

Curriculum Vitae
F. Lynn Carpenter

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Education:

1966 B.A., Zoology, University of California, Riverside
1972 Ph.D., Zoology, University of California, Berkeley

Academic Positions:

1984-current Professor, University of California, Irvine
1984-1986 Associate Professor, Oregon State University
1978-1984 Associate Professor, University of California, Irvine
1972-1978 Assistant Professor, University of California, Irvine

Honors

1967 Phi Beta Kappa
1976 Elected Chair, Ecology Division, American Society of Zoologists
1987 Elected fellow of the American Association for the
 Advancement of Science
1991 Elected fellow of the American Ornithological Union

Teaching

At U.C.I.: Various courses in ecology: undergraduate core biodiversity and core ecology, graduate core ecology, population and community ecology, ecological energetics, California natural history, field methods in ecology, tropical biology. I have directed many undergraduate research projects, several of which have won awards. I have directed graduate research leading to completion of five PhD's and several MS's.

At Oregon State University: Vertebrate natural history, Ornithology.

For U.C. Systemwide, I directed a new tropical biology program in Costa Rica 1994-1996 and taught two of the four component courses, “Population, community, and conservation ecology” and independent research.

Miscellaneous teaching:

1991-2000 Contributed to various graduate courses in Organization for Tropical Studies. Led field trips, gave lectures, and directed research projects on my study site.

January 1994 Cornell University’s Field Practicum “Conservation and Sustainable Development, in Costa Rica”. Field trip on my study site and lecture.

Summer 1996 Created a summer course “Sustainable Forestry in the Tropics”, in UCI’s Minority International Research Training program (MIRT).

December 1996 Contributed to KOCE-TV Introduction to Biology course for credit.

1994, 2000, 2001 UCI’s Undergraduate Studies course “Global Issues and International Perspectives”. Lecture on “The Global Environment”, one of nine lectures in a series.

Symposia Presentations (only invited presentations are listed):

1974 Fullerton College, California; 1977 American Society of Zoologists, Toronto, Canada; 1978 International Ornithological Congress, West Berlin, Germany; 1979 American Society of Zoologists, Richmond, Virginia; 1980 Fullerton College, California; 1984 American Society of Zoologists, Denver, CO; 1986 American Society of Zoologists, Baltimore, MD; 1986 International Ornithological Congress, Ottawa, Canada; 1989 Ecological Society of America, Toronto, Canada; 1990 International Ornithological Congress, Christchurch, New Zealand; 1991 International Ethological Congress, Kyoto, Japan; 1997 Society for Ecological Restoration, Fort Lauderdale Florida; 1999 International Institute for Tropical Forestry and Society for Ecological Restoration, San Juan, Puerto Rico

Research funding

1973-74, 1978-80, 1981-84, 1984-86 National Science Foundation research grants totaling about \$211,000.

1991, 1992, 1993 Earthwatch grants totaling \$34,000.

1993 Wildlife Conservation International \$5000.

1993-1996 University Research Expeditions Program (UREP) grants totaling about \$36,000.

1998. UC MEXUS Small Grant, \$1,000: "Land Management Practices and Mycorrhizal Fertility of Tropical Pasture Soils".

Fall 1998 - Winter 1999. Bio Sci Faculty Research and Travel, \$4000.

1998-2000. Rainforest Agrarian International Network [a 501(c)(3) organization], \$25,600.

2002. Newkirk Center. International workshop: "Reestablishing specific soil fungi to degraded tropical land: What impact on productivity and restoration?" \$10,935

2001-2003. Rainforest Agrarian International Network [a 501(c)(3) organization], \$28,000.

2004. University Research Expeditions Program (UREP) grant, \$3480.

2004. National Science Foundation, pending proposal, \$560,792: "Facilitation of succession in tropical pasture by an aluminum accumulator."

Publications

Articles:

1. Carpenter, F.L. 1974 Torpor in an Andean hummingbird: its ecological significance. *Science* 183: 545-547.
2. 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.
3. Carpenter, F.L. 1975. Bird hematocrits: effects of high altitude and strength of flight. *Comp. Biochem. Physiol.* 50A: 415-417.
4. Carpenter, F.L. 1975. Review of "Food supply and the annual cycles of the Anna Hummingbird", by F.G. Stiles. *Auk* 92: 172-175.
5. Carpenter, F.L. 1975. Review of "The Life of the Hummingbird", by A.F. Skutch. *Auk* 92: 397-398.
6. Carpenter, F.L. 1976. Ecology and evolution in an Andean Hummingbird. University of California Publications in Zoology, vol. 106, 74 pp.
7. Carpenter, F.L. 1976 Plant-pollinator interactions in Hawaii: pollination energetics of *Metrosideros collina* (Myrtaceae). *Ecology* 57: 1125-1144.

8. Carpenter, F.L. and R.E. MacMillen. 1976. Threshold model of feeding territoriality and test with a Hawaiian Honeycreeper. *Science* 194: 639-642.
9. Carpenter, F.L. and R.E. MacMillen. 1976. Energetic cost of feeding territories in an Hawaiian Honeycreeper. *Oecologia* 26: 213-223.
10. MacMillen, R.E. and F.L. Carpenter. 1977. Daily energy costs and body weight in nectarivorous birds. *Comp. Biochem. Physiol.* 56A: 439-441.
11. Carpenter, F.L. 1978. Hooks for mammal pollination? *Oecologia* 35: 123-132.
12. Ewald, P.W. and F.L. Carpenter. 1978. Territorial responses to energy manipulations in the Anna Hummingbird. *Oecologia* 31:277-292.
13. Carpenter, F.L. 1978. A spectrum of nectar eater communities. *Amer. Zool.* 18: 809-819.
14. Carpenter, F.L. 1979. Competition between hummingbirds and insects for nectar. *Amer. Zool.* 19: 1105-1114.
15. Carpenter, F.L. and H.F. Recher. 1979. Pollination, reproduction and fire. *Amer. Nat.* 113: 871-879.
16. Fulton, R.E. and F.L. Carpenter.. 1979. Pollination, reproduction and fire in California *Arctostaphylos*. *Oecologia* 38: 147-157.
17. Carpenter, F.L. and J. Castronovo. 1980. Maternal diet selectivity in *Calypte anna*
18. Carpenter, F.L. and R.E. MacMillen. 1980. Resource limitation, foraging strategies and community structure in Hawaiian Honeycreepers. *Proc. XVII Inter. Ornith. Congress* 2: 1100-1104.
19. MacMillen, R.E. and F.L. Carpenter. 1980. Evening roosting flights of the honeycreepers *Himatione sanguinea* and *Vestiaria coccinea* on Hawaii. *Auk* 97: 28-37.
20. Carpenter, F.L. 1983. Pollination energetics in avian communities: simple concepts and complex realities. Ch. 10 in *Handbook of Experimental Pollination Ecology*, Eds. C.E. Jones and R.J. Little. Van Nostrand Reinhold Co., NY, NY.
21. Carpenter, F.L., D.C. Paton, and M.A. Hixon. 1983. Weight gain and adjustment of feeding territory size in migrant hummingbirds. *Proc. Natl. Acad. Sci.* 80: 7259-7263.
22. Hixon, M.A., Carpenter, F.L., and D.C. Paton. 1983. Territory area, flower density, and time budgeting in hummingbirds: an experimental and theoretical analysis. *Amer. Nat.* 122: 366-391.

23. Paton, D.C. and F.L. Carpenter. 1984. Peripheral foraging by territorial Rufous Hummingbirds: defense by exploitation. *Ecology* 65: 1808-1819.
24. Carpenter, F.L. 1984. Review of "The Hummingbirds of North America", by P. Johnsgard. *Quart. Rev. Bio.* 59: 337-338.
25. Diamond, J.M., W.H. Karasov, D. Phan, and F.L. Carpenter. 1986. Digestive physiology is a determinant of foraging bout frequency in hummingbirds. *Nature* 320: 62-63.
26. Karasov, W.H., D. Phan, J.M. Diamond, and F.L. Carpenter. 1986. Food passage and intestinal nutrient absorption in hummingbirds. *Auk* 103: 453-464.
27. Carpenter, F.L. 1987. Introduction to the symposium: Territoriality: conceptual advances in field and theoretical studies. *Amer. Zool.* 27: 223-228.
28. Carpenter, F.L. 1987. Food abundance and territoriality: to defend or not to defend? *Amer. Zool.* 27: 387-399.
29. Carpenter, F.L. 1987. The study of territoriality: complexities and future directions. *Amer. Zool.* 27: 401-409.
30. Carpenter, F.L. 1987. Editor: Territoriality: conceptual advances in field and theoretical studies. *Amer. Zool.* 27: 223-409.
31. Hixon, M.A. and F.L. Carpenter. 1988. Distinguishing energy maximizers from time minimizers: a comparative study of two hummingbird species. *Amer. Zool.* 28: 913-925.
32. Carpenter, F.L. and M.A. Hixon. 1988. A new function for torpor: fat conservation in a wild migrant hummingbird. *Condor* 90: 373-378.
33. Carpenter, F.L. 1989. Pollen transfer efficiency compensates for pollinator crashes in a specialized bird-pollinated plant. *Acta. XIX Congressus Internationalis Ornithologici*. Vol. I, 537-548. U. Ottawa Press.
34. Carpenter, F.L., M.A. Hixon, A. Hunt, and R.W. Russell. 1991. Why hummingbirds have such large crops. *Evol. Ecol.* 5: 405-414.
35. Carpenter, F.L., M.A. Hixon, D.C. Paton, E.J. Temeles, and R.W. Russell. 1991. Sexual differences in resource acquisition by migrant hummingbirds. *Acta XX, Congressus Internat. Ornithol.* Vol II: 1156-1165. New Zealand Ornithological Congress Trust Board, Wellington, N.Z. 4 vols.

36. Carpenter, F.L. 1991. Concluding remarks: Social patterns in nectarivorous birds. Acta XX, Congressus Internat. Ornithol. Vol II: 1188-1191. New Zealand Ornithological Congress Trust Board, Wellington, N.Z. 4 vols.
37. Carpenter, F.L. and M.A. Hixon. 1992. Fighting Rufous Hummingbirds. Anima 2: 59-64. (Japanese natural history magazine, in Japanese)
38. Carpenter, F.L., M.A. Hixon, C.A. Beuchat, R.W. Russell, and D.C. Paton. 1993. Biphasic mass gain, in migrant Rufous Hummingbirds: body composition changes, torpor, and ecological significance. Ecology 74: 1173-1182.
39. Carpenter, F.L., M.A. Hixon, R.W. Russell, D.C. Paton and E.J. Temeles. 1993. Interference asymmetries among age-sex classes of Rufous Hummingbirds during migratory stopovers. Behav. Ecol. Sociobiol. 33: 305-312.
40. Carpenter, F.L., M.A. Hixon, E.J. Temeles, R.W. Russell, and D.C. Paton. 1993. Exploitative compensation by subordinate age-sex classes of migrant Rufous Hummingbirds. Behav. Ecol. Sociobiol. 33: 305-312.
41. Russell, R.W., F.L. Carpenter, M.A. Hixon, and D.C. Paton. 1994. The impact of variation in stopover habitat quality on migrant Rufous Hummingbirds. Conservation Biology 8: 483-490.
42. Nichols, J.D., M.E. Rosemeyer, F.L. Carpenter, and J. Kettler. 2001. Intercropping legume trees with native timber trees rapidly restores cover to eroded tropical pasture without fertilization. Forest Ecology and Management 152: 195-209.
43. Carpenter, F.L., S. Palacios, E. Gonzalez, and M. Schroeder. 2001. Land use and erosion of a Costa Rican Ultisol affect soil chemistry, mycorrhizal fungi and early regeneration. Forest Ecology and Management 144: 1-17.
44. Carpenter, F.L. and J.D. Nichols. 2003. Variable success of native trees planted on degraded pasture in Costa Rica. Proceedings of Forestry Research Institute of Malaysia.
45. Carpenter, F.L., J.D. Nichols, and E. Sandi. 2004. Early growth of native and exotic trees planted on degraded tropical pasture. Forest Ecology and Management 196: 367-378.
46. Carpenter, F.L., J.D. Nichols, R.T. Pratt, and K.C. Young. 2004. Methods of facilitating reforestation of tropical degraded land with the native timber tree, *Terminalia amazonia*. Forest Ecology and Management. Abstract available online 15 September 2004; publication due in December 2004: vol. 202: 281-291.

47. Shepherd, M., F.L. Carpenter, M.E. Jones, L. Nguyen and J.D. Nichols. Do roots of legume trees contain higher diversity of arbuscular mycorrhizal fungi than roots of non-legume trees in the Tropics? Submitted to Forest Ecology and Management.

Other publications:

48. Carpenter, F.L. 2001. Website
<http://ecoevo.bio.uci.edu/Faculty/Carpenter/Carpenter.html>

49. Carpenter, F.L. 2002. Do beneficial fungi help tropical trees regenerate soil fertility? Journal, Professional Proceedings, People to People Ambassador Programs.

50. Carpenter, F.L., S.A. Soeller, and C. May-Tobin. 2004. Website.
http://webfiles.uci.edu/tsoeller/public/CR_farm1_.html

Abstracts of presentations in the field of restoration at international meetings:

Peloso, A.V. and F.L. Carpenter. 1994. Conversion of degraded tropical farms into viable forested systems. *Poster presentation* for Third International Meeting of the International Society for Ecological Economics. San Jose, Costa Rica. October 1994.

Carpenter, F.L., D. Nichols, M.E. Rosemeyer, and J. Kettler. 1995. Differences between seed trees in growth of native seedlings outplanted from a Costa Rican nursery. *Contributed paper* to Seventh Annual International Conference of the Society for Ecological Restoration. Seattle, WA September 1995. (presented by Carpenter)

Kettler, J.S., M. Rosemeyer, L. Carpenter, and D. Nichols. 1995. Survival and growth of a native tree species planted in restoration of tropical eroded pasture. *Contributed paper* to Seventh Annual International Conference of the Society for Ecological Restoration. Seattle, WA September 1995. (presented by Rosemeyer)

Carpenter, F.L., M. Rosemeyer, D. Nichols, and J. Kettler. 1997. Reforestation of eroded pasture with native tree species in Costa Rica. P. 44 in abstract book: *Contributed paper* to "Tropical Diversity: Origins, Maintenance, and Conservation", Symposium and joint annual meeting of the Association for Tropical Biology and the Organization for Tropical Studies, San Jose, Costa Rica.

Carpenter, F.L., K. Schlather, M. Rosemeyer, D. Nichols, J. Kettler, and S. Rhodes-Conway. 1997. The value of interplanted legumes in soil and tree restoration on a deeply-eroded tropical pasture. *Invited talk* to Society for Ecological Restoration, 9th Annual International Conference Program and Abstracts, p 54. (presented by Carpenter)

Rosemeyer, M., S. Rhodes-Conway, R. Krieger, F.L. Carpenter, J. Kettler, and D. Nichols. 1997. Patterns of legume growth in a deeply-eroded tropical soil. *Poster presentation* for Society for Ecological Restoration, 9th Annual International Conference Program and Abstracts, p 141. (presented by Rhodes-Conway)

Carpenter, F.L., S. Palacios, E. Gonzalez, and M. Schroeder. 1998. Effect of soil erosion in a tropical pasture on soil chemistry and mycorrhizal fungi. *Contributed paper to Biosfera '98, Simposio Internacional de Ecologia; Simposio Latinoamericano de Micorrizas, Havana, Cuba, Nov 22-29, Abstract pp 63-64.* (presented by Carpenter)

Carpenter, F.L., S. Palacios, E. Gonzalez, and M. Schroeder. 1999. Effect of soil erosion in a tropical pasture on soil chemistry and mycorrhizal fungi. *Invited talk to joint meeting of International Institute for Tropical Forestry and Society for Ecological Restoration, San Juan, Puerto Rico, May 23-28, Abstract p 40.* (presented by Carpenter)

Rhodes-Conway, S. and F.Lynn Carpenter. 1999. Examining competition between tropical legume trees and introduced pasture grasses: what lessons for restoration? *Poster presentation to joint meeting of International Institute for Tropical Forestry and Society for Ecological Restoration, San Juan, Puerto Rico, May 23-28, Abstract p 105.* (presented by Rhodes-Conway)

Carpenter, F.L. 2001. Role of mycorrhizal fungi in tropical reforestation. *Invited talk to Las Terrazas Community, Cuba, May 15.* Part of the Women in Science program of the People to People Ambassadors Project to Cuba.

Carpenter, F.L., S. Palacios, and E. Gonzalez. 2001. Does planting native trees restore mycorrhizal communities to eroded tropical pasture? *Poster presentation to the Third International Conference on Mycorrhizas, Adelaide, Australia, July 8-13, Abstract P2 167.* (presented by Carpenter)

Carpenter, F.L. and J.D. Nichols. 2002. Variable success of native trees planted on degraded pasture in Costa Rica. *Contributed paper to joint conference FAO and Forestry Research Institute of Malaysia, October 5-10, Abstract p10.* (presented by Carpenter)

Other research activities:

- 1992-1994 I acquired a permanent field site for my new area of research and built an onsite house and field station.
- 1998 I obtained USDA permits to import Costa Rican soils.
- 1998-1999 I established wet labs for soil analysis at UCI and at the field station in Costa Rica.