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CURRICULUM VITAE Stephen P. Hubbell

Statement:

Dr. Hubbell is an internationally known ecologist whose research is on tropical rainforests and in theoretical ecology. He has published 3 books and more than 100 scientific papers in tropical plant ecology, plant-animal interactions, and theoretical ecology. He has received more than 60 grants from the National Science Foundation and other private foundations in support of his research. He is Co-founder and board member of the Center for Tropical Forest Science, which manages a global network of permanent tropical forest research plots, based on his research design from the original plot on Barro Colorado Island, Panama. He has won numerous awards for his work. He was in the first class of Pew Scholars in Conservation and the Environment. He is Founder and Chairman of the National Council for Science and the Environment, a national organization with more than 10,000 members and over 200 universities and professional societies, with the mission of improving the science underlying environmental decision-making.

Present Affiliations:

Professor, Department of Plant Biology, University of Georgia, Athens, GA 30602
Staff Scientist, Smithsonian Tropical Research Institute, Balboa, Panama

Home address: 1590 Morton Road, Athens, GA 30605

Birth: February 17, 1942, Gainesville, Florida, USA.

Education: B. A. 1963 (Biology) Carleton College, Northfield MN 55455.

Graduated Magna cum Laude, with honors in Biology.

Ph.D. 1969 (Zoology) University of California, Berkeley, CA 94720.

Employment History:

Assistant Professor of Zoology, Univ. of Michigan, Ann Arbor, MI. 1969-1974.

Associate Professor of Zoology, University of Michigan, 1974-1975 (tenured).

Associate Professor of Biology, University of Iowa, Iowa City, IA. 1975-1980.

Professor of Biology, University of Iowa, 1980 - 1988.

Biologist, GS-14, Smithsonian Institution, 1982-1985.
Biologist, GS-15, Smithsonian Institution, 1985 - 1988.
Professor, Ecology & Evolutionary Biology, Princeton University, Princeton NJ
08544, 1988-1999
Professor, Department of Botany, University of Georgia, Athens, GA 30602,
1999-
Biologist, GS-16 Smithsonian Institution, 2000-

Other Employment and Affiliations:

Visiting Distinguished Professor, University of Texas, Austin, TX 1980.
Organization for Tropical Studies: 1964, 1965, 1968, 1970, 1971, 1972, 1981
(OTS courses in Fundamentals of Tropical Biology, Costa Rica).
Summer Faculty Member, University of Minnesota Forestry and Biological
Station, Itasca, MN 1978, 1979, 1980.
Visiting Distinguished Professor, Forest Research Institute, Kuala Lumpur,
Malaysia, 1986.
Research Associate, Arnold Arboretum, Harvard University, 1985 -present.
Visiting Distinguished Professor, University of Turku, Finland 1995
Research Associate, Smithsonian Tropical Research Institute, Panama, 1990-
2000
Staff Scientist, Smithsonian Tropical Research Institute, Panama 2000-present
Visiting Distinguished Professor, University of Amsterdam, The Netherlands
2001.

Major Honors:

Faculty Scholar:

Appointed Faculty Scholar of the University of Iowa, 1980-1983. Half-time
paid release from teaching to pursue research for 3 years.

Fellow, American Association for the Advancement of Science (elected 1982)

Guggenheim Fellowship:

Fellow for the 1984 - 1985 academic year.

Pew Scholar in Conservation and the Environment:

Pew Scholar Award in Conservation and the Environment, 1990-1993.

Crafoord Prize Nominee: 1990. (Stockholm, Sweden) ("Nobel" equivalent
prize for disciplines not considered by the Nobel prize)

Cosmos Environmental Prize, Selection Committee (Kyoto, Japan) 1998-

Distinguished Service Medal, Society of Conservation Biology, 1992.

Invited Seminars and Lectures:

Arizona State University, Beaufort Marine Laboratory, Bedford Institute of Oceanography, Botanical Research Institute, India, Brigham Young University (lecture series), Brown University, Cambridge University (twice), Carleton College, Cornell University (lecture series), Dalhousie University, Dartmouth College (twice), Duke University (three times), Emory University (lecture series), Florida State University (Three times), Forest Research Institute of Malaysia, Harvard University (three times), Indian Institute of Science, Bangalore, Indiana University, CATIE of Costa Rica, Iowa State University (twice), Kellogg Biological Station (lecture series), Kerala Forest Research Institute, India, Michigan State University (three times), Missouri Botanical Garden (twice), New York Botanical Garden (three times), North Carolina State University (three times), Ohio State University, Oxford University (three times), Princeton University (three times), Purdue University (three times), Rice University, Rockefeller University (lecture series), Rutgers University (three times), Savannah River Ecology Laboratory, Stanford University (twice), The Open University (U.K.), Tufts University, University of Amsterdam (lecture series), University of Arizona (three times), University of British Columbia twice, University of California, Berkeley (twice), Davis (three times), Irvine, Riverside, San Diego (twice), Santa Barbara (twice), Santa Cruz (three times), University of Chicago (six times), Universidad de Costa Rica, University of Delaware, University of Florida, University of Georgia (three times), University of Iowa (three times), University of Kansas, University of Leeds, University of Leiden (twice), University of Miami (twice) University of Massachusetts, University of Michigan (five times), University of Minnesota (three times), University of Minnesota Forestry and Biological Station (twice), University of Missouri-St. Louis (twice), University of New Hampshire, University of New Mexico (twice), University of New York at Stony Brook (three times), University of North Carolina (four times), University of North Dakota, University of Oklahoma, University of Pittsburgh, University of Rochester, University of Stockholm, Sweden (lecture series). University of Tennessee, University of Texas (lecture series), University of Toronto, University of Turku (lecture series), University of Utah (lecture series), University of Washington (twice), University of Wisconsin (twice), University of Virginia, University of Utah (three times), University of Utrecht, Utah State University (twice), Williams College, Yale University (three times), York University, Toronto (twice).

Invited National and International Society Lectures:

Summer Simulation Conference, San Diego, 1972.

Biophysical Society, New Orleans, 1971.

American Society of Experimental Zoology, Chicago, 1973.

Symposium Coordinator, 1st International Congress of systematics and Evolutionary Biology, Boulder, 1973.

Gordon Conferences on Theoretical Biology, Tilton School, NH, 1974, 1976, 1984, 1992

- Symposium on Costa Rican Ecology, Organization for Tropical Studies, Stillwater, 1979.
- Gordon Conference on Industrial Microbiology, 1980.
- Symposium of Theoretical Ecology, Uppsala, Sweden, 1980.
- Simposio Internacional sobre Insectos Sociales en los Tropicos, Cocoyoc, Mexico, 1980.
- Symposium on the Tropical Rain Forest, Leeds, UK, 1982.
- Conference on International Union of Biological Sciences and UNESCO on Tropical Diversity, Paris, 1983.
- Symposium on Tropical Plant Ecology, Grand Forks, ND, 1983.
- International Ethological Congress, Brisbane, 1983.
- Symposium on Community Ecology, Los Angeles, 1984.
- Linnaean Society / British Ecological Society Symposium on Plant Ecology, University of Southampton, UK, 1985.
- NSF Workshop on Tropical Plant Ecology, La Selva, Costa Rica, 1985.
- 3rd International Congress of Systematics and Evolutionary Biology, Symposium on Tropical Rain Forest, University of Sussex, Brighton, UK, 1985.
- Second Biological Conservation Conference, Ann Arbor, MI, 1985.
- Symposium on Malaysian Forestry, Kuala Lumpur, 1986.
- UNESCO Symposium on Reproductive Biology of Tropical Trees, Kuala Lumpur, 1987.
- International Symposium on Conservation in Thailand, Chiang Mai, Thailand, 1989.
- Royal Society Symposium on Density Dependence in Plant Populations, London, 1990.
- Crawford Prize Symposium, Uppsala, Sweden, 1990.
- Testor Distinguished Visiting Professor, University of Hawaii, 1993.
- Distinguished Faculty Lecturer, University of Stockholm, Stockholm, Sweden, 1994.
- Visiting Scholar, Smithsonian Tropical Research Institute, 1994.
- Smithsonian Conference on Biodiversity Monitoring, 1995
- Distinguished Visiting Professor, University of Turku, Finland (Fall, 1995)
- Eugene P. Odum Distinguished Lectureship, Univ. of Georgia (March 1996)
- Keynote speaker, 8th International Coral Reef Symposium, Panama City, Panama, 1997 (June, 1996)
- Symposium on Tropical Rain Forest: Past, Present, and Future, James Cook University, Cairns, Queensland, Australia (April 1998)
- International Symposium on Long-term Studies of Tropical Rainforest, Smithsonian Institution, August, 1998 (Washington, DC).
- Keynote speaker, Center for Tropical Forest Science Singapore Symposium (Singapore, June 2000)
- Invited lecture, Academia Sinica, Institute of Botany, Beijing (June, 2000)
- Keynote speaker, British Ecological Society Special Symposium on Plant Ecology, entitled, Plants Stand Still But Their Genes Don't. London, Aug 2000)
- Keynote speaker, Symposium on Frugivory and Seed Dispersal, Sao Paulo, Brazil (August, 2000)

Keynote speaker, Symposium on Sexual Conflict Theory, Tubigen, Germany, August 2001
Visiting distinguished professor, University of Amsterdam, The Netherlands, October 2001
Keynote speaker, Symposium on Integrating Ecology and Evolution, Texas A&M University (February 2002)
Weese Distinguished lecturer, University of Oklahoma, (March 2002)
Invited speaker, BES Symposium on Macroecology, Birmingham, U.K. (T. Blackburn and K. Gaston, eds.. (April, 2002).
Keynote speaker, Symposium on Biodiversity-Driving Force of Life, The Hague, Netherlands (invited, March 2002)
distinguished Professor, University of Texas, 2002 (invited)
Visiting Scholar Lecture, Michigan State University (October, 2002)

Graduate Fellowships, Awards:

National Science Foundation Graduate Fellowships : 1963, 1964, 1965 (decl.), 1966, 1967, 1968, 1969.
National Graduate Fellow, General Biological Supply House (2 year awarded nationally).

Honorary Societies:

Phi Beta Kappa
Sigma Xi

Professional Societies:

American Association for the Advancement of Science
American Society of Naturalists
Ecological Society of America
Association of Tropical Biology

Services Provided for Societies, Universities and Federal Government:

Associate Editor, Theoretical Population Biology, 1976-1978.
Board of Directors, Organization for Tropical Studies, 1979-1981.
La Selva Advisory Board, Organization for Tropical Studies, 1979-1982.
Associate Editor, Tropical Biology Series, Cambridge University Press, 1983-.
Co-editor, Monographs in Population Biology , Princeton University Press, 1989-1996
Board of Editors, Ecology, 1989-1990

Reviewer for: The American Naturalist, Evolution, Ecology, Ecological Monographs, Science, Journal of Ecology, Journal of Animal Ecology, Bulletin of the Torrey Botanical Club, Journal of Theoretical Biology, Mathematical Biosciences, Bioscience, National Science Foundation, National Institutes of Health, The

National Geographic Society, The John Simon Guggenheim Foundation, the John D. and Katherine T. MacArthur Foundation, the Pew Scholars Program in Conservation and the Environment.

Tenure and promotion reviews for 57 full, associate, and assistant professors
Witness for House Committee on Science, Space and Technology, Subcommittee on Natural Resources, Agriculture Research, and Environment, 1990., 1991, 1995, 1997

Witness for Senate Committee on Environment and Public Works, 1990, 1997.

National and International Committee and Board Memberships:

National Academy of Sciences, Committee on the African Bee, 1971-1973.

UNESCO/IUBS Committee on Tropical Rain Forest Diversity, 1983-present.

Advisor to the World Wildlife Fund, Minimum Critical Ecosystems Project, Brazil, 1985-1990

National Research Council, Board on Biology, Committee on Future Research Directions in Biology, 1987-1988

International Advisory Board, Swedish National Research Council, 1989-1995

Board on Biology, National Research Council, NIE meeting, 1990.

Smithsonian Advisory Committee on Biodiversity, 1990-

Board Member, Excellence in Environmental Education, Inc. 1990-

Advisory Board, American Institute of Biological Sciences, 1990-1993

Chairman of the Board, Committee for the National Institutes for the Environment, 1990-.1999

Chairman of the Board, National Council for Science and the Environment, Washington, D. C. 1990present

Member, Science Commission, Smithsonian Institution, 2001-

Board member, The Aurora Collection/Fun with Science, Inc. 2000-

Grants Awarded

(Note: It has been a personal policy not to list the grant dollar amounts on my resume on the grounds that the grant award is the appropriate measure of the recognition of my science, not the dollar amount. However, the total grant support I have obtained over my 32 year academic career is in excess of \$6 million from all sources, Federal and private.)

Grants Awarded, Federal Agencies

A. National Science Foundation:

1. Comparative Foraging Biology of Stingless Bees.
2. Foraging Behavior of Leafcutting Ants.
3. Biology of Leafcutting Ants.
4. Experimental Test of Resource-Based Competition Theory.
5. Theory of Competition and Predation (with P. Waltman).
6. A Demographic Analysis of a Tropical Forest (with R. Foster).
7. Host-Plant Susceptibility to Leafcutting Ant Attack (with D. Wiemer).
8. Structure and Dynamics of a Neotropical Forest.

9. Structure and Dynamics of Lowland Dipterocarp Forest Malaysia (with P. Ashton).
10. The Dynamics of a Neotropical Forest.
11. The short-term Dynamics of a Neotropical Forest: The First Decade.
12. Dynamics of a Neotropical Forest: The Fourth Census
13. Do herbivores control tropical tree diversity: a community level experimental test (with W. Carson).
14. Dispersal limitation: Does it control the distribution and abundance of pioneer tree species in a tropical forest?
15. The dynamics of a Neotropical forest: the 1995 census.
16. What explains the local variation in tree diversity in a Neotropical forest: an experimental approach.
17. The effect of removing ground foraging herbivores in a Neotropical forest. (with W. Carson).
18. The structure and dynamics of a Southeast Asia tropical monsoon forest.
19. The structure and dynamics of a Bornean rainforest on contrasting substrates (with P. Ashton).
20. Are pioneers dispersal limited? An observational and experimental Test
21. Causes of variation in species richness in a Neotropical forest
22. The long-term effects of herbivore removal on a Neotropical forest (with W. Carson)
23. Long-term dynamics of a Neotropical forest: The year 2000 recensus.
24. Long-term small sapling dynamics in a Neotropical forest.
25. Inter-annual seed rain variability, dispersal limitation, and the maintenance of tree diversity in a Malaysian rainforest.
26. Theoretical and empirical studies of seed dispersal in tropical trees.

B. U. S. Department of Energy

27. A Free Atmospheric Carbon Exchange (FACE) experiment in a tropical forest in Panama (with 5 collaborators).

C. U.S. Department of Agriculture:

28. Phytochemical Deterrents to Leafcutting Ant Attack (with D. Wiemer).
29. Chemical Defense to Leafcutting Ant Attack: A Community-Level Assessment (with D. Wiemer).

D. Environmental Protection Agency:

30. Study of Current Human Resources in the Environmental Sciences, 1990-1991.

Grants Awarded, International Organizations:

31. UNESCO/MAB (Paris) Training Program for Malaysian Scientists in Tropical Forest Ecology (with Forest Research Institute of Malaysia).

Grants Awarded, Private Foundations:

A. Smithsonian Institution:

32. Scholarly Studies Program: The Structure and Dynamics of Old-Growth Forest on Barro Colorado Island.
33. Scholarly Studies Program: The Causes and Consequences of rarity in tropical trees.
34. Scholarly Studies Program: The short-term Dynamics of a Neotropical forest.
35. The Walcott Fund: Grant to Support Botanical publication on the BCI Project.
36. Research Opportunities Fund: The Paleoecology of Barro Colorado Island (with D. Piperno).
37. Environmental Sciences Program: Dynamics of Canopy Gaps.
38. Scholarly Studies Program: A Decade of Change in a Tropical Forest.

B. World Wildlife Fund:

39. Implications of a Large-Plot Study of Tropical Rain Forest for Tropical Tree Conservation.
40. The Causes and Consequences of Tree Rarity in a Neotropical Forest.

C. The Center for Field Research:

41. The Anatomy of a Rainforest.

D. Geraldine R. Dodge Foundation:

42. Fifteen competitively awarded scholarships for New Jersey high school science teachers to assist in Tropical Forest Dynamics Project on Barro Colorado Island.
43. Grant to the Committee for the NIE for general operating expenses.

E. The Iowa Foundation:

44. Stipend grant for undergraduate student participants in the Tropical Forest Dynamics Project on Barro Colorado Island.

F. The Exxon Foundation:

45. Stipend grants for Latin American student participants in the Tropical Forest Dynamics Project on Barro Colorado Island.

G. The Tektronix Foundation:

46. Grant to purchase a Tektronix Minicomputer Work Station, Rasterizer and a Color Copier for the BCI Forest Dynamics Project.

H. The Pew Charitable Trusts:

47. Pew Scholars Award
48. Grant to develop the concept of the National Institutes for the Environment.

I. The Johnson & Johnson Company:

49. Grant to sponsor workshop on the National Institutes for the Environment, Washington, D. C., December, 1989.

J. The W. Alton Jones Foundation:

50. Grant to publish the white paper from workshop on the National Institutes for the Environment, Washington, D. C.

K. The Beinecke Foundation:

51. Grant to support the Committee for the National Institute for the Environment.
52. Grant to evaluate the impact of airport air pollution on tree mortality.

L. The A. W. Mellon Foundation

53. Grant to conduct analyses of the data of long-term dynamics of the forest on Barro Colorado Island, Panama.

M. John D. and Katherine T. MacArthur Foundation

54. Grant to establish a Center for Tropical Forest Science at the Smithsonian Tropical Research Institute

Grants Awarded, University:

A. University of Michigan:

54. Post-Graduate Faculty Award : Theoretical and Experimental Studies in Ecology.
55. Institute of Science and Technology : Theoretical Models of Growth and Reproduction in Animals.
56. Committee on Tropical Studies: The Biology of Stingless Bees.

B. University of Iowa:

57. Old Gold Faculty Award: Biology of Leafcutting Ants
58. Faculty Scholar Research Stipend
59. Graduate College: Grant for Computer Purchase
60. Graduate College: Matching Grant for WWF Grant

Publications and Manuscripts:

Books

The Unified Neutral Theory of Biodiversity and Biogeography. 2001. Princeton Monographs in Population biology, Princeton University Press. Princeton, NJ. 375 pp.

Distribution of Tree Species in the Fifty Hectare Research Plot at Pasoh Forest Reserve. 1993. Forest Research Institute of Malaysia, 454pp. (with N. Manokaran, J. V. LaFrankie, N. M. Kochummen, F. S. Quah, J. S. Klahn, P. S. Ashton). The Malaysian Press. 452 pp.

The National Institute for the Environment: A Proposal for Improving the Scientific Basis of Environmental Decisionmaking. 1993. 199pp. (with H. F. Howe, A. K. Ahmed, D. Blockstein, and B. Mandula. Committee for the National Institute for the Environment. Washington, D. C.

The Dynamics of a Neotropical Forest: Theoretical and Empirical Studies. 2002. Princeton Monographs in Population Biology. Princeton University Press, Princeton NJ. (in prep).

Papers and Manuscripts in Plant Ecology and Tropical Forest Conservation

Hubbell, S. P. 1979. Tree dispersion, abundance and diversity in a tropical dry forest. *Science* **203**: 1299-1309.

Hubbell, S. P. 1980. Seed predation and the coexistence of tree species in tropical forests. *Oikos* **35**: 214-229.

Hubbell, S. P. and R. B. Foster. 1983. Diversity of canopy trees in a Neotropical forest and implications for the conservation of tropical trees. Pp. 25-41, in: Sutton, S.J., Whitmore, T.C. and Chadwick, A.C. eds. **Tropical Rain Forest: Ecology and Management.** Blackwell, Oxford, U.K.

Hubbell, S. P. 1984. Methodologies for the study of the origin and maintenance of tree diversity in tropical rainforest. Pp. 8-13 in: Maury-Lechon, G., Hadley, M. and Younes, T. eds. **The Significance of Species Diversity in Tropical Rain Forest Ecosystems.** Biology International (IUBS, Paris) 6:8-13.

Hubbell, S. P. and R. B. Foster. 1986a. Biology, chance and history and the structure of tropical rain forest tree communities. Chapter 19, pp. 314-329, in Diamond, J. and Case, T.J. eds. **Community Ecology,** Harper and Row, NY.

Hubbell, S. P. and R. B. Foster. 1986b. Canopy gaps and the dynamics of a Neotropical forest. Chapter 3, pp. 77-95 in: Crawley, M. ed. **Plant Ecology,** Blackwell, Oxford, UK.

- Hubbell, S. P. and R. B. Foster. 1986c. Commonness and rarity in a Neotropical forest: implications for tropical tree conservation. Chapter 10, pp. 205-231 in Soulé, M. ed. **Conservation Biology: Science of Scarcity and Diversity**. Sinauer Associates, Sunderland, MA.
- Hubbell, S. P. and R.B. Foster. 1987a. The spatial context of regeneration in a Neotropical forest. Chapter 19, pp. 395-412 in: Crawley, M., Gray, A. and Edwards, P. J., eds. **Colonization, Succession and Stability**. Blackwell, Oxford, U.K.
- Hubbell, S. P. and R. B. Foster. 1987b. La estructura en gran escala de un bosque Neotropical. *Revista de Biología Tropical* **35**: (Suppl. 1) 7-22.
- Manokaran, N., J.V. LaFrankie, K.M. Kochummen, E.S. Quah, J.E. Klahn, P.S. Ashton, and S. P. Hubbell. 1990. Methodology for the fifty hectare research plot at Pasoh Forest Reserve. Forest Research Institute of Malaysia, Research Pamphlet No. 104. 69 pp. ISSN-0126-8196.
- Hubbell, S. P. and R. B. Foster. 1990a. The fate of juvenile trees in a Neotropical forest: implications for the natural maintenance of tropical tree diversity. Ch. 22, pp. 317-341 in: K. S. Bawa & M. Hadley Eds. **Reproductive Ecology of Tropical Forest Plants**. Man and the Biosphere Series, Vol. 7 UNESCO/ IUBS Paris and Parthenon Publishing, Carnforth.
- Hubbell, S. P. and R. B. Foster. 1990b. Structure, dynamics and equilibrium status of old-growth forest on Barro Colorado Island. Chapter 26 pp. 522-541, in: A. Gentry, ed. **Four Neotropical Forests**. Yale University Press, New Haven .
- Foster, R. B. and S. P. Hubbell. 1990a. Estructura e la vegetacion y composicion de especies de un lote de cincuenta hectareas en la isla de Barro Colorado pp. 141-151, In: Leigh, Jr., E. G., And, A. S., and Windsor, D. M. eds. **Eclogue de UN Basque Neotropical: Ciclos Estacionales y Cambios de Largo Plazo**. Smithsonian Institution Press, Washington, D. C.
- Foster, R. B. and S. P. Hubbell. 1990b. Floristic composition of the Barro Colorado forest. Chapter 6 pp. 85-98 in: A. Gentry, ed. **Four Neotropical Forests**. Yale University Press.
- Hubbell, S. P., R. Condit, and R. B. Foster. 1990. Presence and absence of density dependence in a Neotropical tree community. *Transactions Royal Society of London. (Series B)* **330**: 269-281.
- Murawski, D. A., J. L. Hamrick, S. P. Hubbell, and R. B. Foster. 1990. Mating systems of two Bombacaceous trees of a Neotropical moist forest. *Oecologia* **82**: 501-506.

- Wong, M., J. Wright, S. P. Hubbell and R. B. Foster. 1990. The spatial pattern and reproductive consequences of outbreak defoliation in *Quararibea asterolepis*, a tropical tree. *Journal of Ecology*. **78**: 579-588.
- Welden, C. W., S. W. Hewett, S. P. Hubbell, and R. B. Foster. 1991. Sapling Survival, growth and recruitment: Relationship to canopy height in a Neotropical forest. *Ecology* **72**: 35-50.
- Condit, R., and S. P. Hubbell. 1991. Abundance and DNA sequence of two-base repeat regions in tropical tree genomes. *Genome* **34**: 66-71.
- Hubbell, S. P. and Robin B. Foster. 1991b. Short-term dynamics of a Neotropical forest: why ecological research matters to tropical conservation and management. *Oikos*. **63**: 48-61.
- Condit, R., Hubbell, S. P. and R. B. Foster. 1992a. Recruitment near conspecific adults and the maintenance of tree and shrub diversity in a Neotropical forest. *American Naturalist* **140**: 261-286.
- Condit, R., Hubbell, S. P. and R. B. Foster. 1992b. Short-term dynamics of a Neotropical forest: change within limits. *Bioscience* **42**: 822-828.
- Young, T.P. and Stephen P. Hubbell. 1991. Crown asymmetry, treefalls and repeat disturbance of broad-leaved forest gaps. *Ecology* **72**: 1464-1471.
- Hubbell, S.P and R B Foster. 1992. Short-term dynamics of a Neotropical forest: Why ecological research matters to tropical conservation and management. *Oikos* **63**: 48-61.
- Condit, R., S. P. Hubbell and R. B. Foster. 1992. Recruitment near conspecific adults and the maintenance of tree and shrub diversity in a Neotropical forest. *American Naturalist* **140**: 261-286.
- Gullison, R. E. and S. P. Hubbell. 1992. Regeneración natural de la mara (*Swietenia macrophylla*) en el Bosque Chimanes, Bolivia. *Ecología en Bolivia* **19**: 43-56.
- Condit, R, S. P. Hubbell and R. B. Foster. 1992a. Short-term dynamics of a neotropical forest: change within limits. *Bioscience* **42**: 822-828.
- Condit, R., S. P. Hubbell, and R. B. Foster. 1993a. Mortality and growth of a commercial hardwood, "el cativo", *Prioria copaifera*, in Panama. *Forest Ecology and Management* **62**: 107-122.
- Condit, R., S. P. Hubbell, and R. B. Foster. 1993b. Identifying fast-growing native trees from the Neotropics using data from a large, permanent census plot. *Forest Ecology and Management* **62**: 123-143

- Condit, R., S. P. Hubbell, and R. B. Foster. 1994. Density-dependence in two understory tree species in a Neotropical forest. *Ecology* **74**: 671-680.
- Gilbert, G. S., S. P. Hubbell, and R. B. Foster. 1995. Density and distance-to-adult effects of a canker disease of trees in a moist tropical forest. *Oecologia* **98**:100-108
- O'Brien, S. T., S. P. Hubbell, P. Spiro, R. Condit, and R. B. Foster. 1995. Diameter, height, crown, and age relationships in eight Neotropical tree species. *Ecology* **76**: 1926-1939.
- Hubbell, S. P. 1995. Toward a global research strategy on the ecology of natural tropical forests to meet conservation and management needs. pp. 423-438 in A. Lugo and C. Lowe, eds. **Tropical Forests: Management and Ecology**. Ecological Studies, Vol. 112, Springer-Verlag, New York.
- Condit, R., Stephen P. Hubbell, and R. B. Foster. 1995a. Demography and harvest potential of Latin American timber species: Data from a large, permanent plot in Panama. *Journal of Forest Science* **7**: 599-622.
- Condit, R., Stephen P. Hubbell, and R. B. Foster. 1995b. Mortality rates of 205 Neotropical tree and shrub species and the impact of a severe drought. *Ecological Monographs* **65**: 419-439.
- Stacey, E. A., J. L. Hamrick, J. D. Nason, S. P. Hubbell, R. B. Foster, and R. Condit. 1996. Pollen dispersal in low-density populations of three Neotropical tree species. *American Naturalist* **148**: 275-298.
- Gilbert, G. S., and S. P. Hubbell. 1996. Plant diseases and the conservation of tropical forests. *Bioscience* **46**: 98-106.
- Condit, R., Stephen P. Hubbell, and R. B. Foster. 1996a. Changes in tree species abundance in a Neotropical forest: Impact of climate change. *Journal of Tropical Ecology* **12**: 231-256.
- Condit, R., Stephen P. Hubbell, and R. B. Foster. 1996b. Assessing the response of plant functional types to climatic change in tropical forests. *Journal of Vegetation Science* **7**: 405-416.
- Condit, R., S. P. Hubbell, J. V. LaFrankie, R. Sukumar, N. Manokaran, R. Foster, and P. S. Ashton. 1996. Species-area and species-individual relationships for tropical trees: a comparison of three 50-ha plots. *Journal of Ecology* **84**: 549-562.
- Gullison, R. E., S. N. Panfil, J. J. Strouse, and S. P. Hubbell 1996. Ecology and management of mahogany (*Swietenia macrophylla* King) in the Chimanes Forest, Beni, Bolivia. *Botanical Journal of the Linnean Society* **122**: 9-34.

- Wills, C., R. Condit, R. Foster and S. P. Hubbell, 1997 Strong density- and diversity-related effects help to maintain tree species diversity in a neotropical forest. *Proceedings of the National Academy of Sciences U.S.* **94**: 1252-1257.
- Dalling J. W., S. P. Hubbell, and K. Silvera. 1998. Seed dispersal, seedling emergence and gap partitioning in gap-dependent tropical tree species. *Journal of Ecology* **86**: 674-689
- Hubbell, S. P. 1999. The maintenance of diversity in a neotropical tree community: Conceptual issues, current evidence, and the challenges ahead. Pp. 17-44 in: F. Dallmeier, and J. A. Comiskey, eds. **Forest Biodiversity, Research, Monitoring and Modeling**. Volume 20, Man and the Biosphere Series, UNESCO and Parthenon Publishing, Paris.
- Hall, P., P. S. Ashton, R. Condit, N. Manokaran, and S. P. Hubbell. 1999. Signals and noise in sampling tropical forest structure and dynamics. Pp. 63-77 in F. Dallmeier, and J. A. Comiskey, eds. **Forest biodiversity, Research, Monitoring and Modeling**. Volume 20, Man and the Biosphere Series, UNESCO and Parthenon Publishing, Paris.
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