

Curriculum Vitae

KEVIN McGARIGAL

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1. PERSONAL DATA

Date/Place of Birth: 16 October 1960, Plymouth, Massachusetts

Current Address: 379 Leverett Road
Shutesbury, MA 01072
(413) 259-9144

2. EDUCATION

Doctor of Philosophy December, 1993
University: Oregon State University
Major: Forest Science
Dissertation: Relationship between landscape structure and avian abundance patterns in the Oregon Coast Range

Master of Science August, 1988
University: Oregon State University
Major: Fisheries & Wildlife
Thesis: Human-eagle interactions on the lower Columbia River

Bachelor of Science December, 1983
University: Virginia Polytechnic Institute & State Univ. (Virginia Tech)
Major: Forestry & Wildlife (Honors Program)
Option: Wildlife Science

3. HONORS and AWARDS

Awards:

- Outstanding Achievement Award – The Wildlife Society, 2012. For FRAGSTATS.
- Outstanding Paper in Landscape Ecology - Honorable Mention, 2011 US Regional Association of the International Association of Landscape Ecology. For McGarigal et al. 2009 (see publications)
- Distinguished Landscape Ecologists Practitioner Award, 2009-2010, US Regional

Association of the International Association of Landscape Ecology

- UMass College of Natural Sciences Outstanding Researcher, 2009-2010
- 2004 Rocky Mountain Research Station Best Scientific Publication, for Cushman and McGarigal 2004 (see publications)
- USDA Forest Service Regional Forester's Honor Award: Caring the for Land Stewardship, 2002, USDA Forest Service, Rocky Mountain Region
- 1988 John T. Babcock Award for Master's Student of Excellence (OSU)
- 1983 Alumni Award for Outstanding Senior Undergraduate (Va. Tech)
- First place, student paper presentations, 1983 Southeast Wildlife Conclave
- First place, student paper presentations, 1982 Southeast Wildlife Conclave

Nominations:

- UMass University Distinguished Teaching Award, 2008-2009 (finalist)
- UMass University Distinguished Teaching Award, 2006-2007 (finalist)
- UMass University Distinguished Teaching Award, 2004-2005
- UMass University Distinguished Teaching Award, 2002-2003
- UMass University Distinguished Teaching Award, 2001-2002
- UMass University Distinguished Teaching Award, 1999-2000

4. PROFESSIONAL EXPERIENCE (excluding graduate research assistantships)

Sep 1997-Present Assistant/Associate/Full Professor – Department of Environmental Conservation, University of Massachusetts, Amherst, MA.

(full time)

Responsibilities include:

- teaching graduate courses in landscape ecology, analysis of environmental data and multivariate statistics.
- graduate program director for environmental conservation (2007-present)
- developing a research program in landscape ecology.
- providing service and outreach to the lay and professional community both within and outside the University of Massachusetts.

Sep 1994-Aug 1997 Consulting Wildlife Biologist/Landscape Ecologist – Dolores, CO.

(part time)

Responsibilities included:

- developing FRAGSTATS computer software designed to analyze landscape structure, in collaboration with Innovative GIS Solutions, Inc. of Fort Collins, CO.
- conducting workshops on the analysis of landscapes.
- consulting with resource managers on the analysis of landscapes using program FRAGSTATS.

Oct 1993-Jun 1994 Research Associate – Forest Science Department, Oregon State Univ.,

(full time)

Corvallis, OR. Responsibilities included:

- implementing research program on wildlife-habitat relationships.
- developing computer software (FRAGSTATS) designed to analyze

landscape structure.

- developing & conducting workshops on the analysis of landscapes.
- publishing manuscripts on research conducted during doctoral program on the relationship between landscape structure and bird populations.

- Oct-Apr, 1992-93 (full time) Research Assistant – Forest Science Department, Oregon State Univ., Corvallis, OR. Responsibilities included:
- conducting problem analysis on biodiversity conservation in western Oregon forests.
 - preparing a detailed report on the results of the problem analysis for the Bureau of Land Management, Oregon State Cooperative Research Unit.
- Jan-Sep, 1988 (full time) Research Assistant – Forest Science Department, Oregon State Univ., Corvallis, OR. Responsibilities included:
- conducting problem analysis on riparian-wildlife relationships.
 - designing & implementing study on vertebrate-habitat relationships.
- May-Sep, 1983 (full time) Interpreter-Naturalist – Claytor Lake State Park, Dublin, VA. Responsibilities included:
- presenting interpretive programs.
 - conducting daily nature walks.
 - inventorying flora & fauna.
 - maintaining all interpretive facilities.
- Jul-Sep, 1982 (full time) Young Adult Conservation Corps Worker – Pisgah National Forest, Marion, NC. Responsibilities included:
- maintaining trails & traversing clearcuts.
 - working on the Recreation Opportunity Guide.
- Apr-Jul, 1982 (full time) Field Research Assistant – Central Appalachian Raptor Ecology Program, directed by Dr. James Mosher, Frostburg State College, Frostburg, MD. Conducted research on the New York Adirondack study area. Responsibilities included:
- conducting weekly surveys of individual raptor species.
 - conducting intensive nest searches.
 - banding nestlings & recording nestling data.
 - conducting intensive nest site habitat data collection.
- Jun-Sep, 1981 (full time) Biological Aid – (Co-operative Education Program) Patuxent Wildlife Research Center, Laurel, MD (Rare & Endangered Species Section). Assisted Dr. George Gee with research on propagation of endangered species. Responsibilities included:
- maintaining the veterinary facilities & equipment.
 - maintaining the Aleutian Canada geese & seaside sparrow colonies.
 - collecting semen from & artificially inseminating seaside sparrows.
 - handling & processing semen for cold storage.

- \$139,000 CAPS: Developing a Wetlands Monitoring and Assessment Program: 2011 Wetlands Development Program (part 4). Environmental Protection Agency and Mass. Department of Environmental Protection. 2011-2012.
- \$40,000 CAPS: Developing a Wetlands Monitoring and Assessment Program: 2012 Wetlands Development Program. Environmental Protection Agency and Mass. Department of Environmental Protection. 2011-2012.
- \$63,035 Trends in Fire Size under Wildland Fire Use Programs: Phase 3. USDA Forest Service. 2011-2012. (Post-doctoral research fellowship for Sandra Haire).
- \$505,000 Assessment of Landscape Changes in the North Atlantic Landscape Conservation Cooperative: Decision-Support Tools for Conservation (Phase1). US Fish and Wildlife Service. 2010-2012.
- \$77,456 Validating the continuity project: crossing assessment protocols. With Scott Jackson. The Nature Conservancy. 2009-2010.
- \$44,610 Trends in Fire Size under Wildland Fire Use Programs: Phase 2. USDA Forest Service. 2010-2011. (Post-doctoral research fellowship for Sandra Haire).
- \$10,415 Critical Linkages -- Evaluating Landscape Connectivity in Massachusetts: Amendment for BioMap2 Analyses. The Nature Conservancy. 2010.
- \$27,905 Development of a Remotely-Sensed Landcover Map of the Province Lands Dunes and Hatches Harbor Salt Marsh, Including an Assessment. USDI National Park Service. 2009-2010.
- \$105,000 CAPS: Developing a Wetlands Monitoring and Assessment Program: Wetlands Development Program (part 3). Environmental Protection Agency and Mass. Department of Environmental Protection. 2009-2011.
- \$100,000 Developing Tools for More Effective Assessment of Wetlands and Aquatic Ecosystems. Mass. Department of Environmental Protection via 604(b) Program. 2009-2010.
- \$100,000 Modeling habitat capability for the eastern Indigo snake in the Altamaha River corridor, Georgia. The Orianne Society. 2009-2011.
- \$10,000 CAPS: South coast rail alternatives. Massachusetts Bay Transportation Authority. 2009.
- \$81,000 Trends in Fire Size under Wildland Fire Use Programs. USDA Forest Service. 2009-2010. (Post-doctoral research fellowship for Sandra Haire).

- \$350,000 Critical Linkages - Evaluating Landscape Connectivity in Massachusetts to Inform Proactive Transportation and Natural Resource Planning – Phase 2. Federal Highways via Massachusetts Department of Transportation and The Nature Conservancy. 2010-2012.
- \$253,000 Critical Linkages - Evaluating Landscape Connectivity in Massachusetts to Inform Proactive Transportation and Natural Resource Planning – Phase 1. Federal Highways via Massachusetts Department of Transportation and The Nature Conservancy. 2009-2011.
- \$15,053 CAPS: Losing Ground analysis. Massachusetts Audubon Society. 2008-2009.
- \$175,000 CAPS: Developing a Wetlands Monitoring and Assessment Program: Wetlands Development Program (Part 2). Environmental Protection Agency and Mass. Department of Environmental Protection. 2008-2011.
- \$754,637 Interactive vision tools to index and search biological image databases for natural resources conservation. National Science Foundation. 2007-2010.
- \$302,031 Landscape Ecology shortcourse development and instruction offered twice per year as part of a national training series. USDA Forest Service. 2007-2010.
- \$40,000 CAPS: Developing a Wetlands Monitoring and Assessment Program: Wetlands Development Program (part 1). Environmental Protection Agency and Mass. Department of Environmental Protection. 2007-2008.
- \$135,000 CAPS: An Innovative Approach for Identifying and Protecting Wetlands Wildlife Habitats of Potential Regional or Statewide Importance. Environmental Protection Agency and Mass. Depart. of Environmental Protection. 2006-2008.
- \$25,000 Conservation plan for marbled salamanders—phase 2. Massachusetts Environmental Trust. 2005-2006.
- \$69,600 Characterization of breeding habitat and assessment of road impact to eastern spadefoot toads at Cape Cod National Seashore. USDI National Park Service. 2005-2008.
- \$40,000 Revisions of FRAGSTATS: landscape pattern analysis software. USDA Forest Service, Northern Region. 2005-2006.
- \$79,010 Validating best forest management practices around vernal pools: amphibian metapopulations, opportunity costs, public values and harvester compliance viability modeling. USDA National Research Initiative. [subcontract with University of Rhode Island Investigators]. 2005-2007.
- \$15,000 Assessing, Prioritizing and Conserving Ecologically Significant Lands in the

- Highlands Communities of Western Massachusetts. Trustees of Reservations. 2004-2006.
- \$150,00 Rocky Mountain landscape simulation. USDA Forest Service, Rocky Mountain Region and San Juan National Forest. 2004-2006.
- \$75,000 Disturbance Ecology of Rocky Mountain Pine Forests: Conservation Implications. The Nature Conservancy. 2004-2006.
- \$25,000 Conservation plan for marbled salamanders. Massachusetts Environmental Trust. 2004-2005.
- \$85,000 Conservation Assessment and Prioritizations System (CAPS) development and application in the Highlands Region of western Massachusetts. The Trustees of Reservations (TTOR), Umass extension, and College of Natural Resources and Environment (NRE). 2003-2005.
- \$62,500 Variability and vulnerability in northeastern populations of the marbled salamander: an evaluation of metapopulation processes. USGS Amphibian Research and Monitoring Initiative (ARMI). 2003-2004.
- \$40,000 Development of a gradient-based landscape pattern analysis methodology. Massachusetts Agricultural Experiment Station, Hatch. 2002-2007.
- \$100,000 Development of a biodiversity assessment software tool for aquatic communities. MA Natural Heritage and Endangered Species Program. 2002-2003.
- \$10,000 Marbled salamander ecology and conservation. The Sweet Water Trust. 2002-2003.
- \$454,000 Rocky Mountain landscape simulation. USDA Forest Service, Rocky Mountain Region. 2001-2004.
- \$130,000 Biodiversity conservation planning approaches. The Nature Conservancy. 2001-2003. (Post-doctoral research fellowship for Maile Neel).
- \$16,500 Impact of scale on breeding bald eagles along the Hudson River, New York. National Oceanic and Atmospheric Administration. 2000-2001.
- \$200,000 Strategic biodiversity conservation planning in the Housatonic watershed: a landscape ecological approach. MA Executive Office of Environmental Affairs. 1999-2001.
- \$14,600 Multi-scale habitat relationships of sympatric civets in fragmented and unfragmented landscapes in Chitwan National Park, Nepal. University of

- Massachusetts, Faculty Research Grant. 1999-2001.
- \$193,000 Landscape analysis in support of San Juan National Forest planning. USDA Forest Service, Rocky Mountain Region and San Juan National Forest. 1998-2001.
- \$160,000 Marbled salamander ecology and conservation. MA Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program and The Nature Conservancy. 1998-2001.
- \$190,000 Interagency service agreement involving several independent projects, including: identifying, describing, mapping, and conserving rare natural communities in the Quabbin watershed; effects of stone wall corridors on forest floor vertebrates in the Quabbin watershed; the importance of hemlock forest in structuring avian communities in the Quabbin watershed; evaluating the effectiveness and efficacy of methods for monitoring vernal pool amphibians. MA Metropolitan District Commission. 1998-2001.
- \$45,000 Relationship between landscape structure and wildlife population viability. Massachusetts Agricultural Experiment Station, McIntire-Stennis. 1998-2002.
- \$5,000 Landscape analysis in support of national forest planning. University of Massachusetts, Faculty Research Grant. 1998-99.
- \$406,000 Effects of forest fragmentation on forest floor vertebrates and stream amphibians in the central Oregon Coast Range. (with W. McComb and C. Chambers). Oregon State BLM Cooperative Research Unit. 1993-96.
- \$28,000 FRAGSTATS: A spatial pattern analysis program for quantifying landscape structure (with B. Marks and W. McComb). Oregon State BLM Cooperative Research Unit. 1993-94.
- \$40,000 Research problem analysis on biodiversity conservation in western Oregon forests (with W. McComb). Oregon State BLM Cooperative Research Unit. 1992-93.

Publications

Books

1. Leitão AB, J Miller, J Ahern, and K McGarigal. 2006. Measuring Landscapes: A Planners Handbook. Island Press, Washington, D.C.
2. McGarigal K, SA Cushman, and SG Stafford. 2000. Multivariate Statistics for Wildlife and Ecology Research. Springer-Verlag, New York.

Published Refereed Journals (including “accepted” and “in press”)

1. Shirley, SM, Y Zhigiang, RA Hutchinson, JDAlexander, K McGarigal, and MG Betts. (Accepted). Species distribution modeling for the people: Unclassified landsat TM predicts bird distributions at fine resolutions in forested landscapes. *Diversity and Distributions*.
2. Timm, BC, K McGarigal, and RP Cook. (Accepted). Upland movement patterns and habitat selection of adult eastern spadefoots (*Scaphiopus holbrookii*) at Cape Cod National Seashore. *J. of Herpetology*.
3. Haire, SL, K McGarigal, and C Miller. (Accepted). Wilderness shapes contemporary fire size distributions across western U.S. landscape. *Ecosphere*.
4. Timm, BC, and K McGarigal. (Accepted). *Scaphiopus holbrookii* (eastern spadefoot). Possible transmitter expulsion. *Herpetological Review*.
5. Allyn, AJ, A McKnight, K McGarigal, CR Griffin, KJ Kuletz, and DB Irons. 2012. Relationships among Kittlitz’s Murrelet habitat use, temperature-depth profiles, and landscape features in Prince William Sound, Alaska, USA. *Marine Ecology Progress Series* 466:233-247.
6. Timm, B, and K McGarigal. 2012. Fine-Scale Remotely-Sensed Cover Mapping of Coastal Dune and Salt Marsh Ecosystems at Cape Cod National Seashore Using Random Forests. *Remote Sensing of Environment* 127:106-117.
7. Zeller, KA, K McGarigal, and AR Whiteley. 2012. Estimating landscape resistance to movement: a review. *Landscape Ecology* 27:777-797.
8. O’Connor MP, FJ Juanes, K McGarigal, and S Gaurin. 2012. Findings on American shad and striped bass in the Hudson River Estuary: a fish community study on the longterm effects of local hydrology and regional climate change. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 4:327–336.
9. O’Connor MP, F Juanes, K McGarigal, and J Caris. 2012. Describing juvenile American shad and striped bass habitat use in the Hudson River estuary using species distribution models. *Ecological Engineering* 48:101-108.
10. Seavey J, B Glimmer, and K McGarigal. 2011. Effect of sea-level rise on piping plover (*Charadrius melodus*) breeding habitat. *Biological Conservation* 144:393-401.
11. Timm BC, K McGarigal, and RP Cook. 2010. *Scaphiopus H. Holbrookii* (eastern spadefoot) predation. *Herpetological Review* 41:207.
12. Haire SL, and K McGarigal. 2010. Effects of landscape patterns of fire severity on regenerating ponderosa pine forests (*Pinus ponderosa*) in New Mexico and Arizona, USA.

- Landscape Ecology 25:1055–1069.
13. Timm BC, and K McGarigal. 2010. The Diets of Subadult Fowler's Toads (*Bufo fowleri*) and Eastern Spadefoots (*Scaphiopus b. holbrookii*) at Cape Cod National Seashore, USA. Herpetological Review 41:154-156.
 14. Betts MG, JC Hagar, JW Rivers, JD Alexander, K McGarigal, and BC McComb. 2010. Thresholds in forest bird occurrence as a function of the amount of early-seral broadleaf forest at landscape scales. Ecological Applications 20:2116-2130.
 15. Cushman SA, KS McKelvey, BR Noon, and K McGarigal. 2010. Use of abundance of one species as a surrogate for abundance of others. Conservation Biology 24: 830-840.
 16. Massey BH, CR Griffin, and K McGarigal. 2009. Habitat Use by Foraging Northern Harriers on Nantucket Island, Massachusetts. The Wilson Journal of Ornithology 121: 765-769.
 17. Haire SL, and K McGarigal. 2009. Spatial patterns of fire severity in southwestern forests, USA: the role of climate, fire size, and landscape gradients. Fire Ecology 5:86-103.
 18. Sekar I, K McGarigal, JT Finn, R Ryan, and TO Randhir. 2009. Water quality response to economic development: quantifying environmental Kuznets curve. Indian Journal of Agricultural Economics 64:73-88.
 19. McGarigal K, S Tagil, and SA Cushman. 2009. Surface metrics: An alternative to patch metrics for the quantification of landscape structure. Landscape Ecology 24:433–450.
 20. Gamble LR, K McGarigal, DB Sigourney, and BC Timm. 2009. Survival and breeding frequency in Marbled Salamanders (*Ambystoma opacum*): implications for spatio-temporal population dynamics. Copeia 2:394–407.
 21. Haire SL, and K McGarigal. 2008. Inhabitants of landscape scars: plant species diversity and succession after high-severity fire at two southwestern sites. The Southwestern Naturalist 53(2):146–161.
 22. Massey B, R Bowen, C Griffin, and K McGarigal. 2008. A classification-tree analysis of nesting habitat in an island population of northern harriers. The Condor 110(1):177–183.
 23. Cushman SA, KS McKelvey, C Flather, and K McGarigal. 2008a. Do forest community types provide a sufficient basis to evaluate biological diversity. Frontiers in Ecology and the Environment 6(1):13-17.
 24. Cushman SA, K McGarigal, and M Neel. 2008b. Parsimony in landscape metrics: strength, universality, and consistency. Ecological Indicators 8:691-703.

25. Gamble LR, S Ravela, and K McGarigal. 2008. Multi-scale features for identifying individuals in large biological databases: an application of pattern recognition technology to the marbled salamander *Ambystoma opacum*. *Journal of Applied Ecology* 45:170–180.
26. Gamble LR, K McGarigal, and BW Compton. 2007. Fidelity and dispersal in the pond-breeding amphibian, *Ambystoma opacum*: Implications for spatio-temporal population dynamics and conservation. *Biological Conservation* 139:247-257.
27. Timm BC, K McGarigal, and BW Compton. 2007a. Timing of large movement events of pond-breeding amphibians in western Massachusetts, USA. *Biological Conservation* 136:442-454.
28. Timm BC, K McGarigal, and LR Gamble. 2007b. Emigration timing of juvenile pond-breeding amphibians in western Massachusetts. *Journal of Herpetology* 41(2):243-250.
29. Timm BC, K McGarigal, and CL Jenkins. 2007c. Emigration orientation of juvenile pond-breeding amphibians in western Massachusetts. *Copeia* 3:685–698.
30. Compton BW, K McGarigal, SA Cushman, and LR Gamble. 2007. A resistant-kernel model of connectivity for amphibians that breed in vernal pools. *Conservation Biology* 21(3):788-799.
31. Jenkins CL, K McGarigal, and BC Timm. 2006. Orientation of movements and habitat selection in a spatially-structured population of marbled salamanders (*Ambystoma opacum*). *J. of Herpetology* 40(2):240-248.
32. Gamble LR, K McGarigal, CL Jenkins, and BC Timm. 2006. Limitations of regulated “buffer zones” for the conservation of marbled salamanders. *Wetlands* 26(2):298-306.
33. Neel MC, K McGarigal, and SA Cushman. 2004. Behavior of class-level landscape metrics across gradients of class aggregation and area. *Landscape Ecology* 19:435-455.
34. Cushman SA, and K McGarigal. 2004a. Hierarchical analysis of forest bird species-environment relationships in the Oregon Coast Range. *Ecological Applications* 14:1090-1105.
35. Cushman SA, and K McGarigal. 2004b. Patterns in the species-environment relationship depend on both scale and choice of response variables. *Oikos* 105:117-124.
36. Cushman SA, and K McGarigal. 2003. Landscape-level patterns of avian diversity in the Oregon Coast Range. *Ecological Monographs* 73:259-281.
37. Jenkins CL, K McGarigal, and LR Gamble. 2003. Comparative effectiveness of two trapping techniques for surveying the abundance and diversity of forest floor vertebrates

- along drift fence arrays. *Herpetological Review* 34:39-42.
38. Thompson CM, and K McGarigal. 2002. The influence of research scale on bald eagle habitat selection along the lower Hudson River, New York. *Landscape Ecology* 17:569-586.
 39. Cushman SA, and K McGarigal. 2002. Hierarchical, multi-scale decomposition of species-environment relationships. *Landscape Ecology* 17:637-646.
 40. McGarigal K, and S Cushman. 2002. Comparative evaluation of experimental approaches to the study of habitat fragmentation. *Ecological Applications* 12(2):335-345.
 41. Jenkins CL, K McGarigal, and LR Gamble. 2002. A comparison of aquatic surveying techniques used to sample *Ambystoma opacum* Larvae. *Herpetological Review* 33:33-35.
 42. McGarigal K, W Romme, M Crist, and E Roworth. 2001. Cumulative effects of Logging and road-building on landscape structure in the San Juan Mountains, Colorado. *Landscape Ecology* 16:327-349.
 43. McGarigal K, and WC McComb. 1995. Relationships between landscape structure and breeding birds in the Oregon Coast Range. *Ecological Monographs* 65(3):235-260.
 44. McComb WC, K McGarigal, and RG Anthony. 1993. Small mammal and amphibian use of riparian and upslope habitats in unmanaged central Oregon Coast Range stands. *Northwest Science* 67:7-15.
 45. McGarigal K, and WC McComb. 1992. Streamside versus upslope bird communities in the central Oregon Coast Range. *J. Wildlife Management* 56: 10-23.
 46. McComb WC, RG Anthony, and K McGarigal. 1991. Differential vulnerability of small mammals to two trap types and two trap baits. *Northwest Science*. 65:109-115.
 47. McGarigal K, RG Anthony, and FB Isaacs. 1991. Interactions of bald eagles and humans on the Columbia River Estuary. *Wildlife Monograph* 115. 47 pp.
 48. McGarigal K, and JD Fraser. 1985. Barred owl responses to recorded vocalizations. *The Condor* 87:552-553.
 49. McGarigal K, and JD Fraser. 1984. The effect of forest stand age on owl distribution in sw Virginia. *J. Wildlife Management* 48:1393-1398.
 50. Johnson WN, and K McGarigal. 1984. Pileated woodpecker nest in natural cavity. *J. Field Ornithology*, Autumn, p. 490.

Submitted Refereed Journals

1. Timm, BC, and K McGarigal. (Submitted). Fowler's Toad (*Anaxyrus fowleri*) activity

patterns on a roadway at Cape Cod National Seashore, USA. *J. of Herpetology*.

2. Allyn, AJ, A McKnight, K McGarigal, CR Griffin, KJ Kuletz, D Cushing, and DB Irons. (Submitted). Evaluating a paired logistic regression model of presence-only data to map important habitat areas of a rare seabird. *Ecological Applications*.

Book Chapters

1. McGarigal K. 2012. Landscape pattern metrics. Pages 1441-1451 in AH El-Shaarawi and W Piegorsch (eds.), *Encyclopedia of Environmetrics*, Second Edition. John Wiley & Sons Ltd., Chichester, England.
2. Cushman SA, K McGarigal, K McKelvey, C Reagan, T Demeo, and C Vojta. (In press). Landscape analysis of wildlife habitat. Chapter 6 in C Vojta (ed.), *USFS Wildlife Habitat Technical Guide*.
3. Wiens JA, H Safford, K McGarigal, WH Romme, and M Manning. 2012. What is the scope of “history” in historical ecology? Issues of scale in management and conservation. Chapter 6 in J Wiens, C Regan, G Hayward, and H Safford (eds), *Historical Environmental Variation in Conservation and Natural Resource Management*. Wiley.
4. McGarigal K, and WH Romme. 2012. Modeling historical range of variation at a range of scales: example application. Chapter 9 in J Wiens, C Regan, G Hayward, and H Safford (eds), *Historical Environmental Variation in Conservation and Natural Resource Management*. Wiley.
5. Zuckerberg B, and K McGarigal. 2012. Widening the circle of investigation: The interface between citizen science and landscape ecology. Chapter 7 in JL Dickinson and R Bonney (eds.), *Citizen Science: Public Collaboration in Environmental Research*. Cornell University Press.
6. Cushman SA, TN Wasserman, and K McGarigal. 2011. Landscape fire and wildlife habitat. Chapter 5 in D McKenzie and LK Kellog (eds.), *The Landscape Ecology of Fire*. Springer.
7. Cushman SA, J Evans, and K McGarigal. 2010. Landscape ecology: past, present and future. Pages 65-82 in SA Cushman and F Huettmann (eds), *Spatial Complexity, Informatics, and Wildlife Conservation*. Springer.
8. Cushman SA, K McGarigal, K Gutzweiler, and JS Evans. 2010. The gradient paradigm: a conceptual and analytical framework for landscape ecology. Pages 83-110 in SA Cushman and F Huettmann (eds), *Spatial Complexity, Informatics, and Wildlife Conservation*.
9. Cushman SA, J Littell, and K McGarigal. 2010. The problem of ecological scaling in spatially complex, nonequilibrium ecological systems. Pages 43-64 in SA Cushman and F

- Huettmann (eds), *Spatial Complexity, Informatics, and Wildlife Conservation*. Springer.
10. Cushman SA, BW Compton, and K McGarigal. 2010. Habitat fragmentation effects depend on complex interactions between population size and dispersal ability: modeling influences of roads, agriculture and residential development across a range of life-history characteristics. Chapter 20 in SA Cushman and F Huettmann (eds), *Spatial Complexity, Informatics, and Wildlife Conservation*. Springer. 18 pgs.
 11. Cushman SA and K McGarigal. 2008. Landscape metrics and scales of resolution. Pages 31-50 in KV Gadow (ed.), *Adaptive Design of Forested Landscapes: The Multiple Path Principle*. Springer, New York. 286 pp.
 12. Cushman SA and K McGarigal. 2006. Multivariate landscape trajectory analysis: An example using simulation modeling of American marten habitat change under four timber harvest scenarios. Pages 119-140 in JA Bissonette and I Storch (eds.), *Temporal Dimensions of Landscape Ecology: Wildlife Responses to Variable Resources*. Springer, New York.
 13. McGarigal K, and SA Cushman. 2005. The gradient concept of landscape structure. Pages 112-119 in J Wiens and M Moss (eds.), *Issues and Perspectives in Landscape Ecology*. Cambridge University Press, Cambridge.
 14. McGarigal K. 2002. Landscape pattern metrics. Volume 2, pp 1135-1142 in AH El-Shaarawi and WW Piegorsch (eds.), *Encyclopedia of Environmetrics*. John Wiley & Sons, Chichester, England.
 15. McGarigal K, and WC McComb. 1999. Forest fragmentation effects on breeding birds in the Oregon Coast Range. Pages 223-246 in JA Rochelle, LA Lehman, and J Wisniewski (eds.), *Forest fragmentation: wildlife and management implications*. Koninklijke Brill NV, Leiden, The Netherlands.
 16. Anthony RG, RJ Steidl, and K McGarigal. 1995. Recreation and bald eagles in the Pacific Northwest. Chapter 13 in RL Knight and KJ Gutzwiller (eds.), *Wildlife and Recreationists: Coexistence Through Management and Research*. Island Press.
 17. McComb WC, K McGarigal, JD Fraser, and WH. Davis. 1991. Planning for basin-level cumulative effects in the Appalachian coal field. Chapter 7 in J Rodiek and E Bolin (eds.), *Wildlife habitats in managed landscapes*. Island Press.

Technical Publications

1. Jackson, S, B Compton, and K McGarigal. 2012. Critical linkages: assessing connectivity restoration potential for culvert replacement, dam removal and construction of wildlife passage structures in Massachusetts. Proceedings of the 2011 International Conference on Ecology and Transportation. August 21-25, Seattle, WA.

2. Cushman, SA, JS Evans, K McGarigal, and JM Kiesecker. 2010. Toward Gleasonian landscape ecology: From communities to species, from patches to pixels. Res. Pap. RMRS-RP-84. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 12 p.
3. McGarigal K. 2007. Habitat fragmentation. Encyclopedia of Geographic Information Science, K. K. Kemp, ed. Sage Publications.
4. McGarigal K, and WH Romme. 2003. Simulate landscape changes. *Geoworld* 16(7):38-43.
5. McGarigal K, SA Cushman, MC Neel, and E Ene. 2002. FRAGSTATS: Spatial Pattern Analysis Program for Categorical Maps. Computer software program produced by the authors at the University of Massachusetts, Amherst. Available at the following web site: www.umass.edu/landeco/research/fragstats/fragstats.html
6. Berry JK, DJ Buckley, and K McGarigal. 1998. Fragstats.arc: Integrating ARC/INFO with the Fragstats landscape analysis program. Proceedings of the 1998 ESRI User Conference, San Diego, California.
7. Berry JK, DJ Buckley, and K McGarigal. 1998. Integrating landscape structure programs with ARC/INFO. Proceedings of the 1998 GIS-98 Resource Technology Conference, Toronto, Canada.
8. Berry JK, DJ Buckley, and K McGarigal. 1997. Seamlessly linking ARC/INFO to forest growth and landscape analysis models. Proceedings of the 1997 ESRI User Conference, San Diego, California.
9. McGarigal K, and BJ Marks. 1995. FRAGSTATS: spatial pattern analysis program for quantifying landscape structure. USDA For. Serv. Gen. Tech. Rep. PNW-351.
10. McGarigal K, and WC McComb. 1994. Research problem analysis --biodiversity in western Oregon Forests. USDI Bureau of Land Manage. Gen. Tech. Rep.
11. McComb WC, AJ Hansen, and K McGarigal. 1989. COPEing with landscape fragmentation in western Oregon: Forests by design or default? Proc. SAF Conference, Spokane, WA. (invited).
12. McComb WC, K McGarigal, JD Fraser, and WH Davis. 1989. Planning for basin-level cumulative effects in the Appalachian coal field. *Trans. North Am. Wildl. Nat. Resour. Conf.* 54:102-112.
13. McGarigal K, and WC McComb. 1989. Riparian wildlife information needs in western Oregon: Land manager concerns. *Trans. North Am. Wildl. Nat. Resour. Conf.* 54:32-42.

Publications – Major Reports and Published Abstracts

1. McGarigal K, BW Compton, SD Jackson, E Plunkett, and E Ene. 2012. Critical Linkages Phase 1: Assessing Connectivity Restoration Potential for Culvert Replacement, Dam Removal and Construction of Wildlife Passage Structures in Massachusetts. Report to Massachusetts Department of Transportation and The Nature Conservancy. 28 pgs.
2. McGarigal K, BW Compton, SD Jackson, E Plunkett, K Rolih, T Portante and E Ene. 2011. Conservation Assessment and Prioritization System (CAPS) Statewide Massachusetts Assessment: November 2011. Report to Massachusetts Department of Environmental Protection. 58 pgs.
3. McGarigal K, T Portante, SD Jackson, BW Compton, and K Rolih. 2010. Development of a Comprehensive State Water Monitoring and Assessment Program for Wetlands in Massachusetts: Phase 2b: Development of a Site Level Assessment Method (SLAM) for Forested Wetlands and field validation of the Conservation Assessment and Prioritization System (CAPS). Report to Massachusetts Department of Environmental Protection. 81 pgs.
4. Compton BW, SD Jackson, and K McGarigal. 2009. Conservation Assessment and Prioritization System (CAPS): South Coast Rail Analysis. Report to the Massachusetts Bay Transportation Authority. 33 pgs.
5. McGarigal K, BW Compton, SD Jackson, and K Rolih. 2009. Quantifying ecological impact. Chapter 3 in J DeNormandie, Losing ground: beyond the footprint – patterns of development and their impact on the nature of Massachusetts. Mass Audubon. 4 pgs.
6. McGarigal K, T Portante, SD Jackson, BW Compton, and K Rolih. 2009. Development of a Comprehensive State Water Monitoring and Assessment Program for Wetlands in Massachusetts: Phase 2a: Development of a Site Level Assessment Method (SLAM) for Forested Wetlands and field validation of the Conservation Assessment and Prioritization System (CAPS). Report to the Massachusetts Department of Environmental Protection. 51 pgs.
7. McGarigal K, T Portante, SD Jackson, BW Compton, and K Rolih. 2008. Development of a Comprehensive State Water Monitoring Assessment Program for Wetlands in Massachusetts: Phase 1 – Development of a wetland Rapid Assessment Method (RAM) and field validation of the Conservation Assessment and Prioritization System (CAPS). Report to the Massachusetts Department of Environmental Protection.
8. McGarigal K, BW Compton, SD Jackson, and K Rolih. 2008. Conservation assessment and prioritization system (CAPS): Western Massachusetts Assessment. Report to the Massachusetts Department of Environmental Protection.
9. McGarigal K. 2008. Marbled salamander (*Ambystoma opacum*) conservation plan for Massachusetts. Report to the Massachusetts Environmental Trust.

10. McGarigal K, BW Compton, SD Jackson, K Rolih, and E Ene. 2005. Conservation assessment and prioritization system (CAPS): Highlands community initiative - Phase 1. Report to The Trustees of Reservations.
11. Compton BW, SD Jackson, and K McGarigal. 2004. Conservation assessment and prioritization system (CAPS) analysis for the proposed route 11 extension. Report to Connecticut Department of Transportation and The Maguire Group.
12. McGarigal K, and WH Romme. 2004a. Historic range of variability in landscape structure and wildlife habitat on the San Juan National Forest, southwestern Colorado. Report to the USDA For. Serv. San Juan National Forest. Durango, CO.
13. McGarigal K, and WH Romme. 2004b. Historic range of variability in landscape structure and wildlife habitat on the Uncompahgre Plateau, southwestern Colorado. Report to the USDA For. Serv. Grand Mesa-Uncompahgre-Gunnison National Forest. Delta, CO.
14. McGarigal K, BW Compton, E Ene, K Rolih, and D Goodwin. 2003. AQUALAND: The Massachusetts aquatic landscape characterization tool. Report to the Massachusetts Natural Heritage and Endangered Species Program.
15. Garrett JD, T Cassidy, K McGarigal, KB Searcy, and R Harrington. 2000. Rare, unique, and exemplary natural communities of Quabbin watershed. Report to the Metropolitan District Commission, Belchertown, MA.
16. Romme WH, ML Floyd, D Hanna, JS Redders, K McGarigal, and M Crist. 1998. Landscape condition analysis for the south-central highlands section, southwestern Colorado and northwestern New Mexico. Report to the USDA For. Serv. San Juan National Forest. Durango, CO.
17. Garrett MG, RG Anthony, JW Watson, and K McGarigal. 1987. Ecology of bald eagles on the Lower Columbia River, Oregon and Washington. Report to the U. S. Army Corps of Engineers, Portland District, Portland, OR.
18. McGarigal K, and JD Fraser. 1983. Great horned owl response in young versus old forest stands. *Virginia Journal of Science* 34(3):128.
19. McGarigal K, and P Scanlon. 1983. Estrus induction in captive white-tailed deer. *Virginia Journal of Science* 34(3):128.

Presentations at Professional Meetings, Workshops, & Seminars

(excludes co-authored presentations in which I was not the speaker)

1. McGarigal K. 2012. Assessment of landscape changes in the North Atlantic Landscape Conservation Cooperative: Resistant kernel modeling. Presented at the International Association for Landscape Ecology Meeting, April 9, Newport, Rhode Island.

2. McGarigal K. 2012. Providing science and tools in support of the North Atlantic Landscape Conservation Cooperative: Designing sustainable landscapes for wildlife. Invited seminar, presented at US Fish and Wildlife Service Northeast Regional Office, February 23, Hadley, Massachusetts.
3. McGarigal K. 2011. Conservation assessment and prioritization system (CAPS): A landscape ecological approach to biodiversity conservation. Invited seminar, presented at Northern Arizona University, April 20, Flagstaff, AZ.
4. McGarigal K. 2010. Conservation assessment and prioritization system (CAPS): A landscape ecological approach to biodiversity conservation. Invited seminar, presented at Carleton University, May 7, Ottawa, Canada.
5. McGarigl K. 2009. Conservation assessment and prioritization system (CAPS): A landscape ecological approach to biodiversity conservation. Invited seminar, presented at the University of Massachusetts, November 20, Amherst, Massachusetts.
6. McGarigal K. 2009. Landscape Ecology: What is the state of the art? Invited presentation to the New York Chapter of The Wildlife Society, Annual Meeting, February 20, Syracuse, New York.
7. McGarigal K. 2007. Metapopulations and their application to wildlife conservation: a case study of the marbled salamander in Massachusetts. Invited Ledermann Lecture in Natural History and Conservation Biology, presented at the University of Rhode Island, November 19, Kingston, Rhode Island.
8. BW Compton, K McGarigal, SA Cushman, and LR Gamble. 2006. A resistant kernel model of connectivity for vernal pool amphibians. Presented at the International Association for Landscape Ecology Meeting, March 28-31, San Diego, California.
9. McGarigal K. 2004. A landscape ecological approach to biodiversity conservation: the Conservation Assessment and Prioritization System (CAPS). Invited presentation to the seminar series in the SUNY Environmental Science and Forestry Program, November 15, Syracuse, New York.
10. McGarigal K. 2004. The evolving science and application of landscape pattern analysis. Invited presentation to the Watershed Conference at the University of Massachusetts, September 17, Amherst, Massachusetts.
11. McGarigal K. 2003. Simulating landscape dynamics in the Rocky Mountains. Invited seminar presentation to the Life Sciences Department at Amherst College, November 3, Amherst, Massachusetts.
12. McGarigal K. 2003. The evolving science and application of landscape pattern analysis. Invited plenary presentation at the 6th International Association of Landscape Ecology

(IALE) World Congress, July 13-17, Darwin, Australia.

13. McGarigal K, SD Jackson, BW Compton, K Rolih, E Ene, K Seleen, and C Griffin. 2001. Biodiversity assessment: a coarse-filtered landscape ecological approach. Presented at the Society for Conservation Biology Meeting, July 29-August 1, Hilo, Hawaii.
14. McGarigal K, WH Romme, E Roworth, and M Crist. 2001. Rocky Mountain Landscape Simulator (RMLANDS): Characterizing the expected range of variation in landscape structure and function. Presented at the International Association for Landscape Ecology Meeting, April 25-29, Tempe, Arizona.
15. McGarigal K, SD Jackson, BW Compton, K Rolih, E Ene, K Seleen, and C Griffin. 2001. Biodiversity assessment: a coarse-filtered landscape ecological approach. Presented at the International Association for Landscape Ecology Meeting, April 25-29, Tempe, Arizona.
16. McGarigal K, WH Romme, E Roworth, and M Crist. 2000. A quantitative framework for interpreting landscape structure metrics. Presented at the International Association for Landscape Ecology Meeting, April 15-19, Fort Lauderdale, Florida.
17. McGarigal K, and SA Cushman. 1999. Comparative evaluation of experimental approaches to the study of habitat fragmentation. Presented at the International Association for Landscape Ecology Meeting, July 29-August 3, Snowmass, Colorado.
18. McGarigal K. 1999. Understanding ecosystem and landscape dynamics. Invited seminar speaker for the Harvard Forest Seminar Series, April 27, Petersham, Massachusetts.
19. McGarigal K. 1999. Understanding ecosystem and landscape dynamics. Invited seminar speaker for the Ecosystems Center of the Marine Biological Laboratory, April 27, Woods Hole, Massachusetts.
20. McGarigal K, and WC McComb. 1998. Forest fragmentation effects on breeding bird communities in the Oregon Coast Range. Presented at the Conference on Forest Fragmentation in the Pacific Northwest, November 18-19, Portland, Oregon.
21. McGarigal K, WH Romme, and M Crist. 1998. Changes in landscape structure in the San Juan Mountains, 1950-93: Scaling issues. Presented at the International Association for Landscape Ecology Meeting, March 17-21, East Lansing, Michigan.
22. McGarigal K, and WC McComb. 1994. Relationship between landscape structure and breeding birds in the Oregon Coast Range. Presented at the Coastal Oregon Productivity Enhancement (COPE) symposium on the management and ecology of Oregon Coast Range Forests, March 29-31, Gleneden Beach, Oregon.
23. McGarigal K, and WC McComb. 1994. Bird communities in Coast Range riparian ecosystems. Presented at the Coastal Oregon Productivity Enhancement (COPE)

- symposium on the management and ecology of Oregon Coast Range Forests, March 29-31, Gleneden Beach, Oregon.
24. McGarigal K, and WC McComb. 1993. Avian community structure in relation to landscape structure. Presented at the USDA Forest Service Land Management Planning Workshop, June 16, Fort Collins, Colorado.
 25. McGarigal K 1992. A landscape perspective for managing forest wildlife. Presented at the Western Forestry Conference, December 9, Portland, Oregon.
 26. McGarigal K, and WC McComb. 1990. Riparian versus upslope bird communities in the central Oregon Coast Range. Presented at the Oregon Chapter of The Wildlife Society Meeting, February 28-March 2, Welches, Oregon.
 27. McGarigal K. 1989. Basin-level planning concepts in vertebrate pest management. Presented at the Integrated Pest Management Symposium, January 17, Corvallis, Oregon.
 28. McGarigal K, and WC McComb. 1989. Riparian wildlife information needs in western Oregon: Land manager concerns. Presented at the 54th North Am. Wildl. Nat. Resour. Conf., March 17-22, Washington, D.C.
 29. McGarigal K, RG Anthony, and FB Isaacs. 1988. Human-eagle interactions on the Lower Columbia River. Presented at the Oregon Chapter of The Wildlife Society Meeting, February 23-26, Pendleton, Oregon.
 30. McGarigal K, RG Anthony, and FB Isaacs. 1988. Human-eagle interactions on the Lower Columbia River. Presented at the Annual Klamath Falls Bald Eagle Conference, February 12-14, Klamath Falls, Oregon.
 31. McGarigal K, RG Anthony, and FB Isaacs. 1987. Experiments on bald eagle response to human activities. Presented at the Annual Raptor Research Foundation Meeting, October 28-31, Boise, Idaho.
 32. McGarigal K, and JD Fraser. 1983. Great horned owl response in young versus old forest stands. Presented at the Annual Virginia Academy of Sciences Meeting, May 20, Fairfax, Virginia.
 33. McGarigal K, and P Scanlon. 1983. Estrus induction in captive white-tailed deer. Presented at the Annual Virginia Academy of Sciences Meeting, May 20, Fairfax, Virginia.
 34. McGarigal K, and JD Fraser. 1983. Owl response in young versus old forest stands in sw Virginia. Presented at the Annual Raptor Research Foundation Meeting, December 2-5, St. Louis, Missouri.

7. TEACHING

University teaching and course evaluations

Department of Environmental Conservation (ECO), formerly Natural Resources Conservation (NRC), courses at the University of Massachusetts, Amherst, 1998-present:

Course ¹	No. of Credits	Course Title	No. of Times Taught	Mean No. of Students/ Class	Mean Rating ²
ECO 697	3	ST: Analysis of environmental data lecture	3	30	4.33
ECO 697	2	ST: Analysis of environmental data lab	2	21	4.55
ECO 697	4	Multivariate statistics for wildlife and ecology research (lecture & lab)	6	18	4.74
ECO 621	4	Landscape ecology (lecture & lab)	7	15	4.71
ECO 697	1	ST: Communicating science	21	21	3.93
WFCON 597	4	Ecosystem management (lecture & lab)	9	30	4.04
WFCON 797	2	ST: Advanced multivariate statistics	1	4	4.83
WFCON 797	2	ST: Spatial ecology and statistics	1	4	4.33
WFCON 591	1	ST: Ecology and conservation of reptiles and amphibians	1	17	4.46
WFCON 691	1	ST: Research proposal seminar	1	15	4.38
NRC 697	2	ST: Multilevel modeling	1	4	4.66
NRC 677	3	ST: Design & analysis of ecological data	1	9	4.67
NRC 697	1	ST: Pattern recognition in wildlife studies	1	4	4.33

¹Note: Course listings and numbers may have varied from year to year.

²Weighted by number of students per semester taught; all ratings standardized to a 5-point scale, where: 1 = lowest and 5 = highest; Mean rating = average of three responses:

1. Overall, how much do you feel you learned?
2. Overall rating of instructors' teaching.
3. Overall rating for this course.

Depart. criteria: >3.8=excellence; 3.1-3.89=strength; <3.1=fails to meet basic expectations.

Extension teaching (on- & off-campus)

- Developed and regularly teach intensive two-week long shortcourse on the **Science and Application of Landscape Ecology to National Forest Management** for the USDA Forest Service, Missoula, MT: 6-17 August 2007; 7-18 January, 2008; 7-18 July 2008; 5-16 January 2009; 4-15 January 2010; Flagstaff AZ: 3-14 January 2011; 16-27 May 2011; 3-13 January 2012; 7-18 January 2013.
- Invited to teach a one-week shortcourse on **Landscape Structure Analysis using program FRAGSTATS** to Weyerhaeuser Company, 31 July-3 August, 2006, Federal Way, WA.
- Developed and presented full-day workshop on **Landscape Structure Analysis using program FRAGSTATS** at the annual conference of the US chapter of the International Association for Landscape Ecology, 1 April 2006, San Diego, CA.
- Invited educational presentation on **Biodiversity Conservation using the Conservation Assessment and Prioritization System (CAPS)** to the Nashua River Watershed Association, 4 November, 2004, Groton, Massachusetts.
- Invited educational presentation on **The evolving science and application of landscape pattern analysis** at the Watershed Conference at the University of Massachusetts, 17 September, 2004, Amherst, MA.
- Developed and presented full-day workshop on **Landscape Structure Analysis using program FRAGSTATS** at the annual conference of the US chapter of the International Association for Landscape Ecology, 12 March 2005, Syracuse, New York.
- Served as the interviewee and provided material for an episode of Laurie Sander's Public Radio show **Field Notes**, focused on the development and application of the CAPS biodiversity assessment tool, 16 July, 2004.
- Supervised a 2½-week field course in Botswana on **African wildlife conservation** for 18 UMass-Five College System graduate and undergraduate students, 27 May-11 June, 2004, Botswana.
- Developed and presented two full-day workshops on **Landscape Structure Analysis using program FRAGSTATS** at the world congress of the International Association for Landscape Ecology, 13-17 July 2003, Darwin, Australia.

- Developed and presented half-day workshop on **Landscape Structure Analysis using program FRAGSTATS** at the GeoStats workshop, 6 June 2003, University of Rhode Island, Kingston, Rhode Island.
- Developed and presented half-day workshop on **Landscape Structure Analysis using program FRAGSTATS** at the annual conference of the US chapter of the International Association for Landscape Ecology, 23 April 2002, Lincoln, Nebraska.
- Invited to present 1-hour lecture on **Biodiversity Assessment using GIS and Landscape Analysis** at the Trustees of Reservations annual conference/workshop, 17 March, 2001, Worcester, Massachusetts.
- Invited to present 1-hour lecture on **Landscape Analysis** at the Mass. Department of Environmental Management Ecosystem Management workshop, 24 May, 2000, Amherst, Massachusetts.
- Invited to present 1-hour lecture on **Landscape Structure and Analysis using FRAGSTATS: Applications using GAP Vegetation Maps** at the GAP Analysis: Applications in Natural Resource Planning and Management workshops, 6 July and 9 July 1999, University of Massachusetts, Amherst, Massachusetts.
- Developed and instructed a two-week long (full time) graduate-level course on **Landscape Ecology: Theory and Application** for students at the University of Cordoba, Argentina, August 1998. Using the same student evaluation process and standardized 5-point scale used by the University of Massachusetts, I received an overall score of 4.67.
- Invited to present 1-2 hour lecture on **Landscape Structure and Analysis** at the Mass. Department of Environmental Management Ecosystem Management workshop, 11 March, 1998, Amherst, Massachusetts.
- Invited to present 1-hour lecture on **Landscape Ecology and Habitat Fragmentation** at the Massachusetts Association of Professional Foresters annual meeting, 10 December, 1997, Petersham, Massachusetts.
- Developed and presented several 2-day workshops on **The Analysis of Landscape Structure with applications using program FRAGSTATS**, 8 December 1993, Corvallis, Oregon; 6-7 April 1994, Corvallis, Oregon; 19-20 July 1994, Dorset, Ontario; and 7-8 May 1996, Fort Collins, Colorado.
- Invited to present 4-hour session on the **Principles of Landscape Ecology** at the continuing education shortcourse on managing forest structure and composition, 11 April 1994, Corvallis, Oregon.
- Invited to present 1-2 hour lecture on **Landscape Ecology: A landscape perspective**

for managing forest wildlife and an example from the Oregon Coast Range at the continuing education shortcourse on managing forest structure and composition, 5 April 1993, Corvallis, Oregon.

- Invited to present 1-2 hour lecture on **Avian response to forest fragmentation--a review** at the continuing education shortcourse on managing forest structure and composition, 22 April 1992, Corvallis, Oregon.
- Invited to present 1-2 hour lecture on **Riparian-wildlife relationships** at the continuing education shortcourse on managing forest structure and composition, 22 April 1990, Corvallis, Oregon.

8. ADVISING

Post-Docs Directed (since 1998)

Name	Focus of work	Years
Brad Compton	Everything	2000-present
Ethan Plunkett	North Atlantic Landscape Conservation Cooperative & Conservation Assessment and Prioritization System (CAPS) development	2010-present
Joanna Grand	North Atlantic Landscape Conservation Cooperative & Conservation Assessment and Prioritization System (CAPS) development	2009-present
Bill Deluca	North Atlantic Landscape Conservation Cooperative	2011-present
Brad Timm	Modeling effects of fuel treatments on fire-risk and habitat suitability for the Mexican spotted owl	2012-present
Liz Willey	North Atlantic Landscape Conservation Cooperative	2010-2012
Jennifer Seavey	Conservation Assessment and Prioritization System (CAPS) development	2009
Sandra Hair	Trends in Fire Size under Wildland Fire Use Programs	2009-2012
Lloyd Gamble	Marbled salamander metapopulation dynamics	2008-2009
Sermin Tagil	Development of surface pattern metrics for landscape pattern analysis	2008

Maile Neel	Evaluation of landscape metric behavior	2002-2003
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Graduate Students Directed (since 1998)

Name	Degree	Program	Thesis/Dissertation Title	Year
Kathy Zeller	PhD	ECo	Empirical evaluation of methods for modeling landscape connectivity and constructing conservation corridors	tbd
Andrew Allyn	PhD	SMS	Distribution and abundance of organisms in the Gulf of Maine	tbd
Javan Bauder	PhD	ECo	Individual-based, spatially-explicit modeling of eastern Indigo snakes in peninsular Florida	tbd
Blake Massey	PhD	ECO	Ecology of bald eagles in relation to wind energy farms in the Gulf of Maine	tbd
Willem Sytsma	MS	WFCON	Modeling habitat capability for the eastern indigo snake in the Altamaha River Corridor, Georgia	drop
Jeff Legros	MS	WFCON	Assessing ecological integrity of rivers and stream in the Northeast	drop
Megan Chesser	MS	WFCON	Evaluating computer-aided individual pattern recognition in amphibians	2011
Theresa Portante	MS	WFCON	Landscape-based assessment of forested wetlands in Massachusetts	tbd
Thomas Coote	PhD	WFCON	Landscape genetic patterns of <i>Marstonia lustrica</i> in western Massachusetts	2010
Brad Timm	PhD	WFCON	Characterization of breeding habitat and assessment of road impacts to eastern spadefoot toads at Cape Cod National Seashore	2013
Ethan Plunkett	MS	WFCON	Effects of land use on population viability of a marbled salamander metapopulation	2009

Jennifer Seavey	PhD	WFCON	Multiscale effects of environmental variables on the abundance and productivity of the piping plover (<i>Charadrius melodus</i>) on Long Island, New York	2009
Sandra Haire	PhD	FOREST	Characterizing the heterogeneity in severity of fire disturbances in the Rocky Mountain region	2009
Sekar Iyyapazham	PhD	WFCON	Sustainable resource management: modeling agro-ecosystem water resources	2006
Brad Timm	MS	WFCON	Orientation and timing of emigration of metamorphs of four species of ephemeral pond-breeding amphibians in Hampshire County, Massachusetts	2006
Lloyd Gamble	MS/ PhD	WFCON	Structure and dynamics of a marbled salamander metapopulation: an empirical study	2006
Sam Cushman	PhD	OEB	Multivariate characterization of heterogeneity and its affect on the distribution and abundance of organisms	2003
Eduard Ene	MS	WFCON	Design and implementation of the Conservation Assessment and Prioritization System (CAPS)	2003
Craig Thompson	MS	WFCON	The influence of research scale on bald eagle habitat selection along the lower Hudson River, New York	2002
Chris Jenkins	MS	WFCON	Ecology and conservation of marbled salamanders in western Massachusetts	2002
Michele Crist	MS	WFCON	Quantifying spatial and temporal dynamics in wildlife habitat under a natural disturbance regime in the southern Rocky Mountains	2002
Eduard Roworth	MS	WFCON	Quantifying the dynamics in landscape structure under natural disturbance regimes in the southern Rocky Mountains	2002

Jennifer Garrett	MS	WFCON	Avifauna of hemlock-dominated natural communities of Quabbin watershed	2002
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Committee Service for Graduate Students

I serve as a committee member/chair for students in five graduate academic programs, including Environmental Conservation (ECo), Wildlife and Fisheries Conservation (WFCON; legacy degree), Forest Resources (FR; legacy degree), GeoSciences, Landscape Architecture and Regional Planning (LARP), Organismic and Evolutionary Biology (OEB), and Plant, Soil and Insect Science. The table below lists my committee activity since 1998.

	Masters	PhD
<i>Completed</i>		
ECo/WFCON	19	10
Other	4	5
<i>Current</i>		
ECo/WFCON	3	5
Other	0	2
Totals	26	25

Undergraduate Students Advised

I serve as an undergraduate student advisor in the Natural Resources Conservation (NRC) in the Department of Environmental Conservation (ECo). My advising load is roughly 15 students/semester.

Undergraduate Independent Studies Supervised

I occasionally serve as a supervisor for undergraduate independent studies in Wildlife and Fisheries Conservation (WFCON). I have supervised 8 independent studies since 1998.

9. SERVICE

Regional, National & International Service (since 1998)

- CAPS Software Development and Applications, 1999-Present.—I am the principal developer (assisted by Scott Jackson and Brad Compton) of an increasingly popular decision support tool called CAPS (Conservation Assessment and Prioritization System) design to assess the ecological integrity of lands and waters and prioritize areas for

strategic biodiversity conservation, among other uses. My lab maintains the software and conducts analyses for a wide variety of applications for various state and federal agencies, nongovernmental organizations and private industry. Continuing development of this software and its application constitutes a major focus of my lab. I consider much of this work to be professional “service” given our focus on real-world problem-solving applications rather than pursuit of scholarly publications.

- FRAGSTATS Software Development, 1993-Present.—I am the principal developer and author of a popular computer software product called FRAGSTATS designed to quantify landscape structure and assist in the analysis of landscapes. This software is recognized internationally as the leading software for landscape structure analysis and is used by hundreds of researchers and professionals throughout the world. This software is developed and distributed in the public domain. In addition, I administer a comprehensive website and listserv for the dissemination and support of the software.
- Technical Assistance and Advice on FRAGSTATS software, 1993-Present.—As the principal developer and author of FRAGSTATS, I receive numerous requests (~3-10 per week) for information about the software and its use from academicians and resource professionals from all over the world. These requests come primarily through email messages. I respond to each of these request and provide the necessary advice and guidance. In addition, I manage the FRAGSTATS list serve to facilitate communication and solve problems among the vast community of FRAGSTATS users.
- International Graduate-level Shortcourse, 1998.—In collaboration with Dr. Brenda McComb, I developed and taught a graduate-level course at the University of Cordoba, Argentina. This 2-week full-time course focused on the theoretical underpinnings of landscape ecology and the practical applications. We worked with students to develop a landscape management plan for a local landscape. I devoted considerable time and effort in developing this course in anticipation of offering this course again to this and other institutions in the future. In particular, I synthesized and summarized material from a variety of sources into a concise set of lecture notes that served as the primary reading material for this course. The lecture was supported by several computer-oriented labs, including landscape analysis using FRAGSTATS software that I developed, dynamic landscape modeling, and population viability modeling.
- International Graduate-level Training, 1998.—I provided training in landscape ecology to a graduate student, Virginia Matta, from Costa Rica; Virginia visited my lab for two months during this year to receive training in landscape ecology and landscape analysis. I devoted considerable time and energy to this training.

Service to State (since 1998)

- Member, Ad Hoc Committee on the Environmental Working Group on Biodiversity and Ecosystems, 1999-2004.—I served as a member of an ad hoc committee established by a Memorandum of Understanding between UMass and the Massachusetts Executive Office of Environmental Affairs to develop priorities for the state in the area of

biodiversity conservation.

- Member, Ad Hoc Committee to Develop a Vision for Massachusetts Forests, 1999-2000.—I served as a member of an ad hoc committee for the Massachusetts Executive Office of Environmental Affairs to develop a vision statement for Massachusetts forests.
- Scientific and Technical Assistance to the Quabbin Watershed, 1998-2001.—I served as the principal investigator/coordinator for an Interagency Service Agreement (ISA) between UMass and the Metropolitan District Commission. A significant portion of this ISA involved conducting biological surveys of proposed timber sale areas. This was a professional service that we provided for MDC. I assumed a significant role in training two technicians to conduct these biological surveys. In addition, I was the principal investigator on another project under this ISA to develop a cost-effective and efficient method for surveying vernal pool amphibians for use by the MDC.
- Member, Ad Hoc Advisory Committee on Ecological Assessment Methodology, 1999.—I served as an active member of an ad hoc committee for the Massachusetts Executive Office of Environmental Affairs to develop an ecological assessment methodology to be adopted statewide by the watershed management teams.

Service to Local Communities (since 1998)

- Expert Advisor to Local Land Trusts, 1999-Present.—I serve as the principal investigator of a project sponsored over time by a wide variety of organizations and designed to study the metapopulation dynamics and conservation of marbled salamanders in western Massachusetts. In the course of this study, we have identified several critical habitats for amphibians and reptiles in the towns of South Hadley and Leverett. My graduate students and I have worked hard with local conservation organizations and, in particular, the Valley Land Trust to identify and purchase five parcels critical to the conservation of this local metapopulation. We are continuing to work with these organizations to identify other critical wildlife habitats in the region.

Service to Professional Groups (since 1998)

- Participation in Panels and Activities at Professional Meetings.—The table below summarizes my involvement on panels and in other activities at Professional meetings.

Organization	Role	Year
International Association for Landscape Ecology	Councillor-at-large	2000-2002
International Association of Landscape Ecology, 1999 Annual Conference	Panel Member	1999
The Wildlife Society, 1998 Annual Conference	Poster reviewer	1998

International Association of Landscape Ecology, 1998 Annual Conference	Moderator	1998-2001
International Association of Landscape Ecology, 1998 Annual Conference	Judge, student papers	1998-2001

- Technical Reviews.—The table below summarizes my involvement in technical reviews of journal articles, book chapters, and research programs since 1998

Type	Number Reviewed ²
Journal articles ¹	40
Book chapters	3
Research programs	1

¹Including the following journals: Landscape Ecology, Conservation Biology, Biological Conservation, Ecological Applications, Ecosystems, Wildlife Society Bulletin, Journal of Environmental Management, Oecologia, Copeia, Ecography, Wetlands, Herpetological Conservation and Biology.

²estimated, since I no longer keep track

University Service

- Departmental Committees/Activities, 1998-Present.—The table below summarizes my service on ECo department committees and other department activities.

Department Committees/Activities	Role	Dates
Graduate Program Director, ECo	Director	2006-present
Conservation Genetics Search Committee	Chair	2008-2009
Computer Committee	Member	1998-2006
School Forests Committee	Member	1998-2006

- Graduate Program in Organismic and Evolutionary Biology
Member, Steering Committee, 1999-2002.
Member, Graduate Operations Committee, 1999-2002.
- Invited speaker, University of Massachusetts, Power of Learning.—Invited to present a summary of our CAPS (conservation assessment and prioritization system) biodiversity program at the Power of Learning Homecoming Program, 29 October, 2004.
- Guest lecturer, University of Massachusetts, 1998-Present.—Invited to present guest lectures in several courses at the University of Massachusetts, Amherst, including

NAREST 191, ENVSCI 191, ENT 683, WFCON 577, and several different WFCON 597 and 697 courses.