institute of Ecosystem Studies. Chapman and Hall, New York.
- Colwell, R. K. 1994. Potential ecological and evolutionary problems of introducing transgenic crops into the environment. Pp. 33-46 in A. F. Krattiger and A. Rosemarin (eds.). *Biosafety for sustainable agriculture: sharing biotechnology regulatory experiences of the Western Hemisphere*. ISAAA-International Service for the Acquisition of Agri-biotech Applications and SEI-The Stockholm Environmental Institute, Stockholm, Sweden.
- Colwell, R. K. 1994. Ruby-throated Hummingbird (*Archilochus colubris*). Pp. 182-183 in L. R. Bevier, ed. *The atlas of breeding birds of Connecticut*. Connecticut State Geological and Natural History

- Survey, Bulletin No. 113.
- Colwell, R. K. and S. Naeem. 1994. Life history patterns of hummingbird flower mites in relation to host phenology and morphology. Pp. 23-44 in M. A. Houck, ed. *Mites: ecological and evolutionary analyses of life history patterns*. Chapman and Hall, New York.
- Newstrom, L. E., G. W. Frankie, H. G. Baker and R. K. Colwell. 1994. Diversity of long-term flowering patterns. Pp. 142-160 in L. A. McDade, K. S. Bawa, H. A. Hespenheide and G. S. Hartshorn (eds.). *La Selva: Ecology and natural history of a Neotropical rain forest*. University of Chicago Press, Chicago.
- Colwell, R. K. 1992. The niche: environmental or population attribute? Pp. 241-248 in E. F. Keller, and E. A. Lloyd, eds. *Keywords in evolutionary biology*. Harvard University Press, Cambridge, MA.
- Colwell, R. K. 1992. Human aspects of biodiversity: An evolutionary perspective. International Union of Biological Sciences, Monograph No. 8. Pp. 209-222 in O. Solbrig, H. M. van Emden and P. G. W. J. van Oordt (eds.). *Biological diversity and global change*. IUBS Press, Paris.
- Barbault, R., R. K. Colwell, B. Dias, D. K. Hawksworth, M. Houston, P. Lasserre, D. Stone, and T. Younés. 1991. Conceptual framework and research and research issues for species diversity at the community level. Pages 37-71 in S. OT, (ed.). *From genes to ecosystems: A research agenda for biodiversity*. International Union of Biological Sciences, Paris.
- Colwell, R. K., and M. A. Huston. 1991. Conceptual framework and research issues for species diversity at the community level. Pp. 37-71 in O. T. Solbrig (ed.). *From genes to ecosystems: A research agenda for biodiversity*. International Union of Biological Sciences, Paris.
- Heyneman, A. J., R. K. Colwell, S. Naeem, D. S. Dobkin, and B. Hallet. 1991. Host plant discrimination: experiments with hummingbird flower mites. Pp. 455-485 in Price, P. W., and T. M. Lewinsohn, G. W. Fernandes, and W. W. Benson (eds.). *Evolutionary ecology in tropical and temperate regions*. John Wiley and Sons, NY.
- Naeem, S. and R. K. Colwell. 1991. Ecological consequences of heterogeneity of consumable resources. Pp. 224-255 in Kolasa, J., and S. T. A. Pickett (eds.). *Ecological heterogeneity*. Springer Verlag, NY.
- Colwell, R. K. 1990. Naturgeschichte, biologische Vielfalt und der Mensch. Pp. 8-10 in H.-B. Peter, ed. *Freiheit und Verantwortung in der Wissenschaft*. Mitteilungsblatt der Schweizerischen Akademie der Geisteswissenschaften und der Schweizerischen Akademie de Naturwissenschaften (Beiheft XV), Gerzensee, Switzerland.
- Colwell, R. K. 1989. Natural and unnatural history: biological diversity and genetic engineering. Pp. 1-40 in Shea, W. R., and B. Sitter (eds.). (Conference of Swiss Scientific Academies). *Freedom and responsibility: moral issues facing scientists today*. Watson Publishing International, Nantucket, MA.
- Colwell, R. K. 1988. Ecology and biotechnology: expectations and outliers. Pp. 163-180 in Fiksel, J. and Vincent T. Covello (eds.). *Risk analysis approaches for environmental releases of genetically engineered organisms*. NATO Advanced Research Science Institutes Series, Volume F. Springer-Verlag, Berlin.
- Colwell, R. K. 1986. Community biology and sexual selection: Lessons from hummingbird flower mites. Pp. 406-424 in Case, T. J. and J. Diamond (eds.). *Ecological communities*. Harper and Row, NY.
- Colwell, R. K. 1986. Population structure and sexual selection for host fidelity in the speciation of hummingbird flower mites. Pp. 475-495 in Karlin, S. and E. Nevo (eds.). *Evolutionary processes and theory*. Academic Press, Orlando, FL.
- Colwell, R. K. 1984. What's new? Community ecology discovers biology. Pp. 387-397 in Price, P. W., C. N. Slobodchikoff, and W. S. Gaud (eds.). *A new ecology: novel approaches to interactive systems*. Wiley, NY.
- Colwell, R. K. and D. W. Winkler. 1984. A null model for null models in biogeography. Pp. 344-359 in Strong, D. R., Jr., D. Simberloff, L. G. Abele, and A. B. Thistle (eds.). *Ecological communities:*

*conceptual issues and the evidence*. Princeton University Press, Princeton, NJ.

Colwell, R. K. 1983. *Rhinoseius colwelli* (Acaro floral del colibri, totolate floral de colibri, hummingbird flower mite). P. 619 (fig.) and pp. 767-768 in Janzen, D. H. (ed.) *Costa Rican natural history*. University of Chicago Press, Chicago.

Colwell, R. K. and M.-C. King. 1983. Disentangling genetic and cultural influences on human behavior: Problems and prospects. Pp. 227-249 in Rajecki, D. (ed.) *Comparing behavior: studying man, studying animals*. Erlbaum Associates, Hillsdale, NJ.

Colwell, R. K. 1979. The geographical ecology of hummingbird flower mites in relation to their host plants and carriers. Pp. 461-468 in J. G. Rodriguez, ed. *Recent Advances in Acarology*. Academic Press, New York.

Colwell, R. K. 1979. Toward a unified approach to the study of species diversity. Pp. 75-91 in Grassle, J. F., G. P. Patil, W. K. Smith, and C. Taillie (eds.). *Ecological diversity in theory and practice*. International Cooperative Publishing House, Fairland, MD.

### Software and Documentation

Colwell, R. K. 2004. *Biota 2: The biodiversity database manager*. Sinauer Associates, Sunderland, MA. (Software and 880 p. Manual. Predecessor Biota 1 has more than 1000 users in 40 countries and 48 U.S. states.)

Colwell, R. K. 1999-2009. *RangeModel 5: A Monte Carlo simulation tool for assessing geometric constraints on species richness*. (Simulation and analysis software.) Published as freeware at <http://viceroy.eeb.uconn.edu/rangemodel>.

Colwell, R. K. 1997-2010. *EstimateS Ver. 8.2: Statistical estimation of species richness and shared species from samples*. (Statistical estimation software with 20 p. Manual). Freeware published at <http://viceroy.eeb.uconn.edu/EstimateS>. (More than 60,000 registered users in more than 100 countries. Cited more than 2000 times.)

### Other Publications

#### Doctoral Dissertation

Colwell, R. K. 1969. *Ecological specialization and species diversity in tropical and temperate arthropod communities*. University of Michigan, Ann Arbor.

#### Textbook Chapters

Colwell, R. K., J. Longino, D. Brenes, N. Oconotrillo, M. Paniagua, and R. Vargas. 2002. Los artrópodos: Protagonistas en la estimación y conservación de la biodiversidad. In R. Primack, R. Rozzi, P. Feinsinger, R. Dirzo and F. Massard, eds. *Conservación biológica*. Fondo de Cultura Económica, Mexico City, Mexico.

Colwell, R. K. 1991. Field ecology. Pp. 187-198 in T. Taigen, T. Terry, D. Wagner, and E. Jokinen (eds.). *Hands-on biology: a lab manual for introductory biology*. McGraw-Hill, New York.

Colwell, R. K. 1991. Population ecology (pp. 786-803); Community interactions (pp. 804-825) in Starr, C., and R. Taggart, *Biology: the unity and diversity of life*. 6th edition. Wadsworth Press, Belmont, CA.

#### Popular Articles

Colwell, R., and J. Longino. 2003. Wings and stings. *Natural History* 112(1): 13-13.

Chazdon, R. L., and R. Colwell. 1989. The Organization for Tropical Studies. Pp. 173-186 in *Science year: the World Book annual science supplement*. World Book, Inc., Chicago.

Colwell, R. K. 1985. A bite to remember. *Natural History* 94(4): 2-8.

Colwell, R. K. 1985. Stowaways on the *Hummingbird Express*. *Natural History* 94(7): 56-63.

#### Letters, Book Reviews, Op Ed, and Memorials

Colwell, R. and D. Futuyma. 2009. Lawrence B. Slobodkin. *Evolutionary Ecology Research* 11:989-990.

- Futuyma, D. and R. Colwell. 2009. Lawrence B. Slobodkin (1928–2009): Integrating theory, models, and experiments in ecology. *PLOS Biology* 7:e1000261. doi:1000210.1001371/journal.pbio.1000261.
- Colwell, R. K., and D. C. Lees. 2000. Reply from R. K. Colwell and D. C. Lees. *Trends in Ecology and Evolution* 15:289.
- Colwell, R. K. 1983. Review of *Theoretical ecology: principles and applications* (R. M. May). *Auk* 100: 261-262.
- Colwell, R. K. 1989. Science of the times. *Village Voice Literary Supplement*, Number 78 (September), p. 19.
- Colwell, R. K. 1988. A Forum: speaking ecologically. *EPA Journal* 14: 6.
- Colwell, R. K. 1988. Academy's gene report: another reading. (Roundtable feature). *BioScience* 38: 421-423.
- Colwell, R. K. 1987. The ice-minus case and a scientifically informed judiciary. (Letter.) *Science* 237: 10.
- Colwell, R. K., E. A. Norse, D. Pimentel, F. E. Sharples, and D. Simberloff. 1985. Genetic engineering in agriculture. (Letter.) *Science* 229: 111-112.
- Colwell, R. K. 1982. Female-biased sex ratios. *Nature* 298:494-496
- Greenstone, M. H., R. K. Colwell, and F. A. Pitelka. 1972. Ecological Assessment. *Science* 177:210.

#### **Commentary and Technical Reports**

- Colwell, R. K. 2010. Beta diversity: synthesis and a guide for the perplexed. *Ecography* 33:1.
- Colwell, R. K. 2002. Hot new paper comments (Colwell, R. K. and D. C. Lees. 2000. The mid-domain effect: geometric constraints on the geography of species richness. *Trends in Ecology and Evolution* 15:70-76.). *Essential Science Indicators Special Topics* January 2002. <http://www.esi-topics.com/nhp/comments/january-02-RobertColwell.html>.
- Gross, K. L., C. E. Pake, E. Allen, R. K. Colwell, P. K. Dayton, M. Dethier, J. Helly, R. D. Holt, N. Morin, W. Michener, S. T. A. Pickett, and S. Stafford. 1995. *Final report of the Ecological Society of America Committee on the Future of Long-term Ecological Data (FLED)*. Ecological Society of America, Washington, D. C.
- Colwell, R. K. 1995. Ecological Society of America, Special Committee on ESA Communications in the Electronic Age: Final report the Committee. *Bulletin of the Ecological Society of America* 76(3):120-131.
- Colwell, R. K. 1993. Management of wildland biodiversity as a resource for biotechnology. Pp. 130-134 in W. Tien, S.-F. Chen, L. Lo, and Y. T. Shyu, eds. *Biotechnology: theory and applications* 1993. Development Center for Biotechnology, Tapei, Republic of China.
- Colwell, R. K. 1989. Biological diversity and transgenic plants: the case for the preservation and protection of wild plant genetic resources. In Dilley, A. (Ed.). *Transgenic plants: risk and regulation*. Keystone Biotechnology Forum. Keystone Center, Frisco, Colorado.
- Colwell, R. K., L. W. Barnthouse, A. Dobson, F. Taub, and R. Wetzler. 1987. Response to the Office of Science and Technology Policy notice "Coordinated framework for regulation of biotechnology." *Bulletin of the Ecological Society of America* 68: 16-23.
- Colwell, R. K. 1986. Biological responses to perturbation: Genome to ecosystem. Pp. 230-232 in Halvorson, H. O., D. Pramer, and M. Rogul (Eds.). *Engineered organisms in the environment: Scientific issues*. American Society for Microbiology, Washington, D.C.
- Colwell, R. K. 1982. This week's citation classic [Colwell, R. K., and Futuyma, D. J. 1971. On the measurement of niche breadth and overlap. *Ecology* 52:567-576.]. *Current Contents* 3:18.