Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways

U.S. Forest Service Southern Research Station General Technical Report SRS-109 September 2008 Garv Bentrup

Literature Cited

1.0 Water Quality

1.1 Buffers and land management

Allan, J.D. 2004. Landscapes and riverscapes: the influence of land use on steam ecosystems. Annual Review of Ecology, Evolution, and Systematics. 35: 257-284.

Arheimer, B.; Torstensson, G.; Wittgren, H.B. 2004. Landscape planning to reduce coastal eutrophication: agricultural practices and constructed wetlands. Landscape and Urban Planning. 67: 205-215.

Basnyat, P.; Teeter, L.D.; Flynn, K.M.; Lockaby, B.G. 1999. Relationships between landscape characteristics and nonpoint source pollution inputs to coastal estuaries. Environmental Management. 23: 539-549.

Betson, R.P.; Marius, J.S. 1969. Source areas of storm runoff. Water Resources Research. 5: 574-582.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Dinnes, D.L.; Karlen, D.L.; Jaynes, D.B. [and others]. 2002. Nitrogen management strategies to reduce nitrate leaching in tile-drained Midwestern soils. Agronomy Journal. 94: 153-171.

Dunne, T.; Moore, T.R.; Taylor, C.H. 1975. Recognition and prediction of runoff-producing zones in humid regions. Hydrological Sciences Bulletin. 20: 305-327.

Forman, R.T.T. 1995. Land mosaics. Cambridge, UK: Cambridge University Press. 632 p.

Gburek, W.J.; Drungil, C.C.; Srinivasan, M.S. [and others]. 2002. Variable-source-area controls on phosphorus transport: bridging the gap between research and design. Journal of Soil and Water Conservation. 57: 534-543.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Houlahan, J.E.; Findlay, C.S. 2004. Estimating the 'critical' distance at which adjacent land-use degrades wetland water and sediment quality. Landscape Ecology. 19: 677-690.

Jørgensen, S.E.; Nielsen, S.N. 1996. Application of ecological engineering principles in agriculture. Ecological Engineering. 7: 373-381.

Maas, R.P. Smolen, M.D.; Dressing, S.A. 1985. Selecting critical areas for nonpoint source pollution control. Journal of Soil and Water Conservation. 40: 68-71.

McGregor, K.C.; Dabney, S.M.; Johnson, J.R. 1999. Runoff and soil loss from cotton plots with and without stiff-grass hedges. Transactions of the American Society of Agricultural Engineers. 42: 361-368.

Mitsch, W.J.; Day, J.W., Jr.; Gilliam, J.W. [and others]. 2001. Reducing nitrogen loading to the Gulf of Mexico from the Mississippi River Basin: strategies to counter a persistent ecological problem. BioScience. 51: 373-388.

Norris, V. 1993. The use of buffer zones to protect water quality: a review. Water Resources Management. 7: 257-272.

Nowak, P.J.; Cabot, P.E. 2004. The human dimensions of resource management programs. Journal of Soil and Water Conservation. 59: 128A-135A.

Omernik, J.M.; Abernathy, A.R.; Male, L.M. 1981. Stream nutrient levels and proximity of agricultural and forest land to streams: some relationships. Journal of Soil and Water Conservation. 36: 227-231.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private

Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Parkyn, S.M.; Davies-Colley, R.J.; Halliday, N.J. [and others]. 2003. Planted riparian buffer zones in New Zealand: do they live up to expectations? Restoration Ecology. 11: 436-447.

Roy, A.H.; Freeman, M.C.; Freeman, B.J. [and others]. 2006. Importance of riparian forest in urban catchments contingent on sediment and hydrologic regimes. Environmental Management. 37: 523-539.

Vache, K.B.; Eilers, J.M.; Santelmann, M.V. 2002. Water quality modeling of alternative agricultural scenarios in the U.S. Corn Belt. Journal of the American Water Resources Association. 38: 773-787.

Verstraeten, G.; Posen, J.; Gillijns, K.; Govers, G. 2006. The use of riparian vegetative filter strips to reduce river sediment loads: an overestimated control measure? Hydrological Processes. 20: 4259-4267.

Walter, M.T.; Brooks, M.F.; Walter, M.F. [and others]. 2001. Evaluation of soluble phosphorus loading from manureapplied fields under various spreading strategies. Journal of Soil and Water Conservation. 56: 329-335.

Wang, X.H.; Yin, C.Q.; Shan, B.Q. 2005. The role of diversified landscape buffer structures for water quality improvement in an agricultural watershed, North China. Agriculture, Ecosystems and Environment. 107: 381-396.

1.2 Karst landscapes

Barfield, B.J.; Blevins, R.L.; Fogle, A.W. [and others]. 1998. Water quality impacts of natural filter strips in karst areas. Transactions of the American Society of Agricultural Engineers. 41: 371-381.

Petersen, A.; Vondracek, B. 2006. Water quality in relation to vegetative buffers around sinkholes in karst terrain. Journal of Soil and Water Conservation. 61: 380-388.

1.3 Frozen soils

Blackburn, W.H.; Pierson, F.B.; Seyfried, M.S. 1990. Spatial and temporal influence of soil frost on infiltration and erosion of sagebrush rangelands. Journal of American Water Resources Association. 26: 991-997.

Gray, D.M.; Toth, B.; Shao, L. [and others]. 2001. Estimating areal snowmelt infiltration into frozen soils. Hydrological Processes. 15: 3095-3111.

Kane, D.L.; Stein, J. 1983. Water movement into seasonally frozen soils. Water Resources Research. 19: 1547-1557.

Nyberg, L.; Stähli, M.; Mellander, P.; Bishop, K.H. 2001. Soil frost effects on soil water and runoff dynamics along a boreal forest transect: 1. field investigations. Hydrological Processes. 15: 909-926.

Shanley, J.B.; Chalmers, A. 1999. The effect of frozen soil on snowmelt runoff at Sleepers River, Vermont. Hydrological Processes 13: 1843-1857.

Steinke, K.; Stier, J.C.; Kussow, W.R.; Thompson, A. 2007. Prairie and turf buffer strips for controlling runoff from paved surfaces. Journal of Environmental Quality. 36: 426-439.

Syversen, N. 2002. Effect of cold-climate buffer zone on minimising diffuse pollution from agriculture. Water Science and Technology. 45(9): 69-76.

Zuzel, J.F.; Allmaras, R.R.; Greenwalt, R. 1982. Runoff and soil erosion on frozen soils in northeastern Oregon. Journal of Soil and Water Conservation. 37: 351-354.

Zuzel, J.F.; Pikul, J.L. 1987. Infiltration into a seasonally frozen agricultural soil. Journal of Soil and Water Conservation. 42: 447-449.

1.4 Target buffers in watersheds

Agnew, L.J.; Lyon, S.; Marchant, P.G. [and others]. 2006. Identifying hydrologically sensitive areas: bridging the gap between science and application. Journal of Environmental Management. 78: 63-76.

Anbumozhi, V.; Radhakrishnan, J.; Yamagi, E. 2005. Impact of riparian buffer zones on water quality and associated management considerations. Ecological Engineering. 24: 517-523.

Angier, J.T.; McCarty, G.W.; Rice, C.P.; Bialek, K. 2002. Influence of riparian wetland on nitrate and herbicides exported from an agricultural field. Journal of Agricultural and Food Chemistry. 50: 4424-4429.

Babcock, B.A.; Lakshminarayan, P.G.; Wu, J.J.; Zilberman, D. 1997. Targeting tools for the purchase of environmental amenities. Land Economics. 73: 325-339.

Baker, M.E.; Wiley, M.J.; Seelbach, P.W. 2001. GIS-based hydrologic modeling of riparian areas: implications for stream water quality. Journal of American Water Resources. 37: 1615-1628.

Bernot, M.J.; Dodds, M.K. 2005. Nitrogen retention, removal, and saturation in lotic ecosystems. Ecosystems. 8: 442-453.

Burkart, M.R.; James, D.E.; Tomer, M.D. 2004. Hydrologic and terrain variables to aid strategic location of riparian buffers. Journal of Soil and Water Conservation. 59: 216-223.

Dodds, W.K.; Oakes, R.M. 2006. Controls on nutrients across a prairie stream watershed: land use and riparian cover effects. Environmental Management. 37: 634-646.

Dosskey, M.G.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauer, D.E. [and others]. 2002. Assessment of concentrated flow through riparian buffers. Journal of Soil and Water Conservation. 57: 336-343.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauer, D.E. [and others]. 2003. Hydrologic routing of farm runoff and implications for riparian buffers. In: Williams, J.D.; Kolpin, D., eds. Agricultural hydrology and water quality: Proceedings of the American Water Resources Association 2003 spring specialty conference. Middleburg, VA. TPS-03-1. CD-ROM.

Dosskey, M.G.G.; Eisenhauer, D.E.; Helmers, M.J. 2005. Establishing conservation buffers using precision information. Journal of Soil and Water Conservation. 60: 349-354.

Duda, A.M.; Johnson, R.J. 1985. Cost-effective targeting of agricultural nonpoint-source pollution controls. Journal of Soil and Water Conservation. 40: 108-111.

Dunne, T.; Moore, T.R.; Taylor, C.H. 1975. Recognition and prediction of runoff-producing zones in humid regions. Hydrological Sciences Bulletin. 20: 305-327.

Gburek, W.J.; Drungil, C.C.; Srinivasan, M.S. [and others]. 2002. Variable-source-area controls on phosphorus transport: bridging the gap between research and design. Journal of Soil and Water Conservation. 57: 534-543.

Hayes, J.C.; Bayfield, B.J.; Barnhisel, R.I. 1984. Performance of grass filters under laboratory and field conditions. Transactions of the American Society of Agricultural Engineers. 27: 1321-1331.

Maas, R.P.; Smolen, M.D.; Dressing, S.A. 1985. Selecting critical areas for nonpoint source pollution control. Journal of Soil and Water Conservation. 40: 68-71.

Matteo, M.; Randhir, T.; Bloniarz, D. 2006. Watershed-scale impacts of forest buffers on water quality and runoff in urbanizing environment. Journal of Water Resources Planning and Management. 132: 144-152.

Mitsch, W.J.; Day, J.W., Jr.; Gilliam, J.W. [and others]. 2001. Reducing nitrogen loading to the Gulf of Mexico from the Mississippi River Basin: strategies to counter a persistent ecological problem. BioScience. 51: 373-388.

Munoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W.. 1993. Numerical approach to the overland flow process in vegetative filter strips. Transactions of the American Society of Agricultural Engineers. 36: 761-770.

Muñoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1999. Modeling hydrology and sediment transport in vegetative filter strips. Journal of Hydrology. 214: 111-129.

Muñoz-Carpena, R.J.; Parsons, J.E. 2000. VFSMOD. Version 1.04. User's Guide. Raleigh, NC: North Carolina State University. <u>http://carpena.ifas.ufl.edu/vfsmod/</u> [Date accessed; October 17, 2007].

Parkyn, S.M.; Davies-Colley, R.J.; Halliday, N.J. [and others]. 2003. Planted riparian buffer zones in New Zealand: do they live up to expectations? Restoration Ecology. 11: 436-447.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Polyakov, V.; Fares, A.; Ryder, M.H. 2005. Precision riparian buffers for the control of nonpoint source pollutant loading into surface water: a review. Environmental Review. 13: 129-144.

Qui, Z. 2003. A vsa-based strategy for placing conservation buffers in agricultural watersheds. Environmental Management. 32: 299-311.

Qui, Z.; Walter, M.T.; Hall, C. 2007. Managing variable source pollution in agricultural watersheds. Journal of Soil and Water Conservation. 62: 115-122.

Ribaudo, M.O. 1989. Targeting the conservation reserve program to maximize water quality benefits. Land Economics. 65: 320-332.

Tollner, E.W.; Barfield, B.J.; Haan, C.T.; Kao, T.Y. 1976. Suspended sediment filtration capacity of simulated vegetation. Transactions of the American Society of Agricultural Engineers. 19: 678-682.

Tomer, M.D.; James, D.E. 2004. Do soil surveys and terrain analysis identify similar priority sites for conservation? Soil Science Society of America Journal. 68: 1905-1915.

Tomer, M.D.; James, D.E.; Isenhart, T.M. 2003. Optimizing the placement of riparian practices in watershed using terrain analysis. Journal of Soil and Water Conservation. 58: 198-206.

Vannote, R.L.; Minshall, G.W.; Cummins, K.W. [and others]. 1980. The river continuum concept. Canadian Journal of Fisheries and Aquatic Sciences. 37: 130-137.

Walter, M.T.; Walter, M.F.; Brooks, E.S. [and others]. 2000. Hydrologically sensitive areas: variable source area hydrology implications for water quality risk assessment. Journal of Soil and Water Conservation. 55: 277-284.

Wigington, P.J.; Moser, T.J.; Lindeman, D.R. 2005. Stream network expansion: a riparian water quality factor. Hydrological Processes. 19: 1715-1721.

Wissmar, R.C.; Beer, W.N.; Timm II, R.K. 2004. Spatially explicit estimates of erosion-risk indices and variable riparian buffer widths in watersheds. Aquatic Sciences. 66: 446-455.

Xiang, W.N. 1996. GIS-based riparian buffer analysis: injecting geographic information into landscape planning. Landscape and Urban Planning. 34: 1-10.

Yang, W.; Weersink, A. 2004. Cost-effective targeting of riparian buffers. Canadian Journal of Agricultural Economics. 52: 17-34.

1.5 Arrangement near sources

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauser, D.E. [and others]. 2002. Assessment of concentrated flow through riparian buffers. Journal of Soil and Water Conservation. 57: 336-343.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Schultz, R.C.; Isenhart, T.M.; Simpkins, W.W.; Colletti, J.P. 2004. Riparian forest buffers in Agroecosystems – lessons learned from the Bear Creek Watershed, central Iowa, USA. Agroforestry Systems. 61: 35-50.

1.6 Buffer site design

Barfield, B.J.; Tollner, E.W.; Hayes, J.C. 1979. Filtration of sediment by simulated vegetation I. Steady-state flow with homogeneous sediment. Transactions of the American Society of Agricultural Engineers. 22: 540-545, 548.

Barling, R.D.; Moore, I.D. 1994. Role of buffer strips in management of waterway pollution: a review. Environmental Management. 18: 543-558.

Bharati, L.; Lee, K.-H.; Isenhart, T.M.; Schultz, R.C. 2002. Soil-water infiltration under crops, pasture, and established riparian buffer in Midwestern USA. Agroforestry Systems. 56: 249-257.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Dosskey, M.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauser, D.E.; Franti, T.G.; Hoagland, K.D. 2002. Assessment of concentrated flow through riparian buffers. Journal of Soil and Water Conservation. 57: 336-343.

Dosskey, M.G.G.; Hoagland, K.D.; Brandle, J.R. 2007. Change in filter strip performance over ten years. Journal of Soil and Water Conservation. 62: 21-32.

Lowrance, R.; Sheridan, J.M. 2005. Surface runoff water quality in a managed three zone riparian buffer. Journal of Environmental Quality. 34: 1851-1859.

Lowrance, R.; Todd, R.; Fail, J., Jr. [and others]. 1984. Riparian forests as nutrient filters in agricultural watersheds. BioScience. 34: 374-377.

McKergow, L.A.; Prosser, I.P.; Grayson, R.B.; Heiner, D. 2004. Performance of grass and rainforest riparian buffers in the wet tropics, Far North Queensland. 2. water quality. Australian Journal of Soil Research. 42: 485-498.

Muñoz -Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1993. Numerical approach to the overland flow process in vegetative filter strips. Transactions of the American Society of Agricultural Engineers. 36: 761-770.

Norris, V. 1993. The use of buffer zones to protect water quality: a review. Water Resources Management. 7: 257-272.

Overcash, M.R.; Bingham, S.C.; Westerman, P.W. 1981. Predicting runoff pollutant reduction in buffer zones adjacent to land treatment sites. Transactions of the American Society of Agricultural Engineers. 24: 430-435.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Qui, Z. 2003. A vsa-based strategy for placing conservation buffers in agricultural watersheds. Environmental Management. 32: 299-311.

Schultz, R.C.; Isenhart, T.M.; Simpkins, W.W.; Colletti, J.P. 2004. Riparian forest buffers in Agroecosystems – lessons learned from the Bear Creek Watershed, central Iowa, USA. Agroforestry Systems. 61: 35-50.

Steinke, K.; Stier, J.C.; Kussow, W.R.; Thompson, A. 2007. Prairie and turf buffer strips for controlling runoff from paved surfaces. Journal of Environmental Quality. 36: 426-439.

Syversen, N. 2002. Effect of cold-climage buffer zone on mininmising diffuse pollution from agriculture. Water Science and Technology. 45(9): 69-76.

Verchot, L.V.; Franklin, E.C.; Gilliam, J.W. 1997. Nitrogen cycling in Piedmont vegetated filter zones. I. Surface soil processes. Journal of Environmental Quality. 26: 327-336.

1.7 Variable buffer width

Baker, M.E.; Weller, D.E.; Jordan, T.E. 2006. Improved methods for quantifying potential nutrient interception by riparian buffers. Landscape Ecology. 21: 1327-1345.

Barfield, B.J.; Blevins, R.L.; Fogle, A.W. [and others]. 1998. Water quality impacts of natural filter strips in karst areas. Transactions of the American Society of Agricultural Engineers. 41: 371-381.

Barfield, B.J.; Tollner, E.W.; Hayes, J.C. 1979. Filtration of sediment by simulated vegetation I. Steady-state flow with homogeneous sediment. Transactions of the American Society of Agricultural Engineers. 22: 540-545, 548.

Bren, L.J. 1998. The geometry of constant buffer-loading design method for humid watersheds. Forest Ecology and Management. 110: 113-125.

Coyne, M.S.; Gilfillen, R.A.; Rhodes, R.W.; Blevins, R.L. 1995. Soil and fecal coliform trapping by grass filter strips during simulated rain. Journal of Soil and Water Conservation. 50: 405-408.

Coyne, M.S.; Gilfillen, R.A.; Villalba, A. [and others]. 1998. Fecal bacteria trapping by grass filter strips during simulated rain. Journal of Soil and Water Conservation. 53: 140-145.

Daniels, R.B.; Gilliam, J.W. 1996. Sediment and chemical load reduction by grass and riparian filters. Soil Science Society of America Journal. 60: 246-251.

Dickey, E.C.; Vanderholm, D.H. 1981. Vegetative filter treatment of livestock feedlot runoff. Journal of Environmental Quality. 10: 279-284.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers. 32: 513-519.

Dosskey, M.G.G.; Eisenhauer, D.E.; Helmers, M.J. 2005. Establishing conservation buffers using precision information. Journal of Soil and Water Conservation. 60: 349-354.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauser, D.E. [and others]. 2002. Assessment of concentrated flow through riparian buffers. Journal of Soil and Water Conservation. 57: 336-343.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauer, D.E. [and others]. 2003. Hydrologic routing of farm runoff and implications for riparian buffers. In: Williams, J.D.; Kolpin, D., eds. Agricultural hydrology and water quality: Proceedings of the American Water Resources Association 2003 spring specialty conference. Middleburg, VA. TPS-03-1. CD-ROM.

Haberstock, A.E.; Nichols, H.G.; DesMeules, M.D. [and others]. 2000. Method to identify effective riparian buffer widths for Atlantic salmon habitat protection. Journal of the American Water Resources Association. 36: 1271-1286.

Helmers, M.J.; Eisenhauer, D.E.; Dosskey, M.G.G. [and others]. 2005. Flow pathways and sediment trapping in a field-scale vegetative filter. Transactions of the American Society of Agricultural Engineers. 48: 955-968.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C.; Mickelson, S.K. 2000. Multispecies riparian buffers trap sediment and nutrients during rainfall simulations. Journal of Environmental Quality. 29: 1200-1205.

Magette, W.L.; Brinsfield, R.B.; Palmer, R.E.; Wood, J.D. 1989. Nutrient and sediment removal by vegetated filter strips. Transactions of the American Society of Agricultural Engineers. 32: 663-667.

McKergow, L.A.; Prosser, I.P.; Grayson, R.B.; Heiner, D. 2004. Performance of grass and rainforest riparian buffers in the wet tropics, Far North Queensland. 2. water quality. Australian Journal of Soil Research. 42: 485-498.

Muñoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1999. Modeling hydrology and sediment transport in vegetative filter strips. Journal of Hydrology. 214: 111-129.

Patty, L.; Réal, B.; Gril, J. 1997. The use of grassed buffer strips to remove pesticides, nitrate and soluble phosphorus compounds from runoff water. Pesticide Science 49: 243-251.

Schmitt, T.J.; Dosskey, M.G.G.; Hoagland, K.D. 1999. Filter strip performance and processes for different vegetation widths and contaminants. Journal of Environmental Quality. 28: 1479-1489.

Tingle, C.H.; Shaw, D.R.; Boyette, M.; Murphy, G.P. 1998. Metolachlor and metribuzin losses in runoff as affected by width of vegetative filter strips. Weed Science. 46: 475-479.

1.8 Effective buffer area ratio

Arora, K.; Mickelson, S.K.; Baker, J.L. [and others]. 1996. Herbicide retention by vegetative buffer strips from runoff under natural rainfall. Transactions of the American Society of Agricultural Engineers. 39: 2155-216

Barfield, B.J., E.W. Tollner, and J.C. Hayes. 1979. Filtration of sediment by simulated vegetation I. Steady-state flow with homogeneous sediment. Transactions of the American Society of Agricultural Engineers. 22: 540-545, 548.

Bren, L.J. 1998. The geometry of constant buffer-loading design method for humid watersheds. Forest Ecology and Management. 110: 113-125.

Coyne, M.S.; Gilfillen, R.A.; Rhodes, R.W.; Blevins, R.L. 1995. Soil and fecal coliform trapping by grass filter strips during simulated rain. Journal of Soil and Water Conservation. 50: 405-408.

Coyne, M.S.; Gilfillen, R.A.; Villalba, A. [and others]. 1998. Fecal bacteria trapping by grass filter strips during simulated rain. Journal of Soil and Water Conservation. 53: 140-145.

Daniels, R.B.; Gilliam, J.W. 1996. Sediment and chemical load reduction by grass and riparian filters. Soil Science Society of America Journal. 60: 246-251.

Dickey, E.C.; Vanderholm, D.H. 1981. Vegetative filter treatment of livestock feedlot runoff. Journal of Environmental Quality. 10: 279-284.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers 32: 513-519.

Dosskey, M.G.G.; Eisenhauer, D.E.; Helmers, M.J. 2005. Establishing conservation buffers using precision information. Journal of Soil and Water Conservation. 60: 349-354.

Dosskey, M.G.G.; Helmers, M.J.; Eisenhauser, D.E. [and others]. 2002. Assessment of concentrated flow through riparian buffers. Journal of Soil and Water Conservation. 57: 336-343.

Helmers, M.J.; Eisenhauer, D.E.; Dosskey, M.G.G. [and others]. 2005. Flow pathways and sediment trapping in a field-scale vegetative filter. Transactions of the American Society of Agricultural Engineers. 48: 955-968.

Hubbard, R.K.; Newton, G.L.; Davis, J.G. [and others]. 1998. Nitrogen assimilation by riparian buffer systems receiving swine lagoon wastewater. Transactions of the American Society of Agricultural Engineers. 41: 1295-1304.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C.; Mickelson, S.K. 2000. Multispecies riparian buffers trap sediment and nutrients during rainfall simulations. Journal of Environmental Quality. 29: 1200-1205.

Magette, W.L.; Brinsfield, R.B.; Palmer, R.E.; Wood, J.D. 1989. Nutrient and sediment removal by vegetated filter strips. Transactions of the American Society of Agricultural Engineers. 32: 663-667.

Mander, Ü.; Kuusemets, V.; Lõhums, K.; Mauring, T. 1997. Efficiency and dimensioning of riparian buffer zones in agricultural catchments. Ecological Engineering. 8: 299-324.

McKergow, L.A.; Prosser, I.P.; Grayson, R.B.; Heiner, D. 2004. Performance of grass and rainforest riparian buffers in the wet tropics, Far North Queensland. 2. water quality. Australian Journal of Soil Research. 42: 485-498.

Munoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1999. Modeling hydrology and sediment transport in vegetative filter strips. Journal of Hydrology. 214: 111-129.

Overcash, M.R.; Bingham, S.C.; Westerman, P.W. 1981. Predicting runoff pollutant reduction in buffer zones adjacent to land treatment sites. Transactions of the American Society of Agricultural Engineers. 24: 430-435.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Syversen, N. 2002. Effect of cold-climage buffer zone on mininmising diffuse pollution from agriculture. Water Science and Technology. 45(9): 69-76.

1.9 Slope and soil type adjustments

Berglund, E.R.; Ahyoud, A.; Tayaa, M. 1981. Comparison of soil and infiltration properties of range and afforested sites in Northern Morocco. Forest Ecology and Management. 3: 295-306.

Bharati, L.; Lee, K.-H.; Isenhart, T.M.; Schultz, R.C. 2002. Soil-water infiltration under crops, pasture, and established riparian buffer in Midwestern USA. Agroforestry Systems. 56: 249-257.

Dickey, E.C.; Vanderholm, D.H. 1981. Vegetative filter treatment of livestock feedlot runoff. Journal of Environmental Quality. 10: 279-284.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers. 32: 513-519.

Dillaha, T.A.; Sherrad, J.H.; Lee, D. [and others]. 1988. Evaluation of vegetative filter strips as best management practices for feed lots. Journal of Water Pollution Control Federation. 60: 1231-1238.

Dosskey, M.G.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dosskey, M.G.G.; Hoagland, K.D.; Brandle, J.R. 2007. Change in filter strip performance over ten years. Journal of Soil and Water Conservation. 62: 21-32.

Elderidge, D.J.; Freudenberger, D. 2005. Ecosystem wicks: woodland trees enhance water infiltration in a fragmented agricultural landscape in eastern Australia. Austral Ecology. 30: 336-347.

Lado, M.; Paz, A.; Ben-Hur, M. 2004. Organic matter and aggregate size interactions in infiltration, seal formation, and soil loss. Soil Science Society of America Journal. 68: 935-942.

Mazurak, A.P.; Kriz, W.; Ramig, R.E. 1960. Rates of water entry into a Chernozem soil as affected by age of perennial grass sods. Agronomy Journal. 52: 35-37.

Munoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1993. Numerical approach to the overland flow process in vegetative filter strips. Transactions of the American Society of Agricultural Engineers. 36: 761-770.

Muñoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1999. Modeling hydrology and sediment transport in vegetative filter strips. Journal of Hydrology. 214: 111-129.

Overcash, M.R.; Bingham, S.C.; Westerman, P.W. 1981. Predicting runoff pollutant reduction in buffer zones adjacent to land treatment sites. Transactions of the American Society of Agricultural Engineers. 24: 430-435.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Parr, J.F.; Bertrand, A.R. 1960. Water infiltration into soils. Advances in Agronomy. 12: 311-363.

Pietola, L.; Horn, R.; Yli-Halla, M. 2005. Effects of trampling by cattle on the hydraulic and mechanical properties of soil. Soil and Tillage Research. 82: 99-108.

Pluhar, J.J.; Knight, R.W.; Heitschmidt, R.K. 1987. Infiltration rates and sediment production as influenced by grazing systems in the Texas Rolling Plains. Journal of Range Management. 40: 240-243.

Robinson, C.A.; Ghaffarzadeh, M.; Cruse, R.M. 1996. Vegetative filter strip effects on sediment concentration in cropland runoff. Journal of Soil and Water Conservation. 51: 227-230.

Schultz, R.C.; Isenhart, T.M.; Simpkins, W.W.; Colletti, J.P. 2004. Riparian forest buffers in Agroecosystems – lessons learned from the Bear Creek Watershed, central Iowa, USA. Agroforestry Systems. 61: 35-50.

Seobi, T.; Anderson, S.H.; Udawatta, R.P.; Gantzer, C.J. 2005. Influence of grass and agroforestry buffer strips on soil hydraulic properties for an Albaqualf. Soil Science Society of America Journal. 69: 893-901.

Thompson, J.R. 1968. Effect of grazing on infiltration in a western watershed. Journal of Soil and Water Conservation. 23: 63-65.

Tromble, J.M.; Renard, K.G.; Thatcher, A.P. 1974. Infiltration for three rangeland soil-vegetation complexes. Journal of Range Management. 27: 318-321.

Verchot, L.V.; Franklin, E.C.; Gilliam, J.W. 1997. Nitrogen cycling in Piedmont vegetated filter zones. I. Surface soil processes. Journal of Environmental Quality. 26: 327-336.

Zachmann, J.E.; Linden, D.R.; Clapp, C.E. 1987. Macroporous infiltration and redistribution as affected by earthworm, tillage, and residue. Soil Science Society of America Journal. 51: 1580-1586.

1.10 Buffers for sediment

Barfield, B.J.; Tollner, E.W.; Hayes, J.C. 1979. Filtration of sediment by simulated vegetation I. Steady-state flow with homogeneous sediment. Transactions of the American Society of Agricultural Engineeres. 22: 540-545, 548.

Barling, R.D.; Moore, I.D. 1994. Role of buffer strips in management of waterway pollution: a review. Environmental Management. 18: 543-558.

Borin, M.; Vianello, M.; Morari, F.; Zanin, G. 2005. Effectiveness of buffer strips in removing pollutants in runoff from a cultivated field in north-east Italy. Agriculture, Ecosystems and Environment. 105: 101-114.

Clinton, B.D.; Vose, J.M. 2006. Variation in stream water quality in an urban headwater stream in the southern Appalachians. Water, Air, and Soil Pollution. 169: 331-353.

Cooper, J.R.; Gilliam, J.W.; Daniels, R.B.; Robarge, W.P. 1987. Riparian areas as filters for agricultural sediment. Soil Science Society of America Journal. 51: 416-420.

Coyne, M.S.; Gilfillen, R.A.; Rhodes, R.W.; Blevins, R.L. 1995. Soil and fecal coliform trapping by grass filter strips during simulated rain. Journal of Soil and Water Conservation. 50: 405-408.

Dabney, S.M.; Meyer, L.D.; Harmon, W.C. [and others]. 1995. Depositional patterns of sediment trapped by grass hedges. Transactions of the American Society of Agricultural Engineers. 38: 1719-1729.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Daniels, R.B.; Gilliam, J.W. 1996. Sediment and chemical load reduction by grass and riparian filters. Soil Science Society of America Journal. 60: 246-251.

Dillaha, T.A.; Inamdar, S.P. 1997. Buffer zones as sediment traps or sources. In: Haycock, N.E.; Burt, T.P.; Goulding, K.W.T.; Pinay, G., eds. Buffer zones: their processes and potential in water protection. Hartfordshire, UK: Quest Environmental. 33-42.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers. 32: 513-519.

Dillaha, T.A.; Sherrard, J.H.; Lee, D. [and others]. 1988. Evaluation of vegetative filter strips as best management practices for feed lots. Journal of Water Pollution Control Federation. 60: 1231-1238.

Dillaha, T.A.; Sherrard, J.H.; Lee, D. 1989. Long-term effectiveness and maintenance of vegetative filter strips. Water Environment and Technology. 1: 418-421.

Dosskey, M.G.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dosskey, M.G.G.; Hoagland, K.D.; Brandle, J.R. 2007. Change in filter strip performance over ten years. Journal of Soil and Water Conservation. 62: 21-32.

Ghadiri, H.; Rose, C.W.; Hogarth, W.L. 2001. The influence of grass and porous barrier strips on runoff hydrology and sediment transport. Transactions of the American Society of Agricultural Engineers. 44: 259-268.

Gilley, J.E.; Eghball, B.; Kramer, L.A.; Moorman, T.B. 2000. Narrow grass hedge effects on runoff and soil loss. Journal of Soil and Water Conservation. 55: 190-196.

Gilliam, J.W. 1994. Riparian wetlands and water quality. Journal of Environmental Quality. 23: 896-900.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Hayes, J.C.; Bayfield, B.J.; Barnhisel, R.I. 1984. Performance of grass filters under laboratory and field conditions. Transactions of the American Society of Agricultural Engineers. 27: 1321-1331.

Jordan, T.E.; Correll, D.L.; Weller, D.E. 1993. Nutrient interception by a riparian forest receiving inputs from adjacent cropland. Journal of Environmental Quality. 22: 467-473.

Kronvang, B.; Laubel, A.; Larsen, S.E. [and others]. 2005. Buffer zones as sink for sediment and phosphorus between the field and stream: Danish field experiences. Water Science and Technology. 51(3-4): 55-62.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C.; Mickelson, S.K. 1999. Nutrient and sediment removal by switchgrass and coolseason grass filter strips in Central Iowa, USA. Agroforestry Systems. 44: 121-132.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C.; Mickelson, S.K. 2000. Multispecies riparian buffers trap sediment and nutrients during rainfall simulations. Journal of Environmental Quality 29:1200-1205.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C. 2003. Sediment and nutrient removal in an established multi-species riparian buffer. Journal of Soil and Water Conservation. 58: 1-8.

Lowrance, R.R.; Altier, L.S.; Dewbold, J.D. [and others]. 1997. Water quality functions of riparian forest buffers in Chesapeake Bay watersheds. Environmental Management. 21: 687-712.

Lowrance, R.; Sharpe, J.K.; Sheridan, J.M. 1986. Long term sediment deposition in the riparian zone of a coastal plain watershed. Journal of Soil and Water Conservation. 41: 266-271.

Lowrance, R.; Sheridan, J.M. 2005. Surface runoff water quality in a managed three zone riparian buffer. Journal of Environmental Quality. 34: 1851-1859.

Lowrance, R.; Williams, R.G.; Inamdar, S.P. [and others]. 2001. Evaluation of coastal plain conservation buffers using the riparian ecosystem management model. Journal of the American Water Resources Association. 37: 1445-1456.

Magette, W.L.; Brinsfield, R.B.; Palmer, R.E.; Wood, J.D. 1989. Nutrient and sediment removal by vegetated filter strips. Transactions of the American Society of Agricultural Engineers. 32: 663-667.

Mander, Ü.; Kuusemets, V.; Lõhums, K.; Mauring, T. 1997. Efficiency and dimensioning of riparian buffer zones in agricultural catchments. Ecological Engineering. 8: 299-324.

McGregor, K.C.; Dabney, S.M.; Johnson, J.R. 1999. Runoff and soil loss from cotton plots with and without stiff-grass hedges. Transactions of the American Society of Agricultural Engineers. 42: 361-368.

McKergow, L.A.; Weaver, D.M.; Prosser, I.M. [and others]. 2003. Before and after riparian management: sediment and nutrient exports from a small agricultural catchment, western Australia. Journal of Hydrology. 270: 253-272.

Meyer, L.D.; Dabney, S.M.; Harmon, W.C. 1995. Sediment-trapping effectiveness of stiff-grass hedges. T Transactions of the American Society of Agricultural Engineers. 38: 809-815.

Mickelson, S.K.; Baker, J.L.; Ahmed, S.I. 2003. Vegetative filter strips for reducing atrazine and sediment runoff transport. Journal of Soil and Water Conservation. 58: 359-367.

Muñoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1993. Numerical approach to the overland flow process in vegetative filter strips. Transactions of the American Society of Agricultural Engineers. 36: 761-770.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Overcash, M.R.; Bingham, S.C.; Westerman, P.W. 1981. Predicting runoff pollutant reduction in buffer zones adjacent to land treatment sites. Transactions of the American Society of Agricultural Engineers. 24: 430-435.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Parsons, J.E.; Gilliam, J.W.; Muñoz-Carpena, R.M. [and others]. 1994. Nutrient and sediment removal by grass and riparian buffers. In: Campbell, K.L.; Graham, W.D.; Bottcher, A.B., eds. Environmentally sound agriculture: proceedings of the 2nd annual conference. St. Joseph, MI: American Society of Agricultural Engineers. 147-154.

Pearce, R.A.; Trlica, M.J.; Leininger, W.C. [and others]. 1997. Efficiency of grass buffer strips and vegetation height on sediment filtration in laboratory rainfall simulations. Journal of Environmental Quality. 26: 139-144.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Raffaelle, J.B., Jr.; McGregor, K.C.; Foster, G.R.; Cullum, R.F. 1997. Effect of narrow grass strips on conservation reserve land converted to cropland. Transactions of the American Society of Agricultural Engineers. 40: 1581-1587.

Robinson, C.A.; Ghaffarzadeh, M.; Cruse, R.M. 1996. Vegetative filter strip effects on sediment concentration in cropland runoff. Journal of Soil and Water Conservation. 51: 227-230.

Schmitt, T.J.; Dosskey, M.G.G.; Hoagland, K.D. 1999. Filter strip performance and processes for different vegetation widths and contaminants. Journal of Environmental Quality. 28: 1479-1489.

Schoonover, J.E.; Williard, K.W.J.; Zaczek, J.J. [and others]. 2006. Agricultural sediment reductions by giant cane and forest riparian buffers. Water, Air, and Soil Pollution. 169: 303-315.

Srivastava, P., Edwards, D.R.; Daniel, T.C. [and others]. 1996. Performance of vegetative filter strips with varying pollutant source and filter strip lengths. Transactions of the American Society of Agricultural Engineers. 39: 2231-2239.

Syversen, N. 2002. Effect of cold-climate buffer zone on minimising diffuse poolution from agriculture. Water Science and Technology. 45(9): 69-76.

Syversen, N. 2005. Effect and design of buffer zones in the Nordic climate: the influence of width, amount of surface runoff, season variation and vegetation type on retention efficiency for nutrient and particle runoff. Ecological Engineering. 24: 483-490.

Syversen, N.; Borch, H. 2005. Retention of soil particle fractions and phosphorus in cold-climate buffer zones. Ecological Engineering. 25: 382-394.

Tollner, E.W.; Barfield, B.J.; Haan, C.T.; Kao, T.Y. 1976. Suspended sediment filtration capacity of simulated vegetation. Transactions of the American Society of Agricultural Engineers. 19: 678-682.

Tomer, M.D.; Moorman, T.B.; Kovar, J.L. [and others]. 2007. Spatial patterns of sediment and phosphorus in a riparian buffer in western Iowa. Journal of Soil and Water Conservation. 62: 329-338.

Van Dijk, P.M.; Kwaad, F.P.J.M.; Klapwijk, M. 1996. Retention of water and sediment by grass strips. Hydrological Processes. 10: 1069-1080.

Verstraeten, G.; Posen, J.; Gillijns, K.; Govers, G. 2006. The use of riparian vegetative filter strips to reduce river sediment loads: an overestimated control measure? Hydrological Processes. 20: 4259-4267.

Vought, L.B.; Pinay, G. Fuglsang, A.; Ruffinoni, C. 1995. Structure and function of buffer strips from a water quality perspective in agricultural landscapes. Landscape and Urban Planning. 31: 323-331.

Wenger, S. 1999. A review of the scientific literature on riparian buffer width, extent, and vegetation. Athens, GA: University of Georgia, Institute of Ecology, Office of Public Service and Outreach. 59 p. <u>http://www.rivercenter.uga.edu/service/tools/buffers/buffer_lit_review.pdf</u> [Date accessed: October 17, 2007].

Wilson, L.G. 1967. Sediment removal from flood water by grass filtration. Transactions of the American Society of Agricultural Engineers. 10: 35-37.

Wissmar, R.C.; Beer, W.N.; Timm II, R.K. 2004. Spatially explicit estimates of erosion-risk indices and variable riparian buffer widths in watersheds. Aquatic Sciences. 66: 446-455.

1.11 Buffers for pathogens

Atwill, E.R.; Hou, L.; Karle, B.M. [and others]. 2002. Transport of *Cryptosporidium parvum* Oocysts through vegetated buffer strips and estimated filtration efficiency. Applied and Environmental Microbiology. 68: 5517-5527.

Chaubey, I.; Edwards, D.R.; Daniel, T.C. [and others]. 1994. Effectiveness of vegetative filter strips in retaining surfaceapplied swine manure constituents. Transactions of the American Society of Agricultural Engineers. 37: 845-850.

Chaubey, I.; Edwards, D.R.; Daniel, T.C. [and others]. 1995. Effectiveness of vegetative filter strips in controlling losses of surface-applied poultry litter constituents. Transactions of the American Society of Agricultural Engineers. 38: 1687-1692.

Clinton, B.D.; Vose, J.M. 2006. Variation in stream water quality in an urban headwater stream in the southern Appalachians. Water, Air, and Soil Pollution. 169: 331-353.

Collins, R.; Dennison, A.; Ross, C.; McLeod, M. 2004. Attenuation of effluent-derived faecal microbes in grass buffer strips. New Zealand Journal of Agricultural Research. 47: 565-574.

Coyne, M.S.; Gilfillen, R.A.; Rhodes, R.W.; Blevins, R.L. 1995. Soil and fecal coliform trapping by grass filter strips during simulated rain. Journal of Soil and Water Conservation. 50: 405-408.

Coyne, M.S.; Gilfillen, R.A.; Villalba, A. [and others]. 1998. Fecal bacteria trapping y grass filter strips during simulated rain. Journal of Soil and Water Conservation. 53: 140-145.

Dickey, E.C.; Vanderholm, D.H. 1981. Vegetative filter treatment of livestock feedlot runoff. Journal of Environmental Quality. 10: 279-284.

Doyle, R.C.; Stanton, G.C.; Wolfe, D.C. 1977. Effectiveness of forest and grass buffer filters in improving the water quality of manure-polluted runoff. ASAE Paper No. 77-2501. St. Joseph, MO: American Society of Agricultural Engineers.

Entry, J.A.; Hubbard, R.K.; Thies, J.E.; Fuhrmann, J.J. 2000. The influence of vegetation in riparian filterstrips on coliform bacteria: I movement and survival in water. Journal of Environmental Quality. 29: 1206-1214.

Entry, J.A.; Hubbard, R.K.; Thies, J.E.; Fuhrmann, J.J. 2000. The influence of vegetation in riparian filterstrips on coliform bacteria: survival in soils. Journal of Environmental Quality. 29: 1215-1224.

Fajardo, J.J.; Bauder, J.W.; Cash, S.D. 2001. Managing nitrate and bacteria in runoff from livestock confinement areas with vegetative filter strips. Journal of Soil and Water Conservation. 56: 185-191.

Hay, V.; Pittroff, W.; Tooman, E.E.; Meyer, D. 2006. Effectiveness of vegetative filter strips in attenuating nutrient and sediment runoff from irrigated pastures. The Journal of Agricultural Science. 144: 349-360.

Koelsch, R.K.; Lorimor, J.C.; Mankin, K.R. 2006. Vegetative treatment systems for management of open lot runoff: review of literature. Applied Engineering in Agriculture. 22: 141-153.

Lim, T.T.; Edwards, D.R.; Workman, S.R. [and others]. 1998. Vegetated filter strip removal of cattle manure constituents in runoff. Transactions of the American Society of Agricultural Engineers. 41: 1375-1381.

Mankins, K.R.; Barnes, P.L.; Harner, J.P. [and others]. 2006. Field evaluation of vegetative filter effectiveness and runoff quality from unstocked feedlots. Journal of Soil and Water Conservation. 61: 209-217.

Muirhead, R.W.; Collins, R.P.; Bremer, P.J. 2006. The association of E-coli and soil particles in overland flow. Water Science and Technology. 54(3): 153-159.

Pachepsky, Y.A.; Sadeghi, A.M.; Bradford, S.A. [and others]. 2006. Transport and fate of manure-borne pathogens: modeling perspective. Agricultural Water Management. 86: 81-92.

Rosen, B. H.; Croft, R.; Atwill, E.R. [and others]. 2000. Waterborne pathogens in agricultural watersheds. Washington, DC: Natural Resources Conservation Service, Watershed Science Institute. 64 p. <u>ftp://ftp-ft.sc.egov.usda.gov/WSI/pdffiles/Pathogens in Agricultural Watersheds.pdf</u> [Date accessed: October 17, 2007].

Schellinger, G.R.; Clausen, J.C. 1992. Vegetative filter treatment of dairy barnyard runoff in cold regions. Journal of Environmental Quality. 21: 40-45.

Srivastava, P.; Edwards, D.R.; Daniel, T.C. [and others]. 1996. Performance of vegetative filter strips with varying pollutant source and filter strip lengths. Transactions of the American Society of Agricultural Engineers. 39: 2231-2239.

Stout, W.L.; Pachepsky, Y.A.; Shelton, D.R. [and others]. 2005. Runoff transport of faecal coliforms and phosphorus released from manure in grass buffer conditions. Letters in Applied Microbiology. 41: 230-234.

Tate, K.W.; Atwill, E.R.; Bartolome, J.W.; Nader, G. 2006. Significant *Escherichia coli* attenuation by vegetative buffers on annual grasslands. Journal of Environmental Quality. 35: 795-805.

Tate, K.W.; Pereira, M.D.G.C.; Atwill, E.R. 2004. Efficacy of vegetated buffer strips for retaining *Cryptosporidium parvum*. Journal of Environmental Quality. 33: 2243-2251.

Trask, J.R.; Kalita, P.; Kuhlenschmidt, M.S. [and others]. 2004. Overland and near-surface transport of *Cryptosporidium* parvum from vegetated and nonvegetated surfaces. Journal of Environmental Quality. 33: 984-993.

Tyrrel, S.F.; Quinton, J.N. 2003. Overland flow transport of pathogens from agricultural land receiving faecal wastes. Journal of Applied Microbiology. 94: 87S-93S.

Vanderholm, D.H.; Dickey, E.C. 1980. Design of vegetative filters for feedlot runoff treatment in humid areas. Transactions of the American Society of Agricultural Engineers. 23: 681-684, 687.

Walker, S.E.; Mostaghimi, S.; Dillaha, T.A.; Woeste, F.E. 1990. Modeling animal waste management practices: impacts on bacteria levels in runoff from agricultural lands. Transactions of the American Society of Agricultural Engineers. 33: 807-817.

Young, R.A.; Huntrods, T.; Anderson, W. 1980. Effectiveness of vegetated buffer strips in controlling pollution from feedlot runoff. Journal of Environmental Quality. 9: 483-487.

Younos, T.M.; Mendez, A.; Collins, E.R.; Ross, B.B. 1998. Effects of a dairy loafing lot-buffer strip on stream water quality. Journal of the American Water Resources Association. 34: 1061-1069.

1.12 Buffers for nitrogen

Angier, J.T.; McCarty, G.W.; Rice, C.P.; Bialek, K. 2002. Influence of riparian wetland on nitrate and herbicides exported from an agricultural field. Journal of Agricultural and Food Chemistry. 50: 4424-4429.

Ambus, P.; Lowrance, R. 1991. Comparison of denitrification in two riparian soils. Soil Science Society of America Journal. 55: 994-997.

Ashby, J.A.; Bowden, W.B.; Murdoch, P.S. 1998. Controls on denitrification in riparian soils in headwater catchments of a hardwood forest in the Catskill Mountains, USA. Soil Biology and Biochemistry. 30: 853-864.

Barling, R.D.; Moore, I.D. 1994. Role of buffer strips in management of waterway pollution: a review. Environmental Management. 18: 543-558.

Bernot, M.J.; Dodds, W.K. 2005. Nitrogen retention, removal, and saturation in lotic ecosystems. Ecosystems. 8: 442-453.

Borin, M.; Bigon, E. 2002. Abatement of NO₃-N concentration in agricultural waters by narrow buffer strips. Environmental Pollution. 117: 165-168.

Borin, M.; Vianello, M.; Morari, F.; Zanin, G. 2005. Effectiveness of buffer strips in removing pollutants in runoff from a cultivated field in North-East Italy. Agriculture, Ecosystems and Environment. 105: 101-114.

Burns, D.A.; Nguyen, L. 2002. Nitrate movement and removal along a shallow groundwater flow path in a riparian wetland within a sheep-grazed pastoral catchment: results of a tracer study. New Zealand Journal of Marine and Freshwater Research. 36: 371-385.

Burt, T.P.; Matchett, L.S.; Goulding, K.W.T. [and others]. 1999. Denitrification in riparian buffer zones: the role of floodplain hydrology. Hydrological Processes. 13: 1451-1463.

Cey, E.E.; Rudolph, D.L.; Aravena, R.; Parkin, G. 1999. Role of riparian zone in controlling the distribution and fate of agricultural nitrogen near a small stream in southern Ontario. Journal of Contaminant Hydrology. 37: 45-67.

Cirmo, C.P.; McDonnell, J.J. 1997. Linking hydrologic and biogeochemical controls of nitrogen transport in near-stream zones of temperate-forested catchments: a review. Journal of Hydrology. 199: 88-120.

Clausen, J.C.; Guillard, K.; Sigmund, C.M.; Martin Dors, K. 2000. Water quality changes from riparian buffer restoration in Connecticut. Journal of Environmental Quality. 29: 1751-1761.

Clinton, B.D.; Vose, J.M. 2006. Variation in stream water quality in an urban headwater stream in the southern Appalachians. Water, Air, and Soil Pollution. 169: 331-353.

Cole, J.T.; Baird, J.H.; Basta, N.T. [and others]. 1997. Influence of buffers on pesticide and nutrient runoff from bermudagrass turf. Journal of Environmental Quality. 26: 1589-1598.

Cooper, A.B. 1990. Nitrate depletion in the riparian zone and stream channel of a small headwater catchment. Hydrobiologia. 202: 13-26.

Corley, C.J.; Frasier, G.W.; Trlica, M.J. [and others]. 1999. Technical note: nitrogen and phosphorus in runoff from 2 montane riparian communities. Journal of Range Management. 52: 600-605.

Correll, D.L. 2005. Principles of planning and establishment of buffer zones. Ecological Engineering. 24: 433-439.

Cors, M.; Tychon, B. 2007. Grassed buffer strips as nitrate diffuse pollution remediation tools: management impact on the denitrification enzyme activity. Water Science and Technology. 55(3): 25-30.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Daniels, R.B.; Gilliam, J.W. 1996. Sediment and chemical load reduction by grass and riparian filters. Soil Science Society of America Journal. 60: 246-251.

Devito, K.J.; Fitzgerald, D.; Hill, A.R.; Aravena, R. 2000. Nitrate dynamics in relation to lithology and hydrologic flow path in a river riparian zone. Journal of Environmental Quality. 29: 1075-1084.

Di, H.J.; Cameron, K.C. 2002. Nitrate leaching in temperate agroecosystems: sources, factors and mitigating strategies. Nutrient Cycling in Agroecosystems. 46: 237-256.

Dillaha, T.A.; Sherrad, J.H.; Lee, D. [and others]. 1988. Evaluation of vegetative filter strips as best management practices for feed lots. Journal of Water Pollution Control Federation. 60: 1231-1238.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers. 32: 513-519.

Dillaha, T.A.; Sherrard, J.H.; Lee, D. 1989. Long-term effectiveness and maintenance of vegetative filter strips. Water Environment and Technology. 1: 418-421.

Dosskey, M.G.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dosskey, M.G.G.; Hoagland, K.D.; Brandle, J.R. 2007. Change in filter strip performance over ten years. Journal of Soil and Water Conservation. 62: 21-32.

Fennessy, M.S.; Cronk, J.K. 1997. The effectiveness and restoration potential of riparian ecotones for the management of nonpoint source pollution, particularly nitrate. Critical Reviews in Environmental Science and Technology. 27: 285-317.

Gilliam, J.W. 1994. Riparian wetlands and water quality. Journal of Environmental Quality. 23: 896-900.

Gilliam, J.W.; Parsons, J.E.; Mikkelsen, R.L. 1997. Nitrogen dynamics and buffer zones. In: Haycock, N.E.; Burt, T.P.; Goulding, K.W.T.; Pinay, G., eds. Buffer zones: their processes and potential in water protection. Hartfordshire, UK: Quest Environmental. 54-61.

Gold, A.J.; Groffman, P.F.; Addy, K. [and others]. 2001. Landscape attributes as controls on ground water nitrate removal capacity of riparian zones. Journal of American Water Resources Association. 37: 1457-1464.

Gold, A.J.; Jacinthe, P.A.; Groffman, P.M. [and others]. 1998. Patchiness in groundwater nitrate removal in a riparian forest. Journal of Environmental Quality. 27: 146-155.

Groffman, P.M.; Axelrod, E.A.; Lemunyon, J.L.; Sullivan, M. 1991. Denitrification in grass and forest vegetated filter strips. Journal of Environmental Quality. 20: 671-674.

Groffman, P.M.; Crawford, M.K. 2003. Denitrification potential in urban riparian zones. Journal of Environmental Quality. 32: 1144-1149.

Groffman, P.M.; Gold, A.J.; Simmons, R.C. 1992. Nitrate dynamics in riparian forests: microbial studies. Journal of Environmental Quality. 21: 666-671.

Groffman, P.M.; Tiedje, J.M. 1989. Denitrification in north temperate forest soils: relationships between denitrification and environmental factors at the landscape scale. Soil Biology and Biochemistry. 21: 621-626.

Groffman, P.M.; Tiedje, J.M. 1989. Denitrification in north temperate forest soils: spatial and temporal patterns at the landscape and seasonal scales. Soil Biology and Biochemistry. 21: 613-620.

Hanson, G.C.; Groffman, P.M.; Gold, A.J. 1994. Symptoms of nitrogen saturation in a riparian wetland. Ecological Applications. 4: 750-756.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Haycock, N.E.; Pinay, G. 1993. Groundwater nitrate dynamics in grass and poplar vegetated riparian buffer strips during the winter. Journal of Environmental Quality. 22: 273-278.

Hefting, M.M.; Bobink, R.; de Caluwe, H. 2003. Nitrous oxide emission and denitrification in chronically nitrate-loaded riparian buffer zones. Journal of Environmental Quality. 32: 1194-1203.

Hefting, M.M.; Clement, J-C.; Bienkowski, P. [and others]. 2005. The role of vegetation and litter in the nitrogen dynamics of riparian buffer zones in Europe. Ecological Engineering. 24: 465-482.

Hefting, M.M.; de Klein, J.J.M. 1998. Nitrogen removal in buffer strips along a lowland stream in the Netherlands: a pilot study. Environmental Pollution. 102: 5211S-526S.

Hill, A.R.; Cardaci, M. 2004. Denitrification and organic carbon availability in riparian wetland soils and subsurface sediments. Soil Science Society of America Journal. 68: 320-325.

Hill, A.R.; Devito, K.J.; Campagnolo, S.; Sanmugadas, K. 2000. Subsurface denitrification in a forest riparian zone: interactions between hydrology and supplies of nitrate and organic carbon. Biogeochemistry. 51: 193-223.

Hill, A.R. 1996. Nitrate removal in stream riparian zones. Journal of Environmental Quality. 25: 743-755.

Hill, A.R., Vidon, P.G.F.; Langat, J. 2004. Denitrification potential in relation to lithology in five headwater riparian zones. Journal of Environmental Quality. 33: 911-919.

Hubbard, R.K.; Lowrance, R. 1997. Assessment of forest management effects on nitrate removal by riparian buffer systems. Transactions of the American Society of Agricultural Engineers. 40: 383-391.

Hubbard, R.K.; Newton, G.L.; Davis, J.G. [and others]. 1998. Nitrogen assimilation by riparian buffer systems receiving swine lagoon wastewater. Transactions of the American Society of Agricultural Engineers. 41: 1295-1304.

Hubbard, R.K.; Sheridan, J.M. 1989. Nitrate movement to groundwater in the southeastern Coastal plain. Journal of Soil and Water Conservation. 44: 20-27.

Hunter, H.; Fellows, C.; Rassam, D. [and others]. 2006. Managing riparian lands to improve water quality: optimising nitrate removal via denitrification. Indooroopilly, Queensland, Australia : Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management. 31 p. <u>http://www.coastal.crc.org.au/pdf/TechnicalReports/57-riparian_guidelines.pdf</u> [Date accessed: October 17, 2007].

Jacobs, T.C.; Gilliam, J.W. 1985. Riparian losses of nitrate from agricultural drainage waters. Journal of Environmental Quality. 14: 472-478.

Jordan, T.E.; Correll, D.L.; Weller, D.E. 1993. Nutrient interception by a riparian forest receiving inputs from adjacent cropland. Journal of Environmental Quality. 22: 467-473.

Kellogg, D.Q.; Gold, A.J.; Groffman, P.M. [and others]. 2005. In situ ground water denitrification in stratified, permeable soils underlying riparian wetlands. Journal of Environmental Quality. 34: 524-533.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C. 2003. Sediment and nutrient removal in an established multi-species riparian buffer. Journal of Soil and Water Conservation. 58: 1-8.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C.; Mickelson, S.K. 2000. Multispecies riparian buffers trap sediment and nutrients during rainfall simulations. Journal of Environmental Quality. 29: 1200-1205.

Lowrance, R. 1992. Groundwater nitrate and denitrification in a coastal plain riparian forest. Journal of Environmental Quality. 21: 401-405.

Lowrance, R.R.; Altier, L.S.; Dewbold, J.D. [and others]. 1997. Water quality functions of riparian forest buffers in Chesapeake Bay watersheds. Environmental Management. 21: 687-712.

Lowrance, R.; Hubbard, R.K.; Williams, R.G. 2000. Effects of a managed three zone riparian buffer system on shallow groundwater quality in the southeastern Coastal Plain. Journal of Soil and Water Conservation. 55: 212-220.

Lowrance, R.; Sheridan, J.M. 2005. Surface runoff water quality in a managed three zone riparian buffer. Journal of Environmental Quality. 34: 1851-1859.

Lowrance, R.R.; Todd, R.L.; Asmussen, L.E. 1984. Nutrient cycling in an agricultural watershed: I. phreatic movement. Journal of Environmental Quality. 13: 22-27.

Lowrance, R.; Vellidis, G.; Hubbard, R.K. 1995. Denitrification in a restored riparian forest wetland. Journal of Environmental Quality. 24: 808-815.

Lowrance, R.; Williams, R.G.; Inamdar, S.P. [and others]. 2001. Evalutation of coastal plain conservation buffers using the riparian ecosystem management model. Journal of the American Water Resources Association. 37: 1445-1456.

Lynch, J.A.; Corbett, E.S.; Mussallem, K. 1985. Best management practices for controlling nonpoint-source pollution on forested watersheds. Journal of Soil and Water Conservation. 40: 164-167.

Magette, W.L.; Brinsfield, R.B.; Palmer, R.E.; Wood, J.D. 1989. Nutrient and sediment removal by vegetated filter strips. Transactions of the American Society of Agricultural Engineers. 32: 663-667.

Martin, T.I.; Kaushik, N.K.; Trevors, J.T.; Whiteley, H.R. 1999. Review: denitrification in temperate climate riparian zones. Water, Air, and Soil Pollution. 111: 171-186.

Matheson, F.E.; Nguyen, M.L.; Cooper, A.B. [and others]. 2002. Fate of ¹⁵N-nitrate in unplanted, planted and harvested riparian wetland soil microcosms. Ecological Engineering. 19: 249-264.

Mayer, P.M.; Reynolds, S.K., Jr.; McCutchen, M.D.; Canfield, T.J. 2006. Riparian buffer width, vegetative cover, and nitrogen removal effectiveness: a review of current science and regulations. EPA/600/R-05/118. Cincinnati, OH: U.S. Environmental Protection Agency. <u>http://www.epa.gov/nrmrl/pubs/600R05118/600R05118.pdf</u> [Date accessed: October 17, 2007].

McKergow, L.A.; Weaver, D.M.; Prosser, I.P. [and others]. 2003. Before and after riparian management: sediment and nutrient exports from a small agricultural catchment, western Australia. Journal of Hydrology. 270: 253-272.

Mehnert, E.; Hwang, H-H.; Johnson, T.M. [and others]. 2007. Denitrification in the shallow ground water of a tile-drained, agricultural watershed. Journal of Environmental Quality. 36: 80-90.

Mihara, M. 2006. The effect of natural weed buffers on soil and nitrogen losses in Japan. Catena. 65: 265-271.

Muscutt, A.D.; Harris, G.L.; Bailey, S.W.; Davies, D.B. 1993. Buffer zones to improve water quality: a review of their potential use in UK agriculture. Agriculture, Ecosystems and Environment. 43: 59-77.

Nelson, W.M.; Gold, A.J.; Groffman, R.M. 1995. Spatial and temporal variation in groundwater nitrate removal in a riparian forest. Journal of Environmental Quality. 24: 691-699.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Overcash, M.R.; Bingham, S.C.; Westerman, P.W. 1981. Predicting runoff pollutant reduction in buffer zones adjacent to land treatment sites. Transactions of the American Society of Agricultural Engineers. 24: 430-435.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Parkyn, S.M.; Davies-Colley, R.J.; Halliday, N.J. [and others]. 2003. Planted riparian buffer zones in New Zealand: do they live up to expectations? Restoration Ecology. 11: 436-447.

Parsons, J.E.; Gilliam, J.W.; Muñoz-Carpena, R.M. [and others]. 1994. Nutrient and sediment removal by grass and riparian buffers. In: Campbell, K.L.; Graham, W.D.; Bottcher, A.B., eds. Environmentally sound agriculture: proceedings of the 2nd annual conference. St. Joseph, MI: American Society of Agricultural Engineers. 147-154.

Paterson, K.G.; Schnoor, J.L. 1993. Vegetative alteration of nitrate fate in unsaturated zone. Journal of Environmental Engineering. 119: 986-993.

Peterjohn, W.T.; Correll, D.L. 1984. Nutrient dynamics in an agricultural watershed: observations on the role a riparian forest. Ecology. 65: 1466-1475.

Pinay, G.; Clement, J.C.; Naiman, R.J. 2002. Basic principles and ecological consequences of changing water regimes on nitrogen cycling in fluvial systems. Environmental Management. 30: 481-491.

Pinay, G.; Roques, L.; Fabre, A. 1993. Spatial and temporal patterns of denitrification in a riparian forest. Journal of Applied Ecology. 30: 581-591.

Pinay, G.; Ruffinoni, C.; Fabre, A. 1995. Nitrogen cycling in two riparian forest soils under different geomorphic conditions. Biogeochemistry. 30: 9-29.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Rassam, D.W.; Fellows, C.S.; DeHayr, R. [and others]. 2006. The hydrology of riparian buffer zones: two case studies in an ephemeral and a perennial stream. Journal of Hydrology. 325: 308-324.

Rosenblatt, A.E.; Gold, A.J.; Stolt, M.H. [and others]. 2001. Identifying riparian sinks for watershed nitrate using soil surveys. Journal of Environmental Quality. 30: 1596-1604.

Ryszkowski, L.; Kedziora, A. 2007. Modification of water flows and nitrogen fluxes by shelterbelts. Ecological Engineering. 29: 388-400.

Schenk, M.K. 1996. Regulation of nitrogen uptake on the whole plant level. Plant and Soil. 181: 131-137.

Schipper, L.A.; Cooper, A.B.; Harfoot, C.G.; Dyck, W.J. 1993. Regulators of denitrification in an organic riparian soil. Soil Biology and Biochemistry. 25: 925-933.

Schmitt, T.J.; Dosskey, M.G.G.; Hoagland, K.D. 1999. Filter strip performance and processes for different vegetation widths and contaminants. Journal of Environmental Quality. 28: 1479-1489.

Schnabel, R.R.; Cornish, L.F.; Stout, W.L.; Shaffer, J.A. 1996. Denitrification in a grassed and a wooded, valley and ridge, riparian ecotone. Journal of Environmental Quality. 25: 1230-1235.

Schoonover, J.E.; Williard, K.W.J.; Zaczek, J.J. [and others]. 2005. Nutrient attenuation in agricultural surface runoff by riparian buffer zones in southern Illinois, USA. Agroforestry Systems. 64: 169-180.

Schultz, R.C.; Colletti, J.P.; Isenhart, T.M. [and others]. 1995. Design and placement of a multi-species riparian buffer strip system. Agroforestry Systems. 29: 201-226.

Schwer, C.B.; Clausen, J.C. 1989. Vegetative filter treatment of dairy milkhouse wastewater. Journal of Environmental Quality. 18: 446-451.

Seitzinger, S.P. 1994. Linkages between organic matter mineralization and denitrification in eight riparian wetlands. Biogeochemistry. 25: 19-39.

Simmons, R.C.; Gold, A.J.; Groffman, P.M. 1992. Nitrate dynamics in riparian forests: groundwater studies. Journal of Environmental Quality. 21: 659-665.

Snyder, N.J.; Mostaghimi, S.; Berry, D.F. [and others]. 1998. Impact of riparian forest buffers on agricultural nonpoint source pollution. Journal of the American Water Resources Association. 34: 385-395.

Spruill, T.B. 2004. Effectiveness of riparian buffers in controlling ground-water discharge of nitrate to streams in selected hydrogeologic settings of the North Carolina Coastal Plain. Water Science and Technology. 49(3): 63-70.

Srivastava, P.; Edwards, D.R.; Daniel, T.C. [and others]. 1996. Performance of vegetative filter strips with varying pollutant source and filter strip lengths. Transactions of the American Society of Agricultural Engineers. 39: 2231-2239.

Syversen, N. 2005. Effect and design of buffer zones in the Nordic climate: the influence of width, amount of surface runoff, season variation and vegetation type on retention efficiency for nutrient and particle runoff. Ecological Engineering. 24: 483-490.

Vellidis, G.; Lowrance, R.; Gay, P.; Hubbard, R.K. 2003. Nutrient transport in a restored riparian wetland. Journal Environmental Quality. 32: 711-726.

Verchot, L.V.; Franklin, E.c.; Gilliam, J.W. 1997. Nitrogen cycling in Piedmont vegetated filter zones. I. Surface soil processes. Journal of Environmental Quality. 26: 327-336.

Vidon, P.G.F.; Hill, A.R. 2004. Landscape controls on nitrate removal in stream riparian zones. Water Resources Research 40: W03201, doi:10.1029/2003WR002473.

Vidon, P.G.F.; Hill, A.R. 2004. Landscape controls on the hydrology of stream riparian zones. Journal of Hydrology. 292: 210-228.

Vidon, P.G.F.; Hill, A.R. 2006. A landscape-based approach to estimate riparian hydrological and nitrate removal functions. Journal of the American Water Resources Association. 42: 1099-1112.

Vought, L.B.; Pinay, G.; Fuglsang, A.; Ruffinoni, C. 1995. Structure and function of buffer strips from a water quality perspective in agricultural landscapes. Landscape and Urban Planning. 31: 323-331.

Wenger, S. 1999. A review of the scientific literature on riparian buffer width, extent, and vegetation. Athens, GA: University of Georgia, Institute of Ecology, Office of Public Service and Outreach. 59 p. http://www.rivercenter.uga.edu/service/tools/buffers/buffer lit_review.pdf [Date accessed: October 17, 2007].

Young, E.O.; Briggs, R.D. 2005. Shallow ground water nitrate-N and ammonium-N in cropland and riparian buffers. Agriculture, Ecosystems and Environment. 109: 297-309.

Young, E.O.; Briggs, R.D. 2007. Nitrogen dynamics among cropland and riparian buffers: soil-landscape influences. Journal of Environmental Quality. 36: 801-814.

Young, R.A.; Huntrods, T.; Anderson, W. 1980. Effectiveness of vegetated buffer strips in controlling pollution from feedlot runoff. Journal of Environmental Quality. 9: 483-487.

Zak, D.R.; Grigal, D.F. 1991. Nitrogen mineralization, nitrification denitrification in upland and wetland ecosystems. Oecologia. 88: 189-196.

1.13 Buffers for phosphorus

Abu-Zreig, M.R.; Rudra, P.; Whiteclay, H.R. [and others]. 2003. Phosphorus removal in vegetated filter strips. Journal of Environmental Quality. 32: 613-619.

Barling, R.D.; Moore, I.D. 1994. Role of buffer strips in management of waterway pollution: a review. Environmental Management. 18: 543-558.

Borin, M.; Vianello, M.; Morari, F.; Zanin, G. 2005. Effectiveness of buffer strips in removing pollutants in runoff from a cultivated field in North-East Italy. Agriculture, Ecosystems and Environment. 105: 101-114.

Clinton, B.D.; Vose, J.M. 2006. Variation in stream water quality in an urban headwater stream in the southern Appalachians. Water, Air, and Soil Pollution. 169: 331-353.

Cole, J.T.; Baird, J.H.; Basta, N.T. [and others]. 1997. Influence of buffers on pesticide and nutrient runoff from bermudagrass turf. Journal of Environmental Quality. 26: 1589-1598.

Cooper, J.R.; Gilliam, J.W. 1987. Phosphorus redistribution from cultivated fields into riparian areas. Soil Science Society of America Journal. 51: 1600-1604.

Corley, C.J.; Frasier, G.W.; Trlica, M.J. [and others]. 1999. Technical note: nitrogen and phosphorus in runoff from 2 montane riparian communities. Journal of Range Management. 52: 600-605.

Correll, D.L.; Jordan, T.E.; Weller, D.E. 1999. Effects of precipitation and air temperature on phosphorus fluxes from Rhode River watersheds. Journal of Environmental Quality. 28: 144-154.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Daniels, R.B.; Gilliam, J.W. 1996. Sediment and chemical load reduction by grass and riparian filters. Soil Science Society of America Journal. 60: 246-251.

Devito, K.J.; Creed, I.F.; Rothwell, R.L.; Prepas. E.E. 2000. Landscape controls on phosphorus loading to boreal lakes: implications for the potential impacts of forest harvesting. Canadian Journal of Fisheries and Aquatic Sciences. 57: 1977-1984.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers. 32: 513-519.

Dillaha, T.A.; Sherrad, J.H.; Lee, D. [and others]. 1988. Evaluation of vegetative filter strips as best management practices for feed lots. Journal of Water Pollution Control Federation. 60: 1231-1238.

Dorioz, J.M.; Wang, D.; Poulenard, J.; Trévisan, D. 2006. The effect of grass buffer strips on phosphorus dynamics – a critical review and synthesis as a basis for application in agricultural landscapes in France. Agriculture, Ecosystems and Environment. 117: 4-21.

Dosskey, M.G.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dosskey, M.G.G., Hoagland, K.D.; Brandle, J.R. 2007. Change in filter strip performance over ten years. Journal of Soil and Water Conservation. 62: 21-32.

Eghball, B.; Gilley, J.E.; Kramer, L.A.; Moorman, T.B. 2000. Narrow grass hedge effects on phosphorus and nitrogen in runoff following manure and fertilizer application. Journal of Soil and Water Conservation. 55: 172-176.

Fennessy, M.S.; Cronk, J.K. 1997. The effectiveness and restoration potential of riparian ecotones for the management of nonpoint source pollution, particularly nitrate. Critical Reviews in Environmental Science and Technology. 27: 285-317.

Gburek, W.J.; Drungil, C.C.; Srinivasan, M.S. [and others]. 2002. Variable-source-area controls on phosphorus transport: bridging the gap between research and design. Journal of Soil and Water Conservation. 57: 534-543.

Gburek, W.J.; Sharpley, A.N. 1998. Hydraulic controls on phosphorus loss from upland agricultural watersheds. Journal of Environmental Quality. 27: 267-277.

Gentry, L.E.; David, M.B.; Royer, T.V. [and others]. 2007. Phosphorus transport pathways to streams in tile-drained agricultural watersheds. Journal of Environmental Quality. 36: 408-415.

Gilliam, J.W. 1994. Riparian wetlands and water quality. Journal of Environmental Quality. 23: 896-900.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Heathwaite, A.L.; Griffiths, P.; Parkinson, R.J. 1998. Nitrogen and phosphorus in runoff from grassland with buffer strips following application of fertilizers and manures. Soil Use and Management. 14: 142-148.

Heathwaite, A.L.; Sharpley, A.; Gburek, W. 2000. A conceptual approach for integrating phosphorus and nitrogen management at watershed scales. Journal of Environmental Quality. 29: 158-166.

Jordan, T.E.; Correll, D.L.; Weller, D.E. 1993. Nutrient interception by a riparian forest receiving inputs from adjacent cropland. Journal of Environmental Quality. 22: 467-473.

Kelly, J.M.; Kovar, K.L.; Sokolowsky, R.; Moorman, T.B. 2007. Phosphorus uptake during four years by different vegetative cover types in a riparian buffer. Nutrient Cycling in Agroecosystems. 78: 239-251.

Klatt, J.G.; Mallarino, A.P.; Downing, J.A. [and others]. 2003. Soil phosphorus management practices and their relationship to phosphorus delivery in the Iowa Clear Lake agricultural watershed. Journal of Environmental Quality. 32: 2140-2149.

Kronvang, B.; Bechmann, M.; Lundekvam, H. [and others]. 2005. Phosphorus losses from agricultural areas in river basins: effects and uncertainties of targeted mitigation measures. Journal of Environmental Quality. 34: 2149-2144.

Kronvang, B.; Laubel, A.; Larsen, S.E. [and others]. 2005. Buffer zones as sink for sediment and phosphorus between the field and stream: Danish field experiences. Water Science and Technology. 51(3-4): 55-62.

Lee, D.; Dillaha, T.A.; Sherrard, J.H. 1989. Modeling phosphorus transport in grass filter strips. Journal of Environmental Engineering. 115: 409-427.

Lee, K-H.; Isenhart, T.M.; Schultz, R.C.; Mickelson, S.K. 2000. Multispecies riparian buffers trap sediment and nutrients during rainfall simulations. Journal of Environmental Quality. 29: 1200-1205.

Logan, T.J. 1982. Mechanisms for release of sediment-bound phosphate to water and the effects of agricultural land management on fluvial transport of particulate and dissolved phosphate. Hydrobiologia. 92: 519-530.

Lowrance, R.R.; Altier, L.S.; Dewbold, J.D. [and others]. 1997. Water quality functions of riparian forest buffers in Chesapeake Bay watersheds. Environmental Management. 21: 687-712.

Lowrance, R.; Sheridan, J.M. 2005. Surface runoff water quality in a managed three zone riparian buffer. Journal of Environmental Quality. 34: 1851-1859.

Lowrance, R.; Williams, R.G.; Inamdar, S.P. [and others]. 2001. Evalutation of coastal plain conservation buffers using the riparian ecosystem management model. Journal of the American Water Resources Association. 37: 1445-1456.

Magette, W.L.; Brinsfield, R.B.; Palmer, R.E.; Wood, J.D. 1989. Nutrient and sediment removal by vegetated filter strips. Transactions of the American Society of Agricultural Engineers. 32: 663-667.

Mander, Ü.; Kuusemets, V.; Lõhums, K.; Mauring, T. 1997. Efficiency and dimensioning of riparian buffer zones in agricultural catchments. Ecological Engineering. 8: 299-324.

McDowell, R.W.; Biggs, B.J.F.; Sharpley, A.N.; Nguyen, L. 2004. Connecting phosphorus loss from agricultural landscapes to surface water quality. Chemistry and Ecology. 20: 1-40.

McKergow, L.A.; Weaver, D.M.; Prosser, I.P. [and others]. 2003. Before and after riparian management: sediment and nutrient exports from a small agricultural catchment, western Australia. Journal of Hydrology. 270: 253-272.

Meyer, J.L.; Likens, G.E. 1979. Transport and transformation of phosphorus in a forest stream ecosystem. Ecology. 60: 1255-1269.

Muscutt, A.D.; Harris, G.L.; Bailey, S.W.; Davies, D.B. 1993. Buffer zones to improve water quality: a review of their potential use in UK agriculture. Agriculture, Ecosystems and Environment. 435: 59-77.

Nowak, J.M.; Hunt, P.G.; Stone, K.C. [and others]. 2002. Riparian zone impact on phosphorus movement to a Coastal Plain black water stream. Journal of Soil and Water Conservation. 57: 127-133.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Parsons, J.E.; Gilliam, J.W.; Muñoz-Carpena, R.M. [and others]. 1994. Nutrient and sediment removal by grass and riparian buffers. In: Campbell, K.L.; Graham, W.D.; Bottcher, A.B., eds. Environmentally sound agriculture: proceedings of the 2rd annual conference. St. Joseph, MI: American Society of Agricultural Engineers. 147-154.

Patty, L.; Réal, B.; Gril, J. 1997. The use of grassed buffer strips to remove pesticides, nitrate and soluble phosphorus compounds from runoff water. Pesticide Science. 49: 243-251.

Peterjohn, W.T.; Correll, D.L. 1984. Nutrient dynamics in an agricultural watershed: observations on the role a riparian forest. Ecology. 65: 1466-1475.

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Reed, T.; Carpenter, S.R. 2002. Comparisons of P-yield, riparian buffer strips, and land cover in six agricultural watersheds. Ecosystems. 5: 568-577.

Schellinger, G.R.; Clausen, J.C. 1992. Vegetative filter treatment of dairy barnyard runoff in cold regions. Journal of Environmental Quality. 21: 40-45.

Schwer, C.B.; Clausen, J.C. 1989. Vegetative filter treatment of dairy milkhouse wastewater. Journal of Environmental Quality. 18: 446-451.

Sharpley, A. 1995. Identifying sites vulnerable to phosphorus loss in agricultural runoff. Journal of Environmental Quality. 24: 947-951.

Sharpley, A.N.; McDowell, R.W.; Kleinman, P.J.A. 2001. Phosphorus loss from land to water: integrating agricultural and environmental management. Plant and Soil. 237: 287-307.

Sharpley, A.N.; Smith, S.J.; Jones, O.R. [and others]. 1992. The transport of bioavailable phosphorus in agricultural runoff. Journal of Environmental Quality. 21: 30-35.

Snyder, N.J.; Mostaghimi, S.; Berry, D.F.[and others]. 1998. Impact of riparian forest buffers on agricultural nonpoint source pollution. Journal of the American Water Resources Association. 34: 385-395.

Srivastava, P.; Edwards, D.R.; Daniel, T.C. [and others]. 1996. Performance of vegetative filter strips with varying pollutant source and filter strip lengths. Transactions of the American Society of Agricultural Engineers. 39: 2231-2239.

Stout, W.L.; Pachepsky, Y.A.; Shelton, D.R. [and others]. 2005. Runoff transport of faecal coliforms and phosphorus released from manure in grass buffer conditions. Letters in Applied Microbiology. 41: 230-234.

Svendsen, L.M.; Kronvang, B. 1993. Retention of nitrogen and phosphorus in a Danish lowland river system: implications for the export from the watershed. Hyrdobiologia. 251: 123-135.

Syversen, N. 2002. Effect of cold-climage buffer zone on mininmising diffuse poolution from agriculture. Water Science and Technology. 45(9): 69-76.

Syversen, N. 2005. Effect and design of buffer zones in the Nordic climate: the influence of width, amount of surface runoff, season variation and vegetation type on retention efficiency for nutrient and particle runoff. Ecological Engineering. 24: 483-490.

Syversen, N.; Borch, H. 2005. Retention of soil particle fractions and phosphorus in cold-climate buffer zones. Ecological Engineering. 25: 382-394.

Tomer, M.D.; Moorman, T.B.; Kovar, J.L. [and others]. 2007. Spatial patterns of sediment and phosphorus in a riparian buffer in western Iowa. Journal of Soil and Water Conservation. 62: 329-338.

Uusi-Kämppä, J. 2005. Phosphorus purification in buffer zones in cold climates. Ecological Engineering. 24: 491-502.

Uusi-Kämppä, J.; Braskerud, B.; Jansson, H. [and others]. 2000. Buffer zones and constructed wetlands as filters for agricultural phosphorus. Journal of Environmental Quality. 29: 151-158.

Uusi-Kämppä, J.; Turtola, E.; Hartikainen, H.; Yläranta, T. 1997. The interactions of buffer zones and phosphorus. In: Haycock, N.E.; Burt, T.P.; Goulding, K.W.T.; Pinay, G., eds. Buffer zones: their processes and potential in water protection. Hartfordshire, UK: Quest Environmental. 43-53.

Vellidis, G.; Lowrance, R.; Gay, P.; Hubbard, R.K. 2003. Nutrient transport in a restored riparian wetland. Journal Environmental Quality. 32: 711-726.

Vought, L.B.; Pinay, G.; Fuglsang, A.; Ruffinoni, C. 1995. Structure and function of buffer strips from a water quality perspective in agricultural landscapes. Landscape and Urban Planning. 31: 323-331.

Wenger, S. 1999. A review of the scientific literature on riparian buffer width, extent, and vegetation. Athens, GA: University of Georgia, Institute of Ecology, Office of Public Service and Outreach. 59 p. <u>http://www.rivercenter.uga.edu/service/tools/buffers/buffer lit_review.pdf</u> [Date accessed: October 17, 2007].

Withers, P.J.A.; Jarvis, S.C. 1998. Mitigation options for diffuse phosphorus loss to water. Soil Use and Management. 14: 186-192.

Young, R.A.; Huntrods, T.; Anderson, W. 1980. Effectiveness of vegetated buffer strips in controlling pollution from feedlot runoff. Journal of Environmental Quality. 9: 483-487.

1.14 Buffers for pesticides

Angier, J.T.; McCarty, G.W.; Rice, C.P.; Bialek, K. 2002. Influence of riparian wetland on nitrate and herbicides exported from an agricultural field. Journal of Agricultural and Food Chemistry. 50: 4424-4429.

Arora, K.; Mickelson, S.K.; Baker, J.L. [and others]. 1996. Herbicide retention by vegetative buffer strips from runoff under natural rainfall. Transactions of the American Society of Agricultural Engineers. 39: 2155-2162.

Arora, K.; Mickelson, S.K.; Baker, J.L. 2003. Effectiveness of vegetated buffer strips in reducing pesticide transport in simulated runoff. Transactions of the American Society of Agricultural Engineers. 46: 635-644.

Asmussen, L.E.; White, A.W., Jr.; Hauser, W.E.; Sheridan, J.M. 1977. Reduction of 2, 4-D load in surface runoff down a grassed waterway. Journal of Environmental Quality. 6: 159-162.

Baker, J.L.; Mickelson, S.K. 1994. Application technology and best management practices for minimizing herbicide runoff. Weed Technology. 8: 862-869.

Barfield, B.J.; Blevins, R.L.; Fogle, A.W. [and others]. 1998. Water quality impacts of natural filter strips in karst areas. Transactions of the American Society of Agricultural Engineers. 41: 371-381.

Benoit, P.; Barriuso, E.; Vidon, P.; Réal, B. 1999. Isoproturon sorption and degradation in a soil from grassed buffer strip. Journal of Environmental Quality. 28: 121-129.

Blanche, S.B.; Shaw, D.R.; Massey, J.H. [and others]. 2003. Fluometuron adsorption to vegetative filter strip components. Weed Science. 51: 125-129.

Boyd, P.M.; Baker, J.L.; Mickelson, S.K.; Ahmed, S.I. 2003. Pesticide transport with surface runoff and subsurface drainage through a vegetative filter strip. Transactions of the American Society of Agricultural Engineers. 46: 675-684.

Branham, B.; Milnert, E.; Rieke, P. 1995. Potential groundwater contamination from pesticides and fertilizers used on golf courses. USGA Green Section Record. 33: 33-37.

Cole, J.T.; Baird, J.H.; Basta, N.T. [and others]. 1997. Influence of buffers on pesticide and nutrient runoff from bermudagrass turf. Journal of Environmental Quality. 26: 1589-1598.

Delphin, J.E.; Chapot, J.Y. 2001. Leaching of atrazine and deethylatrazine under a vegetative filter strip. Agronomie. 21: 461-470.

Flury, M. 1996. Experimental evidence of transport of pesticides through field soils – a review. Journal of Environmental Quality. 25: 25-45.

Karthikeyan, R.; Davis, L.C.; Erickson, L.E. [and others]. 2004. Potential for plant-based remediation of pesticidecontaminated soil and water using nontarget plants such as trees, shrubs, and grasses. Critical Reviews in Plant Sciences. 23: 91-101.

Kloppel, H.; Kordel, W.; Stein, B. 1997. Herbicide transport by surface runoff and herbicide retention in a filter strip – rainfall and runoff simulation studies. Chemosphere. 35: 129-141.

Krutz, L.J.; Gentry, T.J.; Senseman, S.A. [and others]. 2006. Mineralisation of atrazine, metolachlor and their respective metabolites in vegetated filter strip and cultivated soil. Pest Management Science. 62: 505-514.

Krutz, L.J.; Senseman, S.A.; Dozier, M.C. [and others]. 2003. Infiltration and adsorption of dissolved atrazine and atrazine metabolites in buffalograss filter strips. Journal of Environmental Quality. 32: 2319-2324.

Krutz, L.J.; Senseman, S.A.; McInnes, K.J. [and others]. 2003. Adsorption and desorption of atrazine, desethylatrazine, deisopropylatrazine, and hydroxyatrazine in vegetated filter strip and cultivated soil. Journal of Agricultural and Food Chemistry. 51: 7379-7384.

Krutz, L.J.; Senseman, S.A.; McInnes, K.J. [and others]. 2004. Adsorption and desorption of metolachlor and metolachlor metabolites in vegetated filter strip and cultivated soil. Journal of Environmental Quality. 33: 939-945.

Krutz, L.J.; Senseman, S.A.; Zablotowicz, R.M.; Matocha, M.A. 2005. Reducing herbicide runoff from agricultural fields with vegetative filter strips: a review. Weed Science. 53: 353-367.

Lacas, J.G.; Voltz, M.; Gouy, V. [and others]. 2005. Using grassed strips to limit pesticide transfer to surface water: a review. Agronomy for Sustainable Development. 25: 253-266.

Lin, C.H.; Lerch, R.N.; Garrett, H.E.; George, M.F. 2004. Incorporating forage grasses in riparian buffers for bioremediation of atrazine, isoxaflutole and nitrate in Missouri. Agroforestry Systems. 63: 91-99.

Lin, C.Y.; Chou, W.C.; Lin, W.T. 2002. Modeling the width and placement of riparian vegetated buffers strips: a case study on the Chi-Jia-Wang stream, Taiwan. Journal of Environmental Management. 66: 269-280.

Lowrance, R.; Vellidis, G.; Wauchope, R.D. [and others]. 1997. Herbicide transport in a managed riparian forest buffer system. Transactions of the American Society of Agricultural Engineers. 40: 1047-1057.

Madrigal, I.; Benoit, P.; Barriuso, E. [and others]. 2007. Pesticide degradation in vegetative buffer strips: grassed and tree barriers: case of isoproturon. Agrociencia. 41: 205-217.

Mersie, W.; Seybold, C.A.; McNamee, C.; Huang, J. 1999. Effectiveness of switchgrass filter strips in removing dissolved atrazine and metolachlor from runoff. Journal of Environmental Quality. 28: 816-821.

Mersie, W.; Seybold, C.A.; McNamee, C.; Lawson, M.A. 2003. Abating edosulfan from runoff using vegetative filter strips: the importance of plant species and flow rate. Agriculture, Ecosystems and Environment. 97: 215-223.

Mickelson, S.K.; Baker, J.L.; Ahmed, S.I. 2003. Vegetative filter strips for reducing atrazine and sediment runoff transport. Journal of Soil and Water Conservation. 58: 359-367.

Misra, A.K.; Baker, J.L.; Mickelson, S.K.; Shang, H. 1996. Contributing area and concentration effects on herbicide removal by vegetative buffer strips. Transactions of the American Society of Agricultural Engineers. 39: 2105-2111.

Neary, D.G.; Bush, P.B.; Michael, J.L. 1993. Fate dissipation and environmental effects of pesticides in southern forests: a review of a decade of research progress. Environmental Toxicology and Chemistry. 12: 411-428.

Patty, L.; Réal, B.; Gril, J. 1997. The use of grassed buffer strips to remove pesticides, nitrate and soluble phosphorus compounds from runoff water. Pesticide Science. 49: 243-251.

Popov, V.H.; Cornish, P.S.; Sun, H. 2006. Vegetated biofilters: the relative importance of infiltration and adsorption in reducing loads of water-soluble herbicides in agricultural runoff. Agriculture, Ecosystems and Environment. 114: 351-359.

Rankins, A., Jr.; Shaw, D.R.; Boyette, M. 2001. Perennial grass filter strips for reducing herbicide losses in runoff. Weed Science 49:647-651.

Rankins, A., Jr.; Shaw, D.R.; Douglas, J. 2005. Response of perennial grasses potentially used as filter strips to selected postemergence herbicides. Weed Technology. 19: 73-77.

Rankins, A., Jr.; Shaw, D.R.; Kingery, W.L. 2002. Comparison of fluometuron sorption to soil from a filter strip and cropped field. Weed Science. 50: 820-823.

Rao, P.S.; Hornsby, G.; Jessup, R.E. 1985. Indices for ranking the potential for pesticide contamination of groundwater. Proceedings of the Soil and Crop Science Society of Florida. 44: 1-8.

Reichenberger, S.; Bach, M.; Skitschak, A.; Frede, H. 2007. Mitigation strategies to reduce pesticide inputs into groundand surface water and their effectiveness; a review. Science of the Total Environment. 384: 1-35.

Reungsang, A.; Moorman, T.B.; Kanwar, R.S. 2001. Transport and fate of atrazine in midwestern riparian buffer strips. Journal of the American Water Resources Association. 37: 1681-1692.

Schmitt, T.J.; Dosskey, M.G.G.; Hoagland, K.D. 1999. Filter strip performance and processes for different vegetation, widths, and contaminants. Journal of Environmental Quality. 28: 1479-1489.

Seybold, C.; Mersie, W.; Delirem, D. 2001. Removal and degradation of atrazine and metolachlor by vegetative filter strips on clay loam soil. Communications in Soil Science and Plant Analysis. 32: 723-737.

Staddon, W.J.; Locke, M.A.; Zablotowicz, R.M. 2001. Microbiological characteristics of a vegetative buffer strip soil and degradation and sorption of metolachlor. Soil Science Society of America Journal. 65: 1136-1142.

Syversen, N. 2005. Cold-climate vegetative buffer zones as pesticide-filters for surface runoff. Water Science and Technology. 51(3-4): 63-71.

Syversen, N.; Bechmann, M. 2004. Vegetative buffer zones as pesticide filters for simulated surface runoff. Ecological Engineering. 22: 175-184.

Tingle, C.H.; Shaw, D.R.; Boyette, M.; Murphy, G.P. 1998. Metolachlor and metribuzin losses in runoff as affected by width of vegetative filter strips. Weed Science. 46: 475-479.

Vellidis, G.; Lowrance, R.; Gay, P.; Wauchope, R.D. 2002. Herbicide transport in a restored riparian forest buffer systems. Transactions of the American Society of Agricultural Engineers. 45: 89-97.

Webster, E.P.; Shaw, D.R. 1996. Impact of vegetative filter strips on herbicide loss in runoff from soybean (*Glycine max*). Weed Science. 44: 662-671.

Wu, J.; Mersie, W.; Atalay, A.; Seybold, C.A. 2003. Copper retention from runoff by switchgrass and tall fescue filter strips. Journal of Soil and Water Conservation. 58: 67-72.

1.15 Buffers for shallow groundwater

Addy, K.L.; Gold, A.J.; Groffman, P.M.; Jacinthe, P.A. 1999. Ground water nitrate removal in subsoil of forested and mowed riparian buffer zones. Journal of Environmental Quality. 28: 962-970.

Angier, J.T.; McCarty, G.W.; Rice, C.P.; Bialek, K. 2002. Influence of riparian wetland on nitrate and herbicides exported from an agricultural field. Journal of Agricultural and Food Chemistry. 50: 4424-4429.

Ashby, J.A.; Bowden, W.B.; Murdoch, P.S. 1998. Controls on denitrification in riparian soils in headwater catchments of a hardwood forest in the Catskill Mountains, USA. Soil Biology and Biochemistry. 30: 853-864.

Baker, M.E.; Wiley, M.J.; Seelbach, P.W. 2001. GIS-based hydrologic modeling of riparian areas: implications for stream water quality. Journal of American Water Resources. 37: 1615-1628.

Blackwell, M.S.A.; Hogan, D.V.; Maltby, E. 1999. The use of conventionally and alternatively located buffer zones for the removal of nitrate from diffuse agricultural runoff. Water Science and Technology. 39(12): 157-164.

Bohlke, J.K.; Denver, J.M. 1995. Combined use of groundwater dating, chemical, and isotopic analyses to resolve the history and fate of nitrate contamination in two agricultural watersheds, Atlantic coastal plain, Maryland. Water Resources Research. 31: 2319-2340.

Borin, M.; Bigon, E.; Zanin, G.; Fava, L. 2004. Performance of narrow buffer strip in abating agricultural pollutants in the shallow subsurface water flux. Environmental Pollution. 131: 313-321.

Bosch, D.D.; Hubbard, R.K.; West, L.T.; Lowrance, R.R. 1994. Subsurface flow patterns in a riparian buffer system. Transactions of the American Society of Agricultural Engineers. 37: 1783-1790.

Bosch, D.D.; Sheridan, J.M.; Lowrance, R.R. 1996. Hydraulic gradients and flow rates of a shallow coastal plan aquifer in a forested riparian buffer. Transactions of the American Society of Agricultural Engineers. 39: 865-871.

Bradley, P.M.; Fernandez, M., Jr.; Chapelle, F.H. 1992. Carbon limitation of denitrification rates in an anaerobic groundwater system. Environmental Science and Technology. 26: 2377-2381.

Brettar, I.; Höfle, M.G. 2002. Close correlation between the nitrate elimination rate by denitrification and the organic matter content in hardwood forest soils of the Upper Rhine floodplain (France). Wetlands. 22: 214-224.

Burns, D.A.; Nguyen, L. 2002. Nitrate movement and removal along a shallow groundwater flow path in a riparian wetland within a sheep-grazed pastoral catchment: results of a tracer study. New Zealand Journal of Marine and Freshwater Research. 36: 371-385.

Cirmo, C.P.; McDonnell, J.J. 1997. Linking hydrologic and biogeochemical controls of nitrogen transport in near-stream zones of temperate-forested catchments: a review. Journal of Hydrology. 199: 88-120.

Clausen, J.C.; Guillard, K.; Sigmund, C.M.; Martin Dors, K. 2000. Water quality changes from riparian buffer restoration in Connecticut. Journal of Environmental Quality. 29: 1751-1761.

Cooper, A.B. 1990. Nitrate depletion in the riparian zone and stream channel of a small headwater catchment. Hydrobiologia. 202: 13-26.

Correll, D.J. 2005. Principles of planning and establishment of buffer zones. Ecological Engineering. 24: 433-439.

Davis, J.H.; Griffith, S.M.; Horwath, W.R. [and others]. 2007. Mitigation of shallow groundwater nitrate in a poorly drained riparian area and adjacent cropland. Journal of Environmental Quality. 36: 628-637.

Dhondt, K.; Boeckx, P.; van Cleemput, O. [and others]. 2002. Seasonal groundwater nitrate dynamics in a riparian buffer zone. Agronomie. 22: 747-753.

Dosskey, M.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Dukes, M.D.; Evans, R.O.; Gilliam, J.W.; Kunickis, S.H. 2002. Effect of riparian buffer width and vegetation type on shallow groundwater quality in the Middle Coastal Plain of North Carolina. Transactions of the American Society of Agricultural Engineers. 45: 327-336.

Fennessy, M.S.; Cronk, J.K. 1997. The effectiveness and restoration potential of riparian ecotones for the management of nonpoint source pollution, particularly nitrate. Critical Reviews in Environmental Science and Technology. 27: 285-317.

Gold, A.J.; DeRagon, W.R.; Sullivan, W.M.; Lemunyon, J.L. 1990. Nitrate-nitrogen losses to groundwater from rural and suburban land uses. Journal of Soil and Water Conservation. 45: 305-310.

Gold, A.J.; Groffman, P.M.; Addy, K. [and others]. 2001. Landscape attributes as controls on groundwater nitrate removal capacity of riparian zones. Journal of the American Water Resources Association. 37: 1457-1464.

Gold, A.J.; Jacinthe, P.A.; Groffman, P.M. [and others]. 1998. Patchiness in groundwater nitrate removal in a riparian forest. Journal of Environmental Quality. 27: 146-155.

Groffman, P.M.; Crawford, M.K. 2003. Denitrification potential in urban riparian zones. Journal of Environmental Quality. 32: 1144-1149.

Groffman, P.M.; Gold, A.J.; Simmons, R.C. 1992. Nitrate dynamics in riparian forests: microbial studies. Journal of Environmental Quality. 21: 666-671.

Groffman, P.M.; Howard, G.; Gold, A.J.; Nelson, W.M. 1996. Microbial nitrate processing shallow groundwater in a riparian forest. Journal of Environmental Quality. 25: 1309-1316.

Hanson, G.C.; Groffman, P.M.; Gold, A.J. 1994. Symptoms of nitrogen saturation in a riparian wetland. Ecological Applications. 4: 750-756.

Hanson, G.C.; Groffman, P.M.; Gold, A.J. 1994. Denitrification in riparian wetlands receiving high and low groundwater nitrate inputs. Journal of Environmental Quality. 23: 917-922.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Haycock, N.E.; Pinay, G. 1993. Groundwater nitrate dynamics in grass and poplar vegetated riparian buffer strips during the winter. Journal of Environmental Quality. 22: 273-278.

Hill, A.R. 1990. Ground water flow paths in relation to nitrogen chemistry in the near-stream zone. Hydrobiologia. 206: 39-52. Hill, A.R.; Vidon, P.G.F.; Langat, J. 2004. Denitrification potential in relation to lithology in five headwater riparian zones. Journal of Environmental Quality. 33: 911-919.

Hubbard, R.K.; Lowrance, R.R. 1996. Solute transport and filtering through a riparian forest. Transactions of the American Society of Agricultural Engineers. 39: 477-488.

Hunter, H.; Fellows, C.; Rassam, D. [and others]. 2006. Managing riparian lands to improve water quality: optimising nitrate removal via denitrification. Indooroopilly, Queensland, Australia : Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management. 31 p. <u>http://www.coastal.crc.org.au/pdf/TechnicalReports/57-riparian_guidelines.pdf</u> [Date accessed: October 17, 2007].

Jacinthe, P.A.; Groffman, P.M.; Gold, A.J. 2003. Dissolved organic carbon dynamics in a riparian aquifer: effects of hydrology and nitrate enrichment. Journal of Environmental Quality. 32: 1365-1374.

Jacobs, T.C.; Gilliam, J.W. 1985. Riparian losses of nitrate from agricultural drainage waters. Journal of Environmental Quality. 14: 472-478.

Jordan, T.E.; Correll, D.L.; Weller, D.E. 1993. Nutrient interception by a riparian forest receiving inputs from adjacent cropland. Journal of Environmental Quality. 22: 467-473.

Kellogg, D.Q.; Gold, A.J.; Groffman, P.M. [and others]. 2005. In situ ground water denitrification in stratified, permeable soils underlying riparian wetlands. Journal of Environmental Quality. 34: 524-533.

Kuusements, V.; Mander, Ü.; Lõhmus, K.; Ivask, M. 2001. Nitrogen and phosphorus variation in shallow groundwater and assimilation in plants in complex riparian buffer zones. Water Science and Technology. 44(11-12): 615-622.

Lowrance, R. 1992. Groundwater nitrate and denitrification in a coastal plain riparian forest. Journal of Environmental Quality. 21: 401-405.

Lowrance, R.R.; Altier, L.S.; Dewbold, J.D. [and others]. 1997. Water quality functions of riparian forest buffers in Chesapeake Bay watersheds. Environmental Management. 21: 687-712.

Lowrance, R.; Hubbard, R.K.; Williams, R.G. 2000. Effects of a managed three zone riparian buffer system on shallow groundwater quality in the southeastern Coastal Plain. Journal of Soil and Water Conservation. 55: 212-220.

Lowrance, R.; Sheridan, J.M. 2005. Surface runoff water quality in a managed three zone riparian buffer. Journal of Environmental Quality. 34: 1851-1859.

Lowrance, R.R.; Todd, R.L.; Asmussen, L.E. 1984. Nutrient cycling in an agricultural watershed: I. phreatic movement. Journal of Environmental Quality. 13: 22-27.

Lowrance, R.; Vellidis, G.; Hubbard, R.K. 1995. Denitrification in a restored riparian forest wetland. Journal of Environmental Quality. 24: 808-815.

Lowrance, R.; Williams, R.G.; Inamdar, S.P. [and others]. 2001. Evalutation of coastal plain conservation buffers using the riparian ecosystem management model. Journal of the American Water Resources Association. 37: 1445-1456.

Magner, J.A.; Payne, G.A.; Steffen, L.J. 2004. Drainage effects on stream nitrate-n and hydrology in south-central Minnesota (USA). Environmental Monitoring and Assessment. 91: 183-198.

Martin, T.I.; Kaushik, N.K.; Trevors, J.T.; Whiteley, H.R. 1999. Review: denitrification in temperate climate riparian zones. Water, Air, and Soil Pollution. 111: 171-186.

Mayer, P.M.; Reynolds, S.K., Jr.; McCutchen, M.D.; Canfield, T.J. 2006. Riparian buffer width, vegetative cover, and nitrogen removal effectiveness: a review of current science and regulations. EPA/600/R-05/118. Cincinnati, OH: U.S. Environmental Protection Agency. <u>http://www.epa.gov/nrmrl/pubs/600R05118/600R05118.pdf</u> [Date accessed: October 17, 2007].

Mehnert, E.; Hwang, H-H.; Johnson, T.M. [and others]. 2007. Denitrification in the shallow ground water of a tile-drained, agricultural watershed. Journal of Environmental Quality. 36: 80-90.

Muscutt, A.D.; Harris, G.L.; Bailey, S.W.; Davies, D.B. 1993. Buffer zones to improve water quality: a review of their potential use in UK agriculture. Agriculture, Ecosystems and Environment. 43: 59-77.

Nelson, W.M.; Gold, A.J.; Groffman, R.M. 1995. Spatial and temporal variation in groundwater nitrate removal in a riparian forest. Journal of Environmental Quality. 24: 691-699.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Peterjohn, W.T.; Correll, D.L. 1984. Nutrient dynamics in an agricultural watershed: observations on the role a riparian forest. Ecology. 65: 1466-1475.

Petersen, R.C.; Petersen, L.B.; Lacoursiere, J. 1992. A building-block model for stream restoration. In: Boon, P.J.; Calow, P.; Petts, G.E., eds. River conservation and management. London: Wiley. 293-309.

Phillips, J.D. 1989. Nonpoint source pollution control effectiveness of riparian forests along a Coastal Plain river. Journal of Hydrology. 110: 221-237.

Puckett, L.J. 2004. Hydrogeologic controls on the transport and fate of nitrate in ground water beneath riparian buffer zones: results from thirteen studies across the United States. Water Science and Technology. 49(3): 47-53.

Rassam, D.W.; Fellows, C.S.; DeHayr, R. [and others]. 2006. The hydrology of riparian buffer zones: two case studies in an ephemeral and a perennial stream. Journal of Hydrology. 325: 308-324.

Rosenblatt, A.E.; Gold, A.J.; Stolt, M.H. [and others]. 2001. Identifying riparian sinks for watershed nitrate using soil surveys. Journal of Environmental Quality. 30: 1596-1604.

Rotkin-Ellman, M.; Addy, K.; Gold, A.J.; Groffman, P.M. 2004. Tree species, root decomposition and subsurface denitrification potential in riparian wetlands. Plant and Soil. 263: 355-344.

Ryszkowski, L.; Kedziora, A. 2007. Modification of water flows and nitrogen fluxes by shelterbelts. Ecological Engineering. 29: 388-400.

Schilling, K.E.; Li, Z.; Zhang, Y.K. 2006. Groundwater-surface water interaction in the riparian zone of an incised channel, Walnut Creek, Iowa. Journal of Hydrology. 327: 140-150.

Schilling, K.E.; Zhang, Y.K.; Drobney, P. 2004. Water table fluctuations near an incised stream, Walnut Creek, Iowa. Journal of Hydrology. 286: 236-248.

Schnabel, R.R.; Cornish, L.F.; Stout, W.L.; Shaffer, J.A. 1996. Denitrification in a grassed and a wooded, valley and ridge, riparian ecotone. Journal of Environmental Quality 25:1230-1235.

Simmons, R.C.; Gold, A.J.; Groffman, P.M. 1992. Nitrate dynamics in riparian forests: groundwater studies. Journal of Environmental Quality. 21: 659-665.

Simpkins, W.W.; Wineland, T.R.; Andress, R.J. [and others]. 2002. Hydrogeological constraints on riparian buffers for reduction of diffuse pollution: examples from the Bear Creek watershed in Iowa, USA. Water Science and Technology. 45(9): 61-68.

Spruill, T.B. 2004. Effectiveness of riparian buffers in controlling ground-water discharge of nitrate to streams in selected hydrogeologic settings of the North Carolina Coastal Plain. Water Science and Technology. 49(3): 63-70.

Stainton, R.T.; Stone, M. 2003. Nitrate transport in shallow groundwater at the stream-riparian interface in an urbanizing catchment. Journal of Environmental Planning and Management. 46: 475-498.

Tomer, M.D.; Meek, D.W.; Jaynes, D.B.; Hatfield, J.L. 2003. Evaluation of nitrate nitrogen fluxes from a tile-drained watershed in central lowa. Journal of Environmental Quality. 32: 642-653

Tufekcioglu, A.; Raich, J.W.; Isenhart, T.M.; Schultz, R.C. 1999. Fine root dynamics, coarse root biomass, root distribution, and soil respiration in a Multispecies riparian buffer in Central Iowa, USA. Agroforestry Systems. 44: 163-174.

Vidon, P.G.F.; Hill, A.R. 2004. Landscape controls on the hydrology of stream riparian zones. Journal of Hydrology. 292: 210-228.

Vidon, P.G.F.; Hill, A.R. 2004. Landscape controls on nitrate removal in stream riparian zones. Water Resources Research. 40: W03201, doi:10.1029/2003WR002473.

Weller, D.E.; Jordan, T.E.; Correll, D.L. 1998. Heuristic models for material discharge from landscapes with riparian buffers. Ecological Applications. 8: 1156-1169.

Wigington, P.J., Jr.; Griffith, S.M.; Field, J.A. [and others]. 2003. Nitrate removal effectiveness of a riparian buffer along a small agricultural stream in western Oregon. Journal of Environmental Quality. 32: 162-170.

Young, E.O.; Briggs, R.D. 2005. Shallow ground water nitrate-N and ammonium-N in cropland and riparian buffers. Agriculture, Ecosystems and Environment. 109: 297-309.

Zak, D.R.; Grigal, D.F. 1991. Nitrogen mineralization, nitrification denitrification in upland and wetland ecosystems. Oecologia. 88: 189-196.

1.16 Urban runoff and roadsides

Bäckström, M.; Viklander, M.; Malmqvist, P.A. 2006. Transport of stormwater pollutants through a roadside grassed swale. Urban Water Journal. 3: 55-67.

Ball, J.E.; Jenks, R.; Aubourg, D. 1998. An assessment of the availability of pollutant constituents on road surfaces. The Science of the Total Environment. 209: 243-254.

Bannerman, R.T.; Owens, D.W.; Dodds, R.B.; Hornewer, N.J. 1993. Sources of pollutants in Wisconsin stormwater. Water Science and Technology. 28(3-5): 241-259.

Barrett, M.; Lantin, A.; Austrheim-Smith, S. 2004. Stormwater pollutant removal in roadside vegetated buffer strips. Transportation Research Record. 1890: 129-140.

Barrett, M.E.; Walsh, P.M.; Malina, J.F., Jr.; Charbeneau, R.J. 1998. Performance of vegetative controls for treating highway runoff. Journal of Environmental Engineering. 124: 1121-1128.

Booth, D.B.; Hartey, D.; Jackson, R. 2002. Forest cover, impervious-surface area, and the mitigation of stormwater impacts. Journal of the American Water Resources Association. 38: 835-845.

Clar, M.L.; Barfield, B.J.; O'Connor, T.P. 2004. Stormwater best management practice design guide volume 2 vegetative biofilters. EPA/600/R-04/121A. Washington, DC: U.S. Environmental Protection Agency. http://www.epa.gov/nrmrl/pubs/600r04121/600r04121asect2.pdf [Date accessed: October 18, 2007].

Claytor, R.A.; Schueler, T.R. 1996. Design of stormwater filtering systems. Ellicott City, MD: Center for Watershed Protection. <u>http://www.mckenziewaterquality.org/documents/stormwater_filtration_system_design.pdf</u> [Date accessed: October 18, 2007].

Clinton, B.D.; Vose, J.M. 2006. Variation in stream water quality in an urban headwater stream in the southern Appalachians. Water, Air, and Soil Pollution. 169: 331-353.

Cooper, C.M.; Moore, M.T.; Bennett, E.R. [and others]. 2004. Innovative uses of vegetated drainage ditches for reducing agricultural runoff. Water Science and Technology 49(3):117-123.

Deletic, A. 1998. The first flush load f urban surface runoff. Water Research. 32: 2462-2470.

Deletic, A.; Fletcher, T.D. 2006. Performance of grass filters used for stormwater treatment – a field and modeling study. Journal of Hydrology. 317: 261-275.

Forman, R.T.T.; Alexander, L.E. 1998. Roads and their major ecological effects. Annual Review of Ecological Systems. 29: 207-231.

Good, J.C. 1993. Roof runoff as a diffuse source of metals and aquatic toxicity in storm water. Water Science and Technology. 28(3-5): 317-321.

Grass, C.M.; Angle, J.S.; Welterlen, M.S. 1990. Nutrient and sediment losses from turfgrass. Journal of Environmental Quality. 19: 663-668.

Groffman, P.M.; Crawford, M.K. 2003. Denitrification potential in urban riparian zones. Journal of Environmental Quality. 32:.1144-1149.

Han, J.; Wu, J.S.; Allan, C. 2005. Suspended sediment removal by vegetative filter strip treating highway runoff. Journal of Environmental Science and Health. 40: 1637-1649.

Hatt, B.E.; Fletcher, T.D.; Walsh, C.J.; Taylor, S.L. 2004. The influence of urban density and drainage infrastructure on the concentrations and loads of pollutants in the small streams. Environmental Management. 34: 112-124.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Hipp, B.; Alexander, S.; Knowles, T. 1993. Use of resource-efficient plants to reduce nitrogen, phosphorus, and pesticide runoff in residential and commercial landscapes. Water Science and Technology. 28(3-5): 205-213.

Hoffman, E.J.; Latimer, J.S.; Hunt, C.D. [and others]. 1985. Stormwater runoff from highways. Water, Air, and Soil Pollution. 25: 349-364.

Isabelle, P.S.; Fooks, L.J.; Keddy, P.A.; Wilson, S.D. 1987. Effects of roadside snowmelt on wetland vegetation: an experimental study. Journal of Environmental Management. 25: 57-60.

Jensen, M.B. 2004. Hydrological conditions for contaminant leaching through highway swales. Water, Air, and Soil Pollution. 158: 169-180.

Latimer, J.S.; Hoffman, E.J.; Hoffman, G. [and others]. 1990. Sources of petroleum hydrocarbons in urban runoff. Water, Air, and Soil Pollution. 52: 1-21.

Mackenzie, M.J.; Hunter, J.V. 1979. Sources and fates of aromatic compounds in urban stormwater runoff. Environmental Science and Technology. 13: 179-183.

Matteo, M.; Randhir, T.; Bloniarz, D. 2006. Watershed-scale impacts of forest buffers on water quality and runoff in urbanizing environment. Journal of Water Resources Planning and Management. 132: 144-152.

MPCA. 2000. Protecting water quality in urban areas. St. Paul, MN: Minnesota Pollution Control Agency (MPCA). <u>http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html</u> [Date accessed: October 18, 2007].

Moorhead, D.L.; Davis, W.S.; Wolf, C.F. 1998. Coliform densities in urban waters of West Texas. Journal of Environmental Health. 60: 14-18.

Muthukrishnan, S.; Madge, B.; Selvakumar, A. [and others]. 2004. The use of best management practices in urban watersheds. EPA/600/R-04/184. Cincinnati, OH: U.S. Environmental Protection Agency. 271 p. http://www.epa.gov/nrmrl/pubs/600r04184/600r04184.pdf [Date accessed: October 18, 2007].

Oberts, G.L. 1986. Pollutants associated with sand and salt applied to roads in Minnesota. Water Resources Bulletin. 22: 479-483.

Roy, A.H.; Freeman, M.C.; Freeman, B.J.; [and others]. 2006. Importance of riparian forest in urban catchments contingent on sediment and hydrologic regimes. Environmental Management. 37: 523-539.

Sansalone, J.; Koran, J.; Smithson, J.; Buchberger, G. 1998. Physical characteristics of urban roadway solids transported during rain events. Journal of Environmental Engineering. 127: 427-440.

Steinke, K.; Stier, J.C.; Kussow, W.R.; Thompson, A. 2007. Prairie and turf buffer strips for controlling runoff from paved surfaces. Journal of Environmental Quality. 36: 426-439.

Whipple, W., Jr.; Hunter, J.V. 1977. Nonpoint sources and planning for water pollution control. Journal of the Water Pollution Control Federation. 49: 15-23.

Wu, J.; Mersie, W.; Atalay, A.; Seybold, C.A. 2003. Copper retention from runoff by switchgrass and tall fescue filter strips. Journal of Soil and Water Conservation. 58: 67-72.

Yu, S.L.; Stanford, R.L. 2004. VDOT Manual of Practice for Planning Stormwater Management. Federal Highway Administration, FHWA/VTRC 05-CR5. Charlottesville, VA: Virginia Transportation Research Council. 135 p. http://www.virginiadot.org/vtrc/main/online_reports/pdf/05-cr5.pdf [Date accessed: October 18, 2007].

1.17 Buffers and grazing

Bellows, B.C. 2003. Managed grazing in riparian areas. Fayetteville, AR: National Center for Appropriate Technology, Appropriate Technology Transfer for Rural Areas. 28 p. <u>http://attra.ncat.org/attra-pub/PDF/managedgraze.pdf</u> [Date accessed: October 18, 2007].

Belsky, A.J.; Martzke, A. Uselman, S. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. Journal of Soil and Water Conservation. 54: 419-431.

Byers, H.L.; Cabrera, M.L.; Matthews, M.K. [and others]. 2005. Phosphorus, sediment, and *Escherichia coli* loads in unfenced streams of the Georgia Piedmont, USA. Journal of Environmental Quality. 34: 2293-2300.

Chapman, E.W.; Ribic, C.A. 2002. The impact of buffer strips and stream-side grazing on small mammals in southwestern Wisconsin. Agriculture, Ecosystems and Environment. 88: 49-59.

Clark, E.A. 1998. Landscape variables affecting livestock impacts on water quality in the humid temperate zone. Canadian Journal of Plant Sciences. 78: 181-190.

Clary, W.P.; Webster, B.F. 1990. Riparian grazing guidelines for the Intermountain Region. Rangelands. 12: 209-211.

Clary, W.P.; Webster, B.F. 1989. Managing grazing of riparian areas in the Intermountain Region. General Technical Report INT-263. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 11 p. <u>http://www.treesearch.fs.fed.us/pubs/24605</u> [Date accessed: October 18, 2007].

Fleischner, T.L. 1994. Ecological costs of livestock grazing in western United States. Conservation Biology. 8: 629-644.

Gary, H.L.; Johnson, S.R.; Ponce, S.L. 1983. Cattle grazing impact on surface water quality in a Colorado Front Range stream. Journal of Soil and Water Conservation. 38: 124-128.

Gifford, G.F.; Hawkins, R.H. 1978. Hydrologic impact of grazing on infiltration: a critical review. Water Resources Research. 14: 305-313.

Godwin, D.C.; Miner, J.R. 1996. The potential of off-stream livestock watering to reduce water quality impacts. Bioresource Technology. 58: 285-290.

Kauffman, J.B.; Krueger, W.C. 1984. Livestock impacts on riparian ecosystesm and streamside management implications....a review. Journal of Range Management. 37: 430-437.

Kauffman, J.B.; Krueger, W.C.; Vavra, M. 1983. Impacts of cattle on streambanks in north-eastern Oregon. Journal of Range Management. 36: 683-691.

Kauffman, J.B.; Thorpe, A.S.; Brookshire, E.N.J. 2004. Livestock exclusion and belowground ecosystems responses in riparian meadows of eastern Oregon. Ecological Applications. 14: 1671-1679.

McEldowney, R.R.; Flenniken, M.; Fraisier, G.W. [and others]. 2002. Sediment movement and filtration in a riparian meadow following cattle use. Journal of Range Management. 55: 367-373.

Meehan, W.R.; Platts, W.S. 1978. Livestock grazing and the aquatic environment. Journal of Soil and Water Conservation. 33: 274-278.

Orr, H.K, 1960. Soil porosity and bulk density on grazed and protected Kentucky bluegrass range in the Black Hills. Journal of Range Management. 13: 80-86.

Owens, L.B.; Edwards, W.M.; Van Keuren, R.W. 1989. Sediment and nutrient losses from an unimproved, all-year grazed watershed. Journal of Environmental Quality. 18: 232-238.

Owens, L.B.; Edwards, W.M.; Van Keuren, R.W. 1996. Sediment losses from a pastured watershed before and after fencing. Journal of Soil and Water Conservation. 51: 90-94.

Paine, L.K.; Ribic, C.A. 2002. Comparison of riparian plant communities under four land management systems in southwestern Wisconsin. Agriculture, Ecosystems and Environment. 92: 93-105.

Pietola, L.; Horn, R.; Yli-Halla, M. 2005. Effects of trampling by cattle on the hydraulic and mechanical properties of soil. Soil and Tillage Research. 82: 99-108.

Platts, W.S.; Wagstaff, F.J. 1984. Fencing to control livestock grazing on riparian habitats along streams: is it a viable alternative? North American Journal of Fisheries Management. 4: 266-272.

Pluhar, J.J.; Knight, R.W.; Heitschmidt, R.K. 1987. Infiltration rates and sediment production as influenced by grazing systems in the Texas Rolling Plains. Journal of Range Management. 40: 240-243.

Schepers, J.S.; Francis, D.D. 1982. Chemical water quality of runoff from grazing land in Nebraska: influence of grazing livestock. Journal of Environmental Quality. 11: 351-354.

Schulz, T.T.; Leninger, W.W. 1990. Differences in riparian vegetation structure between grazed areas and exclosures. Journal of Range Management. 43: 295-299.

Scrimgeour, G.J.; Kendall, S. 2002. Consequences of livestock grazing on water quality and benthic algal biomass in a Canadian natural grassland plateau. Environmental Management. 29: 824-844.

Smith, C.M. 1989. Riparian pasture retirement effects on sediment, phosphorus, and nitrogen in channellised surface runoff from pastures. New Zealand Journal of Marine and Freshwater Research. 23: 139-146.

Sovell, L.A.; Vondracek, B.; Frost, J.A.; Mumford, K.G. 2000. Impacts of rotational grazing and riparian buffers on physiochemical and biological characteristics of southeastern Minnesota, USA, streams. Environmental Management. 26: 629-641.

Thompson, J.R. 1968. Effect of grazing on infiltration in a western watershed. Journal of Soil and Water Conservation. 23: 63-65.

Tiedemann, A.R.; Higgins, D.A.; Quigley, T.M. [and others]. 1987. Responses of fecal coliform in streamwater to four grazing strategies. Journal of Range Management. 40: 322-329.

Trimble, S.W. 1994, Erosional effects of cattle on streambanks in Tennessee, U.S.A. Earth Surface Processes and Landforms. 19: 451-464.

Trimble, S.W.; Mendel, A.C. 1995. The cow as a geomorphic agent – a critical review. Geomorphology. 13: 233-253.

Tromble, J.M.; Renard, K.G.; Thatcher, A.P. 1974. Infiltration for three rangeland soil-vegetation complexes. Journal of Range Management. 27: 318-321.

Wheeler, M.A.; Trlica, M.J.; Frasier, G.W.; Reeder, J.D. 2002. Seasonal grazing affects soil properties of a montane riparian community. Journal of Range Management. 55: 49-56.

1.18 Allowances for bank erosion

Abernethy, B.; Rutherfurd, I.D. 1999. Guidelines for stabilising streambanks with riparian vegetation. Technical Report 99/10. Melbourne, Australia: Cooperative Research Centre for Catchment Hydrology. 37 p. http://www.catchment.crc.org.au/pdfs/technical199910.pdf [Date accessed: October 18, 2007].

Abernethy, B.; Rutherfurd, I.D. 2000. Stabilising stream banks with riparian vegetation. Journal of the Australian Association of Natural Resource Management. 3(2): 2-9.

Beeson, C.E.; Doyle, P.F. 1995. Comparison of bank erosion at vegetated and non-vegetated channel bends. Water Resources Bulletin. 31: 983-990.

Burckhardt, J.C.; Todd, B.L. 1998. Riparian forest effect on lateral stream channel migration in the glacial till plains. Journal of the American Water Resources Association. 34: 179-184.

Harmel, R.D.; Haan, C.T.; Dutnell, R. 1999. Bank erosion and riparian vegetation influences: Upper Illinois River, Oklahoma. Transactions of the American Society of Agricultural Engineers. 42: 1321-1329.

Micheli, E.R.; Kirchner, J.W.; Larsen, W.W. 2004. Quantifying the effect of riparian forest versus agricultural vegetation on river meander migration rates, Central Sacramento, California, USA. River Research and Applications. 20: 537-548.

Pizzuto, J.E.; Meckelnburg, T.S. 1989. Evaluation of a linear bank erosion equation. Water Resources Research. 25: 1005-1013.

Smith, D.G. 1976. Effect of vegetation on lateral migration of anastomosed channels of a glacier meltwater river. Geological Society of America Bulletin. 87: 857-860.

Wynn, T.; Mostaghimi, S. 2006. The effects of vegetation and soil type on streambank erosion, southwestern Virginia, USA. Journal of the American Water Resources Association. 42: 69-82.

Zaimes, G.N.; Schultz, R.C.; Isenhart, T.M. 2004. Stream bank erosion adjacent to riparian forest buffers, row-crop fields, and continuously grazed pastures along Bear Creek in central Iowa. Journal of Soil and Water Conservation. 59: 19-27.

1.19 Buffer width design tool for surface runoff

Abu-Zreig, M.R.; Rudra, P.; Whiteclay, H.R. 2001. Validation of a vegetated filter strip model (VSFMOD). Hydrological Processes. 15: 729-742.

Barfield, B.J.; Tollner, E.W.; Hayes, J.C. 1979. Filtration of sediment by simulated vegetation. I Steady-state flow with homogeneous sediment. Transactions of the American Society of Agricultural Engineers. 22: 540-545, 548.

Castelle, A.J.; Johnson, A.W.; Conolly, C. 1994. Wetland and stream buffer requirements – a review. Journal of Environmental Quality. 23: 878-882.

Dittrich, T.M.; Geohring, L.D.; Walter, M.T.; Steenhuis, T.S. 2003. Revisiting buffer strip design standards for removing dissolved and particulate phosphorus. In: Saleh, A., ed. Total maximum daily loads (TMDL) environmental regulations – II. Publication Number 70101503. St. Joseph, MI: American Society of Agricultural Engineers. 527-534.

Flanagan, D.C.; Foster, G.R.; Neibling, W.H.; Burt, J.P. 1989. Simplified equations for filter strip design. Transactions of the American Society of Agricultural Engineers. 32: 2001-2007.

Hayes, J.C.; Bayfield, B.J.; Barnhisel, R.I. 1979. Filtration of sediment by simulated vegetation II. Unsteady flow with nonhomogeneous sediment. Transactions of the American Society of Agricultural Engineers. 22: 1063-1067.

Hayes, J.C.; Bayfield, B.J.; Barnhisel, R.I. 1984. Performance of grass filters under laboratory and field conditions. Transactions of the American Society of Agricultural Engineers. 27: 1321-1331.

Hayes, J.C.; Dillaha, T.A. 1992. Vegetative filter strips: I. Site suitability and design. Paper No. 92-2102. St. Joseph, MI: American Society of Agricultural Engineers.

Hayes, J.C.; Hairston, J.E. 1983. Modeling long-term effectiveness of vegetative filters as on-site sediment controls. Paper No. 83-2081. St. Joseph, MI: American Society of Agricultural Engineers.

Helmers, M.J.; Eisenhauer, D.E.; Dosskey, M.G.G.; Franti, T.G. 2002. Modeling vegetative filter performance with VSFMOD. Paper No. MC02-308. St. Joseph, MI: American Society of Agricultural Engineers.

Larson, W.E.; Lindstrom, M.J.; Schumacher, T.E. 1997. The role of severe storms in soil erosion: a problem needing consideration. Journal of Soil and Water Conservation. 52: 90-95.

Lowrance, R.R.; Altier, L.S.; Dewbold, J.D. [and others]. 1997. Water quality functions of riparian forest buffers in Chesapeake Bay watersheds. Environmental Management. 21: 687-712.

McKague, K.J.; Cao, Y.Z.; Stephenson, D.E. 1996. The CREAMS model for evaluating the effectiveness of buffer strips in reducing sediment loads to wetlands. In: Mulamoottil, G.; Warner, B.G.; McBean, E.A., eds. Wetlands: environmental gradients, boundaries, and buffers. Boca Raton, FL: CRC, Lewis Publishers. 252-261.

Muñoz-Carpena, R.J.; Parsons, J.E. 2000. VFSMOD. Version 1.04. User's Guide. Raleigh, NC: North Carolina State University. <u>http://carpena.ifas.ufl.edu/vfsmod/</u> [Date accessed; October 17, 2007].

Muñoz-Carpena, R.J.; Parsons, J.E. 2004. A design procedure for vegetative filter strips using VSFMOD-W. Transactions of the American Society of Agricultural Engineers. 47: 1933-1941.

Muñoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1993. Numerical approach to the overland flow process in vegetative filter strips. Transactions of the American Society of Agricultural Engineers. 36: 761-770.

Muñoz-Carpena, R.J.; Parsons, J.E.; Gilliam, J.W. 1999. Modeling hydrology and sediment transport in vegetative filter strips. Journal of Hydrology. 214: 111-129.

Neitsch, S.L.; Arnold, J.G.; Kinery, J.R. [and others]. 2002. Soil and water assessment tool: theoretical documentation. Version 2000. Report TR-191. College Station, TX: Texas Water Resources Institute. 506 p. http://www.brc.tamus.edu/swat/doc.html [Date accessed: October 18, 2007].

Nieswand, G.H.; Hordon, R.M.; Shelton, T.B. [and others]. 1990. Buffer strips to protect water supply reservoirs: a model and recommendations. Water Resources Bulletin. 26: 959-966.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Phillips, J.D. 1989. Evaluation of the factors determining the effectiveness of water quality buffer zones. Journal of Hydrology. 107: 133-145.

Phillips, J.D. 1989. Nonpoint source pollution control effectiveness of riparian forests along a Coastal Plain river. Journal of Hydrology. 110: 221-237.

Schultz, R.C.; Colletti, J.P.; Isenhart, T.M. [and others]. 1995. Design and placement of a multi-species riparian buffer strip system. Agroforestry Systems 29:201-226.

Stettler, D. 1994. Vegetative filter strip design: draft. Portland, OR: USDA Soil Conservation Service, Western National Technical Center.

Suwandono, L.; Parsons, J.E.; Muñoz-Carpena, R. 1999. Design guide for vegetative filter strips using VSFMOD. Paper No. 99-2147. St. Joseph, MI: American Society of Agricultural Engineers.

Tollner, E.W.; Barfield, B.J.; Haan, C.T.; Kao, T.Y. 1976. Suspended sediment filtration capacity of simulated vegetation. Transactions of the American Society of Agricultural Engineers. 19: 678-682.

Tollner, E.W.; Barfield, B.J.; Vachirakornwatana, C.; Haan, C.T. 1977, Sediment deposition patterns in simulated grass filters. Transactions of the American Society of Agricultural Engineers. 20: 940-944.

Trimble, G.R., Jr.; Sartz, R.S. 1957. How far from a stream should a logging road be located? Journal of Forestry. 55: 339-341.

USDA. 1997. National handbook of conservation practices. Washington, DC: U.S. Department of Agriculture, Natural Resources Conservation Service. Available at http://www.nrcs.usda.gov/technical/standards/nhcp.html [Date accessed: October 18, 20071.

Welsch, D.J. 1991. Riparian forest buffers: function and design for protection and enhancement of water resources. NA-PR-07-91. Broomall, PA: U.S. Dept. of Agriculture, Forest Service, Northern Area State and Private Forestry. http://www.treesearch.fs.fed.us/pubs/10955 [Date accessed: October 18, 2007].

Wenger, S. 1999, A review of the scientific literature on riparian buffer width, extent, and vegetation, Athens, GA: University of Georgia, Institute of Ecology, Office of Public Service and Outreach. 59 p. http://www.rivercenter.uga.edu/service/tools/buffers/buffer lit review.pdf [Date accessed: October 17, 2007].

Williams, R.D.: Nicks, A.D. 1988, Using CREAMS to simulate filter strip effectiveness in erosion control, Journal of Soil and Water Conservation. 43: 108-112.

Williams, R.D.; Nicks, A.D. 1993. Modelling approach to evaluate best management practices. Water Science and Technology, 28(3-5); 675-678.

Wong, S.L.; McCuen, R.H. 1982. The design of vegetative buffer strips for runoff and sediment control. Appendix J. In: McCuen, R.H., ed. Stormwater management in coastal areas. College Park, MD: University of Maryland, Department of Civil Engineering.

Xiang, W.N. 1996. GIS-based riparian buffer analysis: injecting geographic information into landscape planning. Landscape and Urban Planning. 34: 1-10.

1.20 <u>Vegetation for removing pollutants from runoff</u> Corre, M.D.; Schnabel, R.R.; Shaffer, J.A. 1999. Evaluation of soil organic carbon under forests, cool-season and warmseason grasses in Northeastern US. Soil Biology and Biochemistry. 31: 1531-1539.

Dieleman, J. A.; Mortensen, D.A.; Buhler, D.D. [and others]. 2000: Identifying associations among site properties and weed species abundance. I. Multivariate analysis. Weed Science. 48: 567-575.

Fennessy, M.S.; Cronk, J.K. 1997. The effectiveness and restoration potential of riparian ecotones for the management of nonpoint source pollution, particularly nitrate. Critical Reviews in Environmental Science and Technology, 27: 285-317.

Kelly, J.M.; Kovar, J.L.; Sokolowsky, R.; Moorman, T.B. 2007. Phosphorus uptake during four years by different vegetative cover types in a riparian buffer. Nutrient Cycling in Agroecosystems. 78: 239-251.

Lowarance, R.; Williams, R.G.; Inamdar, S.P. [and others]. 2001. Evalutation of coastal plain conservation buffers using the riparian ecosystem management model. Journal of the American Water Resources Association. 37: 1445-1456.

Lyons, J.; Trimble, S.W.; Paine, L.K. 2000. Grass versus trees: managing riparian areas to benefit streams of central North America. Journal of the American Water Resources Association. 36: 919-930.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Parsons, J.E.; Gilliam, J.W.; Munoz-Carpena, R.M. [and others]. 1994. Nutrient and sediment removal by grass and riparian buffers. In: Campbell, K.L.; Graham, W.D.; Bottcher, A.B., eds. Environmentally sound agriculture: proceedings of the 2nd annual conference. St. Joseph, MI: American Society of Agricultural Engineers. 147-154.

Paterson, K.G.; Schnoor, J.L. 1993. Vegetative alteration of nitrate fate in unsaturated zone. Journal of Environmental Engineering. 119: 986-993.

Pinay, G.; Clement, J.C.; Naiman, R.J. 2002. Basic principles and ecological consequences of changing water regimes on nitrogen cycling in fluvial systems. Environmental Management. 30: 481-491.

Rejmanek, M.; Richardson, D.M. 1996. What attributes make some plant species more invasive? Ecology. 77: 1655-1661.

Schippers, P.; Joenje, W. 2002. Modeling the effect of fertilizer, mowing, disturbance and width on biodiversity of plant communities of field boundaries. Agriculture, Ecosystems and Environment. 93: 351-365.

Schnabel, R.R.; Cornish, L.F.; Stout, W.L.; Shaffer, J.A. 1996. Denitrification in a grassed and a wooded, valley and ridge, riparian ecotone. Journal of Environmental Quality. 25: 1230-1235.

Schoonover, J.E.; Williard, K.W.J.; Zaczek, J.J. [and others]. 2006. Agricultural sediment reductions by giant cane and forest riparian buffers. Water, Air, and Soil Pollution. 169: 303-315.

Schultz, R.C.; Isenhart, T.M.; Simpkins, W.W.; Colletti, J.P. 2004. Riparian forest buffers in Agroecosystems – lessons learned from the Bear Creek Watershed, central Iowa, USA. Agroforestry Systems. 61: 35-50.

Snyder, N.J.; Mostaghimi, S.; Berry, D.F. [and others]. 1998. Impact of riparian forest buffers on agricultural nonpoint source pollution. Journal of the American Water Resources Association. 34: 385-395.

Stohlgren, T.J.; Binkley, D.; Chong, G.W. [and others]. 1999. Exotic plant species invade hot spots of native plant diversity. Ecological Monographs. 69: 25-46.

Svejcar, T. 2003. Applying ecological principles to wildland weed management. Weed Science. 51: 266–270.

Syversen, N. 2005. Effect and design of buffer zones in the Nordic climate: the influence of width, amount of surface runoff, season variation and vegetation type on retention efficiency for nutrient and particle runoff. Ecological Engineering. 24: 483-490.

Tomer, M.D.; Moorman, T.B.; Kovar, J.L. [and others]. 2007. Spatial patterns of sediment and phosphorus in a riparian buffer in western lowa. Journal of Soil and Water Conservation. 62: 329-338.

Tufekcioglu, A.; Raich, J.W.; Isenhart, T.M.; Schultz, R.C. 1999. Fine root dynamics, coarse root biomass, root distribution, and soil respiration in a Multispecies riparian buffer in Central Iowa, USA. Agroforestry Systems. 44: 163-174.

1.21 Stiff-stemmed grass barriers

Blanco-Canqui, H.; Gantzer, C.J.; Anderson, S.H. [and others]. 2004. Grass barrier and vegetative filter strip effectiveness in reducing runoff, sediment, nitrogen, and phosphorus loss. Soil Science Society of America Journal. 68: 1670-1678.

Blanco-Canqui, H.; Gantzer, C.J.; Anderson, S.H.; Alberts, E.E. 2004. Grass barriers for reduced concentrated flow induced soil and nutrient loss. Soil Society of America Journal. 68: 1963-1972.

Blanco-Canqui, H.; Gantzer, C.J.; Anderson, S.H. 2006. Performance of grass barriers and filter strips under interrill and concentrated flow. Journal of Environmental Quality. 35: 1969-1974.

Dabney, S.M.; Liu, Z.; Lane, M. [and others]. 1999. Landscape benching from tillage erosion between grass hedges. Soil and Tillage Research. 51: 219-234.

Dabney, S.M.; Meyer, L.D.; Harmon, W.C. [and others]. 1995. Depositional patterns of sediment trapped by grass hedges. Transactions of the American Society of Agricultural Engineers. 38:1719-1729.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Dabney, S.M.; Shields, F.D., Jr.; Temple, D.M.; Langendoen, E.J. 2004. Erosion processes in gullies modified by establishing grass hedges. Transactions of the American Society of Agricultural Engineers. 47: 1561-1571.

Dewald, C.L.; Henry, J.; Bruckerhoff, S. [and others]. 1996. Guidelines for establishing warm season grass hedges for erosion control. Journal of Soil and Water Conservation. 51: 16-20.

Dillaha, T.A.; Reneau, R.B.; Mostaghimi, S.; Lee, D. 1989. Vegetative filter strips for agricultural nonpoint source pollution control. Transactions of the American Society of Agricultural Engineers. 32: 513-519.

Eghball, B.; Gilley, J.E.; Kramer, L.A.; Moorman, T.B. 2000. Narrow grass hedge effects on phosphorus and nitrogen in runoff following manure and fertilizer application. Journal of Soil and Water Conservation. 55: 172-176.

Gilley, J.E.; Eghball, B.; Kramer, L.A.; Moorman, T.B. 2000. Narrow grass hedge effects on runoff and soil loss. Journal of Soil and Water Conservation. 55: 190-196.

Hayes, J.C.; Barfield, B.J.; Barnhisel, R.I. 1984. Performance of grass filters under laboratory and field conditions. Transactions of the American Society of Agricultural Engineers. 27: 1321-1331.

Jin, C.X.; Dabney, S.M.; Römkens, M.J.M. 2002. Trapped mulch increases sediment removal by vegetative filter strips: a flume study. Transactions of the American Society of Agricultural Engineers. 45: 929-939.

McGregor, K.C.; Dabney, S.M.; Johnson, J.R. 1999. Runoff and soil loss from cotton plots with and without stiff-grass hedges. Transactions of the American Society of Agricultural Engineers. 42: 361-368.

Meyer, L.D.; Dabney, S.M.; Harmon, W.C. 1995. Sediment-trapping effectiveness of stiff-grass hedges. Transactions of the American Society of Agricultural Engineers. 38: 809-815.

Owino, J.O.; Owido, S.F.O.; Chemelil, M.C. 2006. Nutrients in runoff form a clay loam soil protected by narrow grass strips. Soil and Tillage Research. 88: 116-122.

Rachman, A.; Anderson, S.H.; Gantzer, C.J.; Alberts, E.E. 2004. Influence of stiff-stemmed grass hedge systems on infiltration. Soil Science Society of America Journal. 68: 1386-1393.

Rachman, A.; Anderson, S.H.; Gantzer, C.J.; Thompson, A.L. 2004. Influence of stiff-stemmed grass hedge systems on infiltration. Soil Science Society of America Journal. 68: 2000-2006.

Sharma, K.D.; Joshi, N.L.; Singh, H.P. [and others]. 1999. Study on the performance of contour vegetative barriers in an arid region using numerical models. Agricultural Water Management. 41: 41-56.

Thapa, B.B.; Cassel, D.K.; Garrity, D.P. 1999. Ridge tillage and contour natural grass barrier strips reduce tillage erosion. Soil and Tillage Research. 51: 341-356.

USDA. 1999. Vegetative barriers for erosion control. Kingsville, TX: U.S. Department of Agriculture, Natural Resources Conservation Service, Kika de la Garza Plant Materials Center. 20 p. <u>http://www.plant-materials.nrcs.usda.gov/pubs/stpmcbr1452.pdf</u>. [Date accessed September 27, 2007].

1.22 Vegetation for bank erosion control

Abernethy, B.; Rutherfurd, I.D. 1998. Where along a river's length will vegetation most effectively stabilize stream banks? Geomorphology. 23: 55-75.

Abernethy, B.; Rutherfurd, I.D. 2000. The effect of riparian tree roots on the mass-stability of riverbanks. Earth Surface Process and Landforms. 25: 921-937.

Abernethy, B.; Rutherfurd, I.D. 2000. Does the weight of riparian trees destabilize riverbanks. Regulated Rivers: Research and Management .16: 565-576.

Abernethy, B.; Rutherfurd, I.D. 2001. The distribution and strength of riparian tree roots in relation to riverbank reinforcement. Hydrological Processes. 15: 63-79.

Allmendinger, N.E.; Pizzuto, J.E.; Potter, N., Jr. [and others]. 2005. The influence of riparian vegetation on stream width, eastern Pennsylvania, USA. Geological Society of America Bulletin. 117: 229-243.

Dunaway, D.; Swanson, S.R.; Wendel, J.; Clary, W. 1994. The effects of herbaceous plant communities and soil textures on particle erosion of alluvial streambanks. Geomorphology. 9: 47-56.

Easson, G.; Yarbrough, L.D. 2002. The effects of riparian vegetation on bank stability. Environmental and Engineering Geoscience. 8: 247-260.

Geyer, W.A.; Neppl, T.; Brooks, K.; Carlisle, J. 2000. Woody vegetation protects streambank stability during the 1993 flood in central Kansas. Journal of Soil and Water Conservation. 55: 483-488.

Gray, D.H.; Leiser, A.T. 1982. Biotechnical slope protection. New York: Van Nostrand Reinhold Co. 271 p.

Hathaway, R.L.; Penny, D. 1975. Root strength in some *Populus* and *Salix* clones. New Zealand Journal of Botany. 13: 333-344.

Kleinfelder, D.; Swanson, S.; Norris, G.; Clary, W. 1992. Unconfined compressive strength of some streambank soils with herbaceous roots. Soil Science Society of America Journal. 56: 1920-1925.

Lyons, J.; Trimble, S.W.; Paine, L.K. 2000. Grass versus trees: managing riparian areas to benefit streams of central North America. Journal of the American Water Resources Association. 36: 919-930.

Micheli, E.R.; Kirchner, J.W. 2002. Effects of wet meadow riparian vegetation on streambank erosion. 2. Measurements of vegetated bank strength and consequences for failure mechanics. Earth Surface Processes and Landforms. 27: 687-697.

Montgomery, D.R. 1997. What's best on the banks? Nature. 388: 328-329.

Murgatroyd, A.L.; Ternan, J.L. 1983. The impact of afforestation on streambank erosion and channel form. Earth Surface Processes and Landforms. 8: 357-369.

Pollen, N. 2007. Temporal and spatial variability in root reinforcement of streambanks: accounting for soil shear strength and moisture. Catena. 69: 197-205.

Pollen, N.; Simon, A.; Collison, A. 2004. Advances in assessing the mechanical and hydrologic effects of riparian vegetation on streambank stability. In: Bennett, S.J.; Simon, A., eds. Riparian vegetation and fluvial geomorphology: water science and application 8. Washington, DC: American Geophysical Union.125-139.

Riestenberg, M.M.; Sovonick-Dunford, S. 1983. The role of woody vegetation in stabilizing slopes in the Cincinnati area, Ohio. Geological Society of America Bulletin. 94: 506-518.

Simon, A.; Pollen, N.; Langendoen, E. 2006. Influence of two woody riparian species on critical conditions for streambank stability: Upper Truckee River, CA. Journal of the American Water Resources Association. 42: 99-113.

Simon, A.; Collison, A. 2002. Quantifying the mechanical and hydrologic effects of riparian vegetation on streambank stability. Earth Surface Process and Landforms. 27: 527-546.

Smith, D.G. 1976. Effect of vegetation on lateral migration of anastomosed channels of a glacier meltwater river. Geological Society of America Bulletin. 87: 857-860.

Steinblums, I.J.; Froehlich, H.A.; Lyons, J.K. 1984. Designing stable buffer strips for stream protection. Journal of Forestry. 82: 49-52.

Stott, T. 1997. A comparison of stream bank erosion processes on forested and moorland streams in the Balquhidder catchments, central Scotland. Earth Surface Processes and Landforms 22:383-399.

Toledo, Z.; Kauffman, J.B. 2001. Root biomass in relation to channel morphology of headwater streams. Journal of the American Water Resources Association. 37: 1653-1663.

Trimble, S.W. 1997. Stream channel erosion and changes resulting from riparian forests. Geology. 25: 467-469.

Trimble, S.W. 2004. Effects of riparian vegetation on stream channel stability and sediment budgets. In: Bennett, S.J.; Simon, A., eds. Riparian vegetation and fluvial geomorphology: Water Science and Application 8. A comparison of stream bank erosion processes on forested and moorland streams in the Balquhidder catchments, central Scotland. American Geophysical Union. 153-169.

Waldron, L.J.; Dakessian, S. 1982. Effect of grass, legume, and tree roots on soil shearing resistance. Soil Science Society American Journal. 46: 894-899.

Wynn, T.; Mostaghimi, S. 2006. The effects of vegetation and soil type on streambank erosion, southwestern Virginia, USA. Journal of the American Water Resources Association. 42: 69-82.

Wynn, T.; Mostaghimi, S. 2003. Riparian vegetation effects on freeze-thaw cycling and desiccation of stream bank soils. Paper No. 032129. St. Joseph, MI: American Society of Agricultural Engineers.

Wynn, T.M.; Mostaghimi, S.; Burger, J.H. [and others]. 2004. Variation in root density along stream banks. Journal of Environmental Quality. 33: 2030-2039.

1.23 In-stream pollution removal

Bernhardt, E.S.; Hall, R.O.; Likens, G.E. 2002. Whole-system estimates of nitrification and nitrate uptake in streams of the Hubbard Brook Experimental Forest. Ecosystems. 5: 419-430.

Bernhardt, E.S.; Likens, G.E.; Busco, D.C.; Driscoll, C.T. 2003. In-stream uptake dampens effects of major forest disturbance on watershed nitrogen export. Proceedings of the National Academy of Sciences. 100: 10304-10308.

Bernhardt, E.S.; Likens, G.E.; Hall, R.O. [and others]. 2005. Can't see the forest for the stream? – In-stream processing and terrestrial nitrogen exports. BioSciences. 55: 219-230.

Bohlke, J.K.; Denver, J.M. 1995. Combined use of groundwater dating, chemical, and isotopic analyses to resolve the history and fate of nitrate contamination in two agricultural watersheds, Atlantic coastal plain, Maryland. Water Resources Research. 31: 2319-2340.

Cooke, J.G.; White, R.E. 1987. Spatial distribution of denitrifying activity in a stream draining an agricultural catchment. Freshwater Biology. 18: 509-519.

Cooper, A.B. 1990. Nitrate depletion in the riparian zone and stream channel of a small headwater catchment. Hydrobiologia. 202: 13-26.

Dosskey, M.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management 28:577-598.

Dudley, S.J.; Fischenich, J.C.; Abt, S.R. 1998. Effect of wood debris entrapment on flow resistance. Journal of American Water Resources Association. 34: 1189-1197.

Duff, J.H.; Triska, F.J. 1990. Denitrification in sediments from the hyporheic zone adjacent to a small forested stream. Canadian Journal of Fisheries and Aquatic Sciences. 47: 1140-1147.

Groffman, P.M.; Dorsey, A.M.; Mayer, P.M. 2005. N processing within geomorphic structures in urban streams. Journal of the North American Benthological Society. 24: 613-625.

Gurtz, M.M.; Marzolf, G.R.; Killingbeck, K.T. [and others]. 1988. Hydrologic and riparian influences on the import and storage of coarse particulate organic matter in a prairie stream. Canadian Journal of Fisheries and Aquatic Sciences. 45: 655-665.

Hill, A.R. 1983. Denitrification: its importance in a river draining an intensively cropped watershed. Agriculture, Ecosystems and Environment. 10: 47-62.

Hill, A.R. 1997. The potential role of in-stream and hyporheic environments as buffer zones. In: Haycock, N.E.; Burt, T.P.; Goulding, K.W.T.; Pinay, G., eds. Buffer zones: their processes and potential in water protection. Hartfordshire, UK: Quest Environmental. 115-127.

Jansson, M.; Leonardson, L.; Fejes, J. 1994. Denitrification and nitrogen retention in a farmland stream in southern Sweden. Ambio. 23: 326-331.

Martin, L.A.; Mulholland, P.J.; Webster, J.R.; Valett, H.M. 2001. Denitrification potential in sediments of headwater streams in the southern Appalachian Mountains, USA. Journal of the North American Benthological Society. 20: 505-519.

Meyer, J.L.; Likens, G.E. 1979. Transport and transformation of phosphorus in a forest stream ecosystem. Ecology. 60: 1255-1269.

O'Brien, J.M.; Williard, K.W.J. 2006. Potential denitrification rates in an agricultural stream in southern Illinois. Journal of Freshwater Ecology. 21: 157-162.

Peterson, B.J.; Wollheim, W.M.; Mulholland, P.J. [and others]. 2001. Control of nitrogen export from watersheds by headwater streams. Science. 292: 86-90.

Royer, T.V.; Tank, J.L.; David, M.B. 2004. Transport and fate of nitrate in headwater agricultural streams in Illinois. Journal of Environmental Quality. 33: 1296-1304.

Sweeney, B.W.; Bott, T.L.; Jackson, J.K. [and others]. 2004. Riparian deforestation, stream narrowing, and loss of stream ecosystem services. Proceedings of the National Academy of Science. 101: 14132-14137.

Triska, F.J.; Duff, J.H.; Avanzino, R.J. 1993. The role of water exchange between a stream channel and its hyporheic zone in nitrogen cycling at the terrestrial-aquatic interface. Hydrobiologia. 251: 167-184.

1.24 Species selection

Corre, M.D.; Schnabel, R.R.; Shaffer, J.A. 1999. Evaluation of soil organic carbon under forests, cool-season and warmseason grasses in Northeastern US. Soil Biology and Biochemistry. 31: 1531-1539.

Fennessy, M.S.; Cronk, J.K. 1997. The effectiveness and restoration potential of riparian ecotones for the management of nonpoint source pollution, particularly nitrate. Critical Reviews in Environmental Science and Technology. 27: 285-317.

Kelly, J.M.; Kovar, J.L.; Sokolowsky, R.; Moorman, T.B. 2007. Phosphorus uptake during four years by different vegetative cover types in a riparian buffer. Nutrient Cycling in Agroecosystems. 78: 239-251.

Lowrance, R.; Williams, R.G.; Inamdar, S.P. [and others]. 2001. Evalutation of coastal plain conservation buffers using the riparian ecosystem management model. Journal of the American Water Resources Association. 37: 1445-1456.

Lyons, J.; Trimble, S.W.; Paine, L.K. 2000. Grass versus trees: managing riparian ares to benefit streams of central North America. Journal of the American Water Resources Association. 36: 919-930.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

Parsons, J.E.; Gilliam, J.W.; Muñoz-Carpena, R.M. [and others]. 1994. Nutrient and sediment removal by grass and riparian buffers. In: Campbell, K.L.; Graham, W.D.; Bottcher, A.B., eds. Environmentally sound agriculture: proceedings of the 2nd annual conference. St. Joseph, MI: American Society of Agricultural Engineers. 147-154.

Paterson, K.G.; Schnoor, J.L. 1993. Vegetative alteration of nitrate fate in unsaturated zone. Journal of Environmental Engineering. 119: 986-993.

Pinay, G.; Clement, J.C.; Naiman, R.J. 2002. Basic principles and ecological consequences of changing water regimes on nitrogen cycling in fluvial systems. Environmental Management. 30: 481-491.

Rejmanek, M.; Richardson, D.M. 1996, What attributes make some plant species more invasive? Ecology. 77: 1655-1661.

Schippers, P.; Joenje, W. 2002. Modeling the effect of fertilizer, mowing, disturbance and width on biodiversity of plant communities of field boundaries. Agriculture, Ecosystems and Environment. 93: 351-365.

Schnabel, R.R.; Cornish, L.F.; Stout, W.L.; Shaffer, J.A. 1996. Denitrification in a grassed and a wooded, valley and ridge, riparian ecotone. Journal of Environmental Quality. 25: 1230-1235.

Schoonover, J.E.; Williard, K.W.J.; Zaczek, J.J. [and others]. 2006. Agricultural sediment reductions by giant cane and forest riparian buffers. Water, Air, and Soil Pollution. 169: 303-315.

Schultz, R.C.; Isenhart, T.M.; Simpkins, W.W.; Colletti, J.P. 2004. Riparian forest buffers in Agroecosystems – lessons learned from the Bear Creek Watershed, central Iowa, USA. Agroforestry Systems. 61: 35-50.

Snyder, N.J.; Mostaghimi, S.; Berry, D.F. [and others]. 1998. Impact of riparian forest buffers on agricultural nonpoint source pollution. Journal of the American Water Resources Association. 34: 385-395.

Stohlgren, T.J.; Binkley, D.; Chong, G.W. [and others]. 1999. Exotic plant species invade hot spots of native plant diversity. Ecological Monographs 69:25-46.

Svejcar, T. 2003. Applying ecological principles to wildland weed management. Weed Science. 51: 266–270.

Syversen, N. 2005. Effect and design of buffer zones in the Nordic climate: the influence of width, amount of surface runoff, season variation and vegetation type on retention efficiency for nutrient and particle runoff. Ecological Engineering. 24: 483-490.

1.25 Sediment removal

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Dillaha, T.A.; Inamdar, S.P. 1997. Buffer zones as sediment traps or sources. In: Haycock, N.E.; Burt, T.P.; Goulding, K.W.T.; Pinay, G., eds. Buffer zones: their processes and potential in water protection. Hartfordshire, UK: Quest Environmental. 33-42.

Dillaha, T.A.; Sherrard, J.H.; Lee, D. 1989. Long-term effectiveness and maintenance of vegetative filter strips. Water Environment and Technology. 1: 418-421.

Dillaha, T.A.; Sherrard, J.H.; Lee, D. 1986. Long-term effectiveness and maintenance of vegetative filter strips. VPI-VWRRC-Bull. 153. Blacksburg, VA: Virginia Polytechnic Institute and State University. 31 p. http://www.vwrrc.vt.edu/publications/Bulletin%20153.pdf [Date accessed: October 18, 2007].

Palone, R.S.; Todd, A.H. 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. NA-TP-02-97. Randor, PA: U.S. Department of Agriculture, Forest Service, Northeastern State and Private Forestry. <u>http://www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm</u> [Date accessed: October 17, 2007].

1.26 Harvesting for nutrient removal

Bedard-Haughn, A.; Tate, K.W.; van Kessel, C. 2005. Quantifying the impact of regular cutting on vegetative buffer efficacy for nitrogen-15 sequestration. Journal of Environmental Quality. 34: 1651-1664.

Di, H.J.; Cameron, K.C. 2002. Nitrate leaching in temperate Agroecosystems: sources, factors, and mitigating strategies. Nutrient Cycling in Agroecosystems. 64: 237-256.

Dosskey, M.G. 2001. Toward quantifying water pollution abatement in response to installing buffers on crop land. Environmental Management. 28: 577-598.

Haycock, N.E.; Muscutt, A.D. 1995. Landscape management strategies for the control of diffuse pollution. Landscape and Urban Planning. 31: 313-321.

Hefting, M.M.; Clement, J.C.; Bienkowski, P. [and others]. 2005. The role of vegetation and litter in the nitrogen dynamics of riparian buffer zones in Europe. Ecological Engineering. 24: 465-482.

Kelly, J.M.; Kovar, J.L.; Sokolowsky, R.; Moorman, T.B. 2007. Phosphorus uptake during four years by different vegetative cover types in a riparian buffer. Nutrient Cycling in Agroecosystems. 78: 239-251.

Mander, Ü.; Kuusemets, V.; Ivask, M. 1995. Nutrient dynamics of riparian ecotones: a case study from the the Porijõgi River catchment, Estonia. Landscape and Urban Planning. 31: 333-348.

Mander, Ü.; Kuusemets, V.; Lõhums, K.; Mauring, T. 1997. Efficiency and dimensioning of riparian buffer zones in agricultural catchments. Ecological Engineering. 8: 299-324.

Matheson, F.E.; Nguyen, M.L.; Cooper, A.B. [and others]. 2002. Fate of ¹⁵N-nitrate in unplanted, planted and harvested riparian wetland soil microcosms. Ecological Engineering. 19: 249-264.

Reynolds, J.H.; Walker, C.L.; Kirchner, M.J. 2000. Nitrogen removal in switchgrass biomass under two harvest systems. Biomass and Bioenergy. 19: 281-286.

Schenk, M.K. 1996. Regulation of nitrogen uptake on the whole plant level. Plant and Soil. 181: 131-137.

Sheridan, J.M.; Lowrance, R.; Bosch, D.D. 1999. Management effects on runoff and sediment transport in riparian forest buffers. Transactions of the American Society of Agricultural Engineers. 42: 55-64.

Vought, L.B.; Pinay, G.; Fuglsang, A.; Ruffinoni, C. 1995. Structure and function of buffer strips from a water quality perspective in agricultural landscapes. Landscape and Urban Planning. 31: 323-331.

1.27 Plant succession

Dieleman, J.A.; Mortensen, D.A.; Buhler, D.D. [and others]. 2000: Identifying associations among site properties and weed species abundance. I. Multivariate analysis. Weed Science. 48: 567–575.

Dosskey, M.G.G.; Hoagland, K.D.; Brandle, J.R. 2007. Change in filter strip performance over ten years. Journal of Soil and Water Conservation. 62: 21-32.

Leishman, M.R.; Hughes, M.T.; Gore, D.B. 2004. Soil phosphorus enhancement below stormwater outlets in urban bushland: spatial and temporal changes and the relationship of invasive plants. Australian Journal of Soil Research. 42: 197-202.

Rejmanek, M.; Richardson, D.M. 1996. What attributes make some plant species more invasive? Ecology. 77: 1655-1661.

Stohlgren, T.J.; Binkley, D.; Chong, G.W. [and others]. 1999. Exotic plant species invade hot spots of native plant diversity. Ecological Monographs. 69: 25-46.

1.28 Vegetation and traffic

Alakukku, L. 1996. Persistence of soil compaction due to high axle load traffic. II. Long-term effects on the properties of fine-textured and organic soils. Soil and Tillage Research. 37: 223-238.

Bakken, L.R.; Børresen, T.; Njøs, A. 1987. Effect of soil compaction by tractor traffic on soil structure, denitrification, and yield of wheat (*Triticum aestivum*). Journal of Soil Science. 38: 541-552.

Hamza, M.A.; W.K. Anderson. 2005. Soil compaction in cropping systems: a review of the nature, causes, and possible solutions. Soil and Tillage Research. 82: 121-145.

Kozlowski, T.T. 1999. Soil compaction and growth of woody plants. Scandinavian Journal of Forest Research. 14: 596-619.

Lehvavirta, S. 1999. Structural elements as barriers against wear in urban woodlands. Urban Ecosystems. 3: 45-56.

2.0 Biodiversity

2.1 Matrix primer

Andren, H. 1994. Effects of habitat fragmentation on birds and mammals in landscapes with different proportions of suitable habitat: a review. Oikos. 71: 355-366.

As, S. 1999. Invasion of matrix species in small habitat patches. Conservation Ecology. 3(1): 1. <u>http://www.consecol.org/vol3/iss1/art1</u> [Date accessed: July 18, 2007].

Baudry, J.; Burel, F.; Aviron, S. [and others]. 2003. Temporal variability of connectivity in agricultural landscapes: do farming activities help? Landscape Ecology. 18: 303-314.

Baum, K.A.; Haynes, K.J.; Dillemuth, F.P.; Cronin, J.T. 2004. The matrix enhances the effectiveness of corridors and stepping stones. Ecology. 85: 2671-2676.

Bender, D.J.; Fahrig, L. 2005 Matrix structure obscures the relationship between interpatch movement and patch size and isolation. Ecology. 86: 1023-1033.

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Benton, T.G.; Vickery, J.A.; Wilson, J.D. 2003. Farmland biodiversity: is habitat heterogeneity the key? Trends in Ecology and Evolution. 18: 182-188.

Best, L.B.; Freemark, K.E.; Dinsmore, J.J.; Camp, M. 1995. A review and synthesis of habitat use by breeding birds in agricultural landscapes. American Midland Naturalist. 134: 1-29.

Bolger, D.T.; Alberts, A.C.; Sauvajot, R.M. [and others]. 1997. Response of rodents to habitat fragmentation in coastal southern California. Ecological Applications. 7: 552-563.

Brothers, T.S.; Spingarn, A. 1990. Forest fragmentation and alien plan invasion of central Indiana old-growth forests, Conservation Biology. 6: 91-100.

Collinge, S.K. 1996. Ecological consequences of habitat fragmentation: implications for landscape architecture and planning. Landscape and Urban Planning. 36: 59-77.

Collinge, S.K. 1998. Spatial arrangement of habitat patches and corridors: clues from ecological field studies. Landscape and Urban Planning. 42: 157-168.

Coppendge, B.R.; Engle, D.M.; Masters, R.E.; Gregory, M.S. 2001. Avian response to landscape change in fragmented southern Great Plains grasslands. Ecological Applications. 11: 47-59.

Dickman, C.R.; Doncaster, C.P. 1987. The ecology of small mammals in urban habitats. I. Populations in a patchy environment. Journal of Animal Ecology. 56: 629-640.

Donald, P.F.; Evans, A.D. 2006. Habitat connectivity and matrix restoration: the winder implications of agri-environment schemes. Journal of Applied Ecology. 43: 209-218.

Forman, R.T.T. 1995. Some general principles of landscape and regional ecology. Landscape Ecology. 10: 133-142.

Freemark, K.E.; Boutin, C.; Keddy, C.J. 2002. Importance of farmland habitats for conservation plant species. Conservation Biology. 16: 399-412.

Freemark, K.E.; Merriam, H.G. 1986. Importance of area and habitat heterogeneity to bird assemblages in temperate forest fragments. Biological Conservation. 36: 115-141.

Galli, A.E.; Leck, C.F.; Forman, R.T.T. 1976. Avian distribution patterns in forest islands of different size in central New Jersey. Auk. 93: 356-64.

Gibbs, H.; Hochuli, D.F. 2002. Habitat fragmentation in an urban environment: large and small fragments support different arthropod assemblages. Biological Conservation. 106: 91-100.

Golden, D.M.; Crist, T.O. 2000. Experimental effects of fragmentation on rove beetles and ants: patch area or edge? Oikos. 90: 525-538.

Goldstein, E.L.; Gross, M.; DeGraff, R.M. 1983. Wildlife and greenspace planning in medium-scale residential developments. Urban Ecology. 7: 201-214.

Goodwin, B.J.; Fahrig, L. 2002. How does landscape structure influence landscape connectivity? Oikos. 99: 552-570.

Hanski, I. 1994. A practical model of metapopulation dynamics. Journal of Animal Ecology. 63: 151-162.

Harris, L. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. Chicago: University of Chicago Press. 230 p.

Herkert, J.R. 1994. The effects of habitat fragmentation on Midwestern grassland bird communities. Ecological Applications. 4: 461-471.

Holt, R.D.; Robinson, G.R.; Gaines, M.S. 1995. Vegetation dynamics in an experimentally fragmented landscape. Ecology. 76: 1610-1624.

Honnay, O.; Hermy, M.; Coppin, P. 1999. Effects of area, age, and diversity of forest patches in Belgium on plant species richness, and implications for conservation and reforestation. Biological Conservation. 87: 73-84.

Johnson, R.G.; Temple, S.A. 1990. Nest predation and brood parasitism of tallgrass prairie birds. Journal of Wildlife Management. 54: 106-111.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

King, A.W.; With, K.A. 2002. Dispersal success on spatially structured landscapes: when do spatial pattern and dispersal behavior really matter? Ecological Modeling. 147: 23-39.

Koford, R.R.; Best, L.B. 1996. Management of agricultural landscapes for the conservation of neotropical migratory birds. In: Management of agricultural landscapes for the conservation of neotropical migratory birds. Gen. Tech. Rep. NC – 187. St. Paul, MN: Department of Agriculture. Forest Service, North Central Forest Experiment Station: 68-88.

Lindenmayer, D.B.; Franklin, J.F.; Fischer, J. 2006. General management principles and a checklist of strategies to guide forest biodiversity conservation. Biological Conservation. 131: 433-445.

Lynch, J.F.; Whigham, D.F. 1984. Effects of forest fragmentation on breeding bird communities in Maryland, USA. Biological Conservation. 28: 287-324.

Mace, R.D.; Waller, J.S.; Manely, T.L. [and others]. 1996. Relationships among grizzly bears, roads, and habitat in the Swan Mountains, Montana. Journal of Applied Ecology. 33: 1395-1404.

Mader, H.J. 1984, Animal habitat isolation by roads and agricultural fields. Biological Conservation. 29: 81-96.

Margules, C.; Higgs, A.J.; Rafe, R.W. 1982. Modern biogeographic theory: are there any lessons for nature reserve design? Biological Conservation. 24: 115-128.

Opdam, P. 1991. Metapopulation theory and habitat fragmentation: a review of Holarctic breeding bird studies. Landscape Ecology. 5: 93-106.

Ricketts, T.H. 2001. The matrix matters: effective isolation in fragmented landscapes. American Naturalist. 158: 87-99.

Rizkalla, C.E.; Swihart, R.K. 2007. Explaining movement decisions of forest rodents in fragmented landscapes. Biological Conservation. 140: 339-348.

Santelmann, M.; Freemark, K.; Sifneos, J.; White, D. 2006. Assessing effects of alternative agricultural practices on wildlife habitat in Iowa, USA. Agriculture, Ecosystems and Environment. 113: 243-253.

Saunders, D.A.; Hobbs, R.J.; Margules, C.R. 1991. Biological consequences of ecosystem fragmentation: a review. Conservation Biology. 5: 18-32.

Sedell, J.R.; Reeves, G.H.; Hauer, F.R. [and others]. 1990. Role of refugia in recovery from disturbances: modern fragmented and disconnected river systems. Environmental Management. 14: 711-724.

Selonen, V.; Hanski, I.K. 2003. Movements of the flying squirrel *Pteromys volans* in corridors and in matrix habitat. Ecography. 26: 641-651.

Semlitsch, R.D.; Bodie, J.R. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. Conservation Biology. 17: 1219-1228.

Silva, M.; Hartling, L.; Opps, S.B. 2005. Small mammals in agricultural landscapes of Prince Edward Island (Canada): effects of habitat characteristics at three different spatial scales. Biological Conservation. 126: 556-568.

Soule, M.E.; Alberts, A.C.; Bolger, D.T. 1992. The effects of habitat fragmentation on chaparral plants and vertebrates. Oikos. 64: 39-47.

Walk, J.W.; Warner, R.E. 2000. Grassland management for the conservation of songbirds in the Midwestern USA. Biological Conservation. 94: 165-172.

Walker, B. 1995. Conserving biological diversity through ecosystem resilience. Conservation Biology. 9: 747-752.

Wegner, J.F.; Merriam, G. 1979. Movements by birds and small mammals between a wood and adjoining farmland habitats. Journal of Applied Ecology. 16: 349-357.

Willson, J.D.; Dorcas, M.E. 2003. Effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management. Conservation Biology. 13: 1424-1436.

Winter, M.; Johnson, D.H.; Faaborg. J. 2000. Evidence for edge effects on multiple levels in tallgrass prairie. Condor. 102: 256-266.

With, K.A.; Crist, T.O. 1995. Critical thresholds in species' responses to landscape structure. Ecology. 76: 2446-2459.

Yahner, R.H. 1988. Changes in wildlife communities near edges. Conservation Biology. 2: 333-339.

2.2 Patch primer

Andren, H. 1994. Effects of habitat fragmentation on birds and mammals in landscapes with different proportions of suitable habitat: a review. Oikos. 71: 355-366.

As, S. 1999. Invasion of matrix species in small habitat patches. Conservation Ecology. 3(1): 1. http://www.consecol.org/vol3/iss1/art1 [Date accessed: July 18, 2007].

Barbour, M.; Litvaitis, J. 1993. Niche dimensions of New England cottontails in relation to habitat patch size. Oecologia. 95: 321-327.

Beier, P. 1993. Determining minimum habitat areas and habitat corridors for cougars. Conservation Biology. 7: 98-108.

Bender, D.J.; Fahrig, L. 2005 Matrix structure obscures the relationship between interpatch movement and patch size and isolation. Ecology. 86: 1023-1033.

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Benton, T.G.; Vickery, J.A.; Wilson, J.D. 2003. Farmland biodiversity: is habitat heterogeneity the key? Trends in Ecology and Evolution. 18: 182-188.

Best, L.B.; Freemark, K.E.; Dinsmore, J.J.; Camp, M. 1995. A review and synthesis of habitat use by breeding birds in agricultural landscapes. American Midland Naturalist. 134: 1-29.

Blake, J.G.; Karr, J.R. 1984. Species composition of bird communities and the conservation benefit of large versus small forests. Biological Conservation. 30: 173-187.

Bolger, D.T.; Alberts, A.C.; Sauvajot, R.M. [and others]. 1997. Response of rodents to habitat fragmentation in coastal southern California. Ecological Applications. 7: 552-563.

Bowers, M.A.; Matter, S.F. 1997. Landscape ecology of mammals: relationships between density and patch size. Journal of Mammalogy. 78: 999-1013.

Brothers, T.S.; Spingarn, A. 1990. Forest fragmentation and alien plan invasion of central Indiana old-growth forests, Conservation Biology. 6: 91-100.

Brown, M.; Dinsmore, J. 1986. Implications of marsh size and isolation for marsh bird management. Journal of Wildlife Management. 50: 392-387.

Collinge, S.K. 1996. Ecological consequences of habitat fragmentation: implications for landscape architecture and planning. Landscape and Urban Planning. 36: 59-77.

Collinge, S.K. 1998. Spatial arrangement of habitat patches and corridors: clues from ecological field studies. Landscape and Urban Planning. 42: 157-168.

Coppendge, B.R.; Engle, D.M.; Masters, R.E.; Gregory, M.S. 2001. Avian response to landscape change in fragmented southern Great Plains grasslands. Ecological Applications. 11: 47-59.

Crist, T.; Ahern, R. 1999. Effects of habitat patch size and temperature on the distributions and abundance of ground beetles (Coleoptera: Carabidae) in an old field. Environmental Entomology. 28: 681-689.

Diamond, J.M. 1975. The island dilemma: lessons of modern biogeographic studies for the design of nature reserves. Biological Conservation. 7: 129-146.

Dickman, C.R.; Doncaster, C.P. 1987. The ecology of small mammals in urban habitats. I. Populations in a patchy environment. Journal of Animal Ecology. 56: 629-640.

Ewers, R.M.; Didham, R.K. 2007. The effect of fragment shape and species' sensitivity to habitat edges on animal population size. Conservation Biology. 21: 926-936.

Fischer, J.; Lindenmayer, D.B. 2002. Small patches can be valuable for biodiversity conservation: two case studies on birds in southeastern Australia. Biological Conservation. 106: 129-136.

Forman, R.T.T. 1995. Some general principles of landscape and regional ecology. Landscape Ecology. 10: 133-142.

Forman, R.T.T.; Galli, A.E.; Leck, C.F. 1976. Forest size and avian diversity in New Jersey woodlots with some land use implications. Oecologia. 26: 1-8.

Forman, R.T.T.; Godron, M. 1981. Patches and structural components for a landscape ecology. BioSciences. 31: 733-740.

Freemark, K.E.; Boutin, C.; Keddy, C.J. 2002. Importance of farmland habitats for conservation plant species. Conservation Biology. 16: 399-412.

Freemark, K.E.; Merriam, H.G. 1986. Importance of area and habitat heterogeneity to bird assemblages in temperate forest fragments. Biological Conservation. 36: 115-141.

Galli, A.E.; Leck, C.F.; Forman, R.T.T. 1976. Avian distribution patterns in forest islands of different size in central New Jersey. Auk. 93: 356-64.

Gibbs, H.; Hochuli, D.F. 2002. Habitat fragmentation in an urban environment: large and small fragments support different arthropod assemblages. Biological Conservation. 106: 91-100.

Godefroid, S.; Koedam, N. 2003. How important are large vs. small forest remnants for the conservation of woodland flora in an urban context? Global Ecology and Biogeography. 12: 287-298.

Golden, D.M.; Crist, T.O. 2000. Experimental effects of fragmentation on rove beetles and ants: patch area or edge? Oikos. 90: 525-538.

Goldstein, E.L.; Gross, M.; DeGraff, R.M. 1983. Wildlife and greenspace planning in medium-scale residential developments. Urban Ecology. 7: 201-214.

Goodwin, B.J.; Fahrig, L. 2002. How does landscape structure influence landscape connectivity? Oikos. 99: 552-570.

Hanski, I. 1994. A practical model of metapopulation dynamics. Journal of Animal Ecology. 63: 151-162.

Harris, L. 1984. The fragmented forest: island biogeography theory and the preservation of biotic diversity. Chicago: University of Chicago Press. 230 p.

Helzer, C.J.; Jelinski, D.E. 1999. The relative importance of patch area and perimeter-area ratio to grassland breeding birds. Ecological Applications. 9: 1448-1458.

Herkert, J.R. 1994. The effects of habitat fragmentation on Midwestern grassland bird communities. Ecological Applications. 4: 461-471.

Higgs, A.J.; Usher, M.B. 1980. Should nature reserves be large or small? Nature. 285: 568-569.

Hill, J.K.; Thomas, C.D.; Lewis, O.T. 1996. Effects of habitat patch size and isolation on dispersal by Hesperia comma butterflies: implications for metapopulation structure. Journal of Animal Ecology. 65: 725-735.

Holt, R.D.; Robinson, G.R.; Gaines, M.S. 1995. Vegetation dynamics in an experimentally fragmented landscape. Ecology. 76: 1610-1624.

Honnay, O.; Endels, P.; Vereecken, H.; Hermy, M. 1999. The role of patch area and habitat diversity in explaining native plant species richness in disturbed suburban forest patches in northern Belgium. Diversity and Distributions. 5: 129-141.

Honnay, O.; Hermy, M.; Coppin, P. 1999. Effects of area, age, and diversity of forest patches in Belgium on plant species richness, and implications for conservation and reforestation. Biological Conservation. 87: 73-84.

Hoover, J.; Brittingham, M.; Goodrich, L. 1995. Effects of forest patch size on nesting success of wood thrushes. Auk. 112: 146-155.

Johnson, R.G.; Temple, S.A. 1990. Nest predation and brood parasitism of tallgrass prairie birds. Journal of Wildlife Management. 54: 106-111.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

King, A.W.; With, K.A. 2002. Dispersal success on spatially structured landscapes: when do spatial pattern and dispersal behavior really matter? Ecological Modeling. 147: 23-39.

Koford, R.R.; Best, L.B. 1996. Management of agricultural landscapes for the conservation of neotropical migratory birds. In: Management of agricultural landscapes for the conservation of neotropical migratory birds. Gen. Tech. Rep. NC – 187. St. Paul, MN: Department of Agriculture. Forest Service, North Central Forest Experiment Station: 68-88.

Lindenmayer, D.B.; Franklin, J.F.; Fischer, J. 2006. General management principles and a checklist of strategies to guide forest biodiversity conservation. Biological Conservation. 131: 433-445.

Lynch, J.F.; Whigham, D.F. 1984. Effects of forest fragmentation on breeding bird communities in Maryland, USA. Biological Conservation. 28: 287-324.

Mace, R.D.; Waller, J.S.; Manely, T.L.; Lyon, L.J.; Zuuring, H. 1996. Relationships among grizzly bears, roads, and habitat in the Swan Mountains, Montana. Journal of Applied Ecology. 33: 1395-1404.

Mader, H.J. 1984, Animal habitat isolation by roads and agricultural fields. Biological Conservation. 29: 81-96.

Margules, C.; Higgs, A.J.; Rafe, R.W. 1982. Modern biogeographic theory: are there any lessons for nature reserve design? Biological Conservation. 24: 115-128.

McIntyre, N.E. 1995. Effects of forest patch size on avian diversity. Landscape Ecology. 10: 85-99.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. Arlington, VA: NatureServe. <u>http://www.natureserve.org/explorer</u>. [Date accessed October 5, 2007].

Naugle, D.E.; Higgins, K.F.; Nusser, S.M.; Johnson, W.C. 1999. Scale-dependent habitat use in three species of prairie wetland birds. Landscape Ecology. 14: 267-276.

Opdam, P. 1991. Metapopulation theory and habitat fragmentation: a review of Holarctic breeding bird studies. Landscape Ecology. 5: 93-106.

Pirnat, J. 2000. Conservation and management of forest patches and corridors in suburban landscapes. Landscape and Urban Planning. 52: 135-143.

Robbins, C.S; Dawson, D.K.; Dowell, B.A. 1989. Habitat area requirements of breeding forest birds of the middle Atlantic states. Wildlife Monographs. 103: 1-34.

Santelmann, M.; Freemark, K.; Sifneos, J.; White, D. 2006. Assessing effects of alternative agricultural practices on wildlife habitat in Iowa, USA. Agriculture, Ecosystems and Environment. 113: 243-253.

Saunders, D.A.; Hobbs, R.J.; Margules, C.R. 1991. Biological consequences of ecosystem fragmentation: a review. Conservation Biology. 5: 18-32.

Schultz, C.B.; Crone, E. 2005. Patch size and connectivity thresholds for butterfly habitat restoration. Conservation Biology. 19: 887-896.

Sedell, J.R.; Reeves, G.H.; Hauer, F.R. [and others]. 1990. Role of refugia in recovery from disturbances: modern fragmented and disconnected river systems. Environmental Management. 14: 711-724.

Selonen, V.; Hanski, I.K. 2003. Movements of the flying squirrel *Pteromys volans* in corridors and in matrix habitat. Ecography. 26: 641-651.

Semlitsch, R.D.; Bodie, J.R. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. Conservation Biology. 17: 1219-1228.

Silva, M.; Hartling, L.; Opps, S.B. 2005. Small mammals in agricultural landscapes of Prince Edward Island (Canada): effects of habitat characteristics at three different spatial scales. Biological Conservation. 126: 556-568.

Soule, M.E.; Alberts, A.C.; Bolger, D.T. 1992. The effects of habitat fragmentation on chaparral plants and vertebrates. Oikos. 64: 39-47.

Tscharntke, T.; Steffan-Dewenter, J.; Kruess, A.; Thies, C. 2002. Contribution of small habitat fragments to conservation of insect communities of grassland-cropland landscapes. Ecological Applications. 12: 354-363.

Uezu, A.; Metzger, J.P.; Vielliard, J.M.E. 2005. Effects of structural and functional connectivity and patch size on the abundance of seven Atlantic Forest bird species. Biological Conservation. 123: 507-519.

van Dorp, D.; Opdam, P.F.M. 1987. Effects of patch size, isolation and regional abundance on forest bird communities. Landscape Ecology. 1: 59-73.

Walk, J.W.; Warner, R.E. 1999. Effects of habitat area on the occurrence of grassland birds in Illinois. American Midland Naturalist. 141: 339-344.

Walk, J.W.; Warner, R.E. 2000. Grassland management for the conservation of songbirds in the Midwestern USA. Biological Conservation. 94: 165-172.

Walker, B. 1995. Conserving biological diversity through ecosystem resilience. Conservation Biology. 9: 747-752.

Wegner, J.F.; Merriam, G. 1979. Movements by birds and small mammals between a wood and adjoining farmland habitats. Journal of Applied Ecology. 16: 349-357.

Willson, J.D.; Dorcas, M.E. 2003. Effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management. Conservation Biology. 13: 1424-1436.

Winter, M.; Johnson, D.H.; Faaborg. J. 2000. Evidence for edge effects on multiple levels in tallgrass prairie. Condor. 102: 256-266.

Winter, M.; Johnson, D.H.; Shaffer, J.A. [and others] 2006. Patch size and landscape effects on density and nesting success of grassland birds. Journal of Wildlife Management. 70: 158-172.

With, K.A.; Crist, T.O. 1995. Critical thresholds in species' responses to landscape structure. Ecology. 76: 2446-2459.

Yahner, R.H. 1988. Changes in wildlife communities near edges. Conservation Biology. 2: 333-339.

2.3 Corridors and connectivity

Anderson, G.S.; Danielson, B.J. 1997. The effects of landscape composition and physiognomy on metapopulation size: the role of corridors. Landscape Ecology. 12: 261-271.

Baudry, J.; Burel, F.; Aviron, S. [and others]. 2003. Temporal variability of connectivity in agricultural landscapes: do farming activities help? Landscape Ecology. 18: 303-314.

Beier, P.; Noss, R.F. 1998. Do habitat corridors provide connectivity? Conservation Biology. 12: 1241-1252.

Beier, P.; Loe, S. 1992. A checklist for evaluating impacts to wildlife movement corridors. Wildlife Society Bulletin. 20: 434-440.

Bennett, A.F. 1990. Habitat corridors and the conservation of small mammals in a fragmented forest environment. Landscape Ecology. 4: 109-122.

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Bennett, A.F.; Henein, K.; Merriam, G. 1994. Corridor use and the elements of corridor quality: chipmunks and fencerows in a farmland mosaic. Biological Conservation. 68: 155-165.

Bolger, D.T., Scott, T.A.; Rotenberry, J.T. 2001. Use of corridor-like landscape structures by bird and small mammal species. Biological Conservation. 102: 213-224.

Boutin, C.; Jobin, B.; Bélanger, L. 2003. Importance of riparian habitats to flora conservation in farming landscapes of southern Quebec, Canada. Agriculture, Ecosystems and Environment. 94: 73-87.

Briner, T.; Nentwig, W.; Airoldi, J.P. 2005. Habitat quality of wildflower strips for common voles (*Microtus arvalis*) and its relevance for agriculture. Agriculture, Ecosystems and Environment. 105: 173-179.

Burbrink, F.T.; Phillips, C.A.; Heske, E.J. 1998. A riparian zone in southern Illinois as a potential dispersal corridor for reptiles and amphibians. Biological Conservation. 86: 107-115.

Capel, S.W. 1988. Design of windbreaks for wildlife in the Great Plains of North America. Agriculture, Ecosystem and Environment. 22/23: 337-347.

Chetkiewicz, C.L.B.; St. Clair, C.C.; Boyce, M.S. 2006. Corridors for conservation: integrating pattern and process. Annual Review of Ecology, Evolution, and Systematics. 37:317-342.

Collinge, S.K. 1998. Spatial arrangement of habitat patches and corridors: clues from ecological field studies. Landscape and Urban Planning. 42: 157-168.

Damschen, E.I.; Haddad, N.M.; Orrock, J.L. [and others]. 2006. Corridors increase plant species richness at large scales. Science. 313: 1284-1286.

Danielson, B.J.; Hubbard, M.W. 2000. The influence of corridors on the movement behavior of individual *Peromyscus* polionotus in experimental landscapes. Landscape Ecology. 15: 323-331.

Darveau, M.; Beauchesne, P.; Belanger, L. [and others]. 1995. Riparian forest strips as habitat for breeding birds in boreal forest. Journal of Wildlife Management. 59: 67-78.

Davies, Z.G.; Pullin, A.S. 2007. Are hedgerows effective corridors between fragments of woodland habitat? An evidencebased approach. Landscape Ecology. 22: 333-351.

Dixon, J.D.; Oli, M.K.; Wooten, M.C. [and others]. 2006. Effectiveness of a regional corridor in connecting two Florida black bear populations. Conservation Biology. 20: 155-162.

Dmowski, K.; Kozakiewicz, M. 1990. Influence of a shrub corridor on movements of passerine birds to a lake littoral zone. Landscape Ecology. 42: 99-108.

Downes, S.J.; Handasyde, K.A., Elgar, M.A. 1997. The use of corridors by mammals in fragmented Australian eucalypt forests. Conservation Biology. 11: 718-726.

Eagan, D.; Howell, E. 2001. Historical ecology handbook: a restorationist's guide to reference ecosystems. Covelo, CA: Island Press. 457 p.

Falcy, M.R.; Estades, C.F. 2007. Effectiveness of corridors relative to enlargement of habitat patches. Conservation Biology. 21: 1341-1346.

Forman, R.T.T. 1991. Landscape corridors: from theoretical foundations to public policy. In: Saunders, D.A.; Hobbs, R.J., eds. Nature conservation 2: the role of corridors. Chipping Norton, Australia: Surrey Beatty: 1-84.

Gilbert, F.; Gonzalez, A.; Evans-Freke, I. 1998. Corridors maintain species richness in the fragmented landscapes of a microecosystem. Proceedings of the Royal Society of London, Series B: Biological Sciences. 265: 577-582.

Goodwin, B.J.; Fahrig, L. 2002. How does landscape structure influence landscape connectivity? Oikos. 99: 552-570.

Grashof-Bokdam, C.J.; van Langevelde, F. 2004. Green veining: landscape determinants of biodiversity in European agricultural landscapes. Landscape Ecology. 20: 417-439.

Haas, C.A. 1994. Dispersal and use of corridors by birds in wooded patches on an agricultural landscape. Conservation Biology. 9: 845-854.

Haddad, N. 1999. Corridor and distance effects on interpatch movements: a landscape experiment with butterflies. Ecological Applications. 9: 612-622.

Haddad, N. 2000. Corridor length and patch colonization by a butterfly, *Junonia coenia*. Conservation Biology. 14:738-745.

Haddad, N.M.; Baum, K.A. 1999. An experimental test of corridor density on butterfly densities. Ecological Applications. 9: 623-633.

Haddad, N.M.; Bowne, D.R.; Cunningham, A. [and others]. T. 2003. Corridor use by diverse taxa. Ecology. 84: 609-615.

Haddad, N.M.; Tewksbury, J.T. 2006. Impacts of corridors on populations and communities. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 390-415.

Hannon, S.J.; Schmiegelow, F.K. 2002. Corridors may not improve the conservation value of small reserves for most boreal birds. Ecological Applications. 12: 1457-1468.

Harris, L.D.; Scheck, J. 1991. From implications to applications: the dispersal corridor principle applied to the conservation of biological diversity. In: Saunders, D.A.; Hobbs, R.J., eds. Nature conservation 2: the role of corridors. Chipping Norton, Australia: Surrey Beatty: 189-220.

Henein, K.; Merriam, G. 1990. The elements of connectivity where corridor quality is variable. Landscape Ecology. 4: 157-170.

Henningsen, J.C.; Best, L.B. 2005. Grassland bird use of riparian filter strips in southeast Iowa. Journal of Wildlife Management. 69: 198-210.

Herkert, J.R. 1994. The effects of habitat fragmentation on Midwestern grassland bird communities. Ecological Applications. 4: 461-471.

Hess, G.R. 1994. Conservation corridors and contagious disease: a cautionary note. Conservation Biology. 8: 256-261.

Horskins, K.; Mather, P.B.; Wilson, J.C. 2006. Corridors and connectivity: when use and function do not equate. Landscape Ecology. 21: 641-655.

Hudgens, G.R.; Haddad, N.M. 2003. Predicting which species will benefit from corridors in fragmented landscapes from population growth models. American Naturalist. 161: 808-820.

Hultquist, J.M.; Best, L.B. 2001. Bird use of terraces in Iowa rowcrop fields. American Midland Naturalist. 145: 275-287.

Jordán, F. 2000. A reliability-theory approach to corridor design. Ecological Modelling. 128: 211-220.

Kautz, R.; Kawula, R.; Hoctor, T. [and others]. 2006. How much is enough? Landscape-scale conservation for the Florida panther. Biological Conservation. 130: 118-133.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

Lindenmayer, D.B.; Nix, H.A. 1993. Ecological principles for the design of wildlife corridors. Conservation Biology. 7: 627-630.

Little, S.J.; Harcourt, R.G.; Clevenger, A.P. 2002. Do wildlife passages act as prey-traps? Biological Conservation. 107: 135-145.

Machtans, C.S.; Villard, M.V.; Hannon, S.J. 1996. Use of riparian buffer strips as movement corridors by forest birds. Conservation Biology. 10: 1366-1379.

Margules, C.; Higgs, A.J.; Rafe, R.W. 1982. Modern biogeographic theory: are there any lessons for nature reserve design? Biological Conservation. 24: 115-128.

Miller, J.E.; Hess, G.R.; Moorman, C.E. 2007. Southern two-lined salamanders in urbanizing watersheds. Urban Ecosystems. 10: 73-85.

Naiman, R.J.; Decamps, H.; Pollock, M. 1993. The role of riparian corridors in maintaining regional biodiversity. Ecological Applications. 3: 209-212.

Newmark, W.D. 1993. The role and design of wildlife corridors with examples from Tanzania. Ambio. 22: 500-504.

Noss, R.F. 1987. Corridors in real landscapes. Conservation Biology. 1: 159-164.

Noss, R.F. 2003. A checklist for wildlands network design. Conservation Biology. 17: 1270-1275.

Pierce, R.A.; Farrand, D.T.; Kurtz, W.B. 2001. Projecting the bird community response resulting from the adoption of shelterbelt agroforestry practices in Eastern Nebraska. Agroforestry Systems. 53: 333-350.

Pirnat, J. 2000. Conservation and management of forest patches and corridors in suburban landscapes. Landscape and Urban Planning. 52: 135-143.

Poague, K.L.; Johnson, R.J.; Young, L.J. 2000. Bird use of rural and urban converted railroad right-of-ways in southeast Nebraska. Wildlife Society Bulletin. 28: 852-864.

Pringle, C. 2003. What is hydrologic connectivity and why is it ecologically important? Hydrological Processes. 17: 2685-2689.

Reeder, K.F.; Debinski, D.M.; Danielson, B.J. 2005. Factors affecting butterfly use of filter strips in Midwestern USA. Agriculture, Ecosystems and Environment. 109: 40-47.

Rodewald, A.D.; Vitz, A.C. 2005. Edge and area-sensitivity of shrubland birds. Journal of Wildlife Management. 69: 681-688.

Roe, J.H.; Georges, A. 2007. Heterogeneous wetland complexes, buffer zones, and travel corridors: landscape management for freshwater reptiles. Biological Conservation. 135: 67-76.

Rosenberg, D.K.; Noon, B.R.; Meslow, E.C. 1997. Biological corridors: form, function, and efficacy. BioScience. 47: 677-687.

Ruefenacht, B.; Knight, R.L. 1995. Influences of corridor continuity and width on survival and movement of deer mice *Peromyscus maniculatus*. Biological Conservation. 71: 269-274.

Russell, K.N.; Ikerd, H.; Droege, S. 2005. The potential conservation value of unmowed powerline strips for native bees. Biological Conservation. 124: 133-148.

Saunders, D.A.; Hobbs, R.J.; Margules, C.R. 1991. Biological consequences of ecosystem fragmentation: a review. Conservation Biology. 5: 18-32.

Schultz, C.B.; Crone, E. 2005. Patch size and connectivity thresholds for butterfly habitat restoration. Conservation Biology. 19: 887-896.

Sedell, J.R.; Reeves, G.H.; Hauer, F.R. [and others]. 1990. Role of refugia in recovery from disturbances: modern fragmented and disconnected river systems. Environmental Management. 14: 711-724.

Selonen, V.; Hanski, I.K. 2003. Movements of the flying squirrel *Pteromys volans* in corridors and in matrix habitat. Ecography. 26: 641-651.

Simberloff, D.; Farr, J.A.; Cox, J.; Mehlman, D. 1992. Movement corridors: conservation bargains or poor investments? Conservation Biology. 6: 493-504.

Simberloff, D.; Cox, J. 1987. Consequences and costs of conservation corridors. Conservation Biology. 1: 63-71.

Smith, R.J.; Schaefer, J.M. 1992. Avian characteristics of an urban riparian strip corridor. Wilson Bulletin. 104: 732-738.

Sutcliffe, O.L.; Thomas, C.D. 1996. Open corridors appear to facilitate dispersal by ringlet butterflies between woodland clearings. Conservation Biology. 10: 1359-1365.

Talyor, P.D.; Fahrig, L.; With, K.A. 2006. Landscape connectivity: a return to the basics. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 29-43.

Tewksbury, J.J.; Levey, D.J.; Haddad, N.M. [and others]. 2002. Corridors affect plants, animals and their interactions in fragmented landscapes. Proceedings of the National Academy of Sciences. 99: 12923-12926.

Uezu, A.; Metzger, J.P.; Vielliard, J.M.E. 2005. Effects of structural and functional connectivity and patch size on the abundance of seven Atlantic Forest bird species. Biological Conservation. 123: 507-519.

Vannote, R.L.; Minshall, G.W.; Cummins, K.W. [and others]. 1980. The river continuum concept. Canadian Journal of Fisheries and Aquatic Sciences. 37: 130-137.

Wegner, J.F.; Merriam, G. 1979. Movements by birds and small mammals between a wood and adjoining farmland habitats. Journal of Applied Ecology. 16: 349-357.

Weldon, A.J. 2006. How corridors reduce indigo bunting nest success. Conservation Biology. 20: 1300-1305.

2.4 Corridors versus connectivity zones

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Chetkiewicz, C.L.B.; St. Clair, C.C.; Boyce, M.S. 2006. Corridors for conservation: integrating pattern and process. Annual Review of Ecology, Evolution, and Systematics. 37: 317-342.

Dobson, A.; Ralls, K.; Foster, M. [and others]. 1999. Connectivity: maintaining flows in fragmented landscapes. In: Soulé, M.E.; Terborgh, J., eds. Continental conservation: scientific foundations of regional reserve networks. Washington, DC: Island Press: 129-170.

Lindenmayer, D.B.; Fischer, J. 2006. Habitat fragmentation and landscape change: an ecological and conservation synthesis. Island Press: Washington DC. 328 p.

Manning, A.D.; Lindenmayer, D.B.; Nix, H.A. 2004. Continua and umwelt: novel perspectives on viewing landscapes. Oikos. 104: 621-628.

Sanderson, J.; Da Fonseca, G.A.B.; Galindo-Leal, C. [and others]. 2006. Escaping the minimalist trap: design and implementation of large-scale biodiversity corridors. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 620-648.

Taylor, P.D.; Fahrig, L.; Henien, K.; Merriam, G. 1993. Connectivity is a vital element of landscape structure. Oikos. 68: 571-573.

Talyor, P.D.; Fahrig, L.; With, K.A. 2006. Landscape connectivity: a return to the basics. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 29-43.

Uezu, A.; Metzger, J.P.; Vielliard, J.M.E. 2005. Effects of structural and functional connectivity and patch size on the abundance of seven Atlantic Forest bird species. Biological Conservation. 123: 507-519.

2.5 Corridor network

Anderson, G.S.; Danielson, B.J. 1997. The effects of landscape composition and physiognomy on metapopulation size: the role of corridors. Landscape Ecology. 12: 261-271.

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Bunn, A.G.; Urban, D.L.; Keitt, T.H. 2000. Landscape connectivity: a conservation application of graph theory. Journal of Environmental Management. 59: 265-278.

Chetkiewicz, C.L.B.; St. Clair, C.C.; Boyce, M.S. 2006. Corridors for conservation: integrating pattern and process. Annual Review of Ecology, Evolution, and Systematics. 37: 317-342.

Dobson, A.; Ralls, K.; Foster, M. [and others]. 1999. Connectivity: maintaining flows in fragmented landscapes. In: Soulé, M.E.; Terborgh, J., eds. Continental conservation: scientific foundations of regional reserve networks. Washington, DC: Island Press: 129-170.

Forman, R.T.T.; Baudry, J. 1984. Hedgerows and hedgerow networks in landscape ecology. Environmental Management. 8: 495-510.

Henein, K.; Merriam, G. 1990. The elements of connectivity where corridor quality is variable. Landscape Ecology. 4: 157-170.

Jordán, F. 2000. A reliability-theory approach to corridor design. Ecological Modelling. 128: 211-220.

Kautz, R.; Kawula, R.; Hoctor, T. [and others]. 2006. How much is enough? Landscape-scale conservation for the Florida panther. Biological Conservation. 130: 118-133.

Noss, R.F.; Harris, L.D. 1986. Nodes, networks, and MUMs: preserving diversity at all scales. Environmental Management. 10: 299-309.

Rothley, K.D.; Rae, C. 2005. Working backwards to move forwards: graph-based connectivity metrics for reserve network design. Environmental Modeling and Assessment. 10: 107-113.

Talyor, P.D.; Fahrig, L.; With, K.A. 2006. Landscape connectivity: a return to the basics. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 29-43.

Theobald, D.M. Exploring the functional connectivity of landscapes using landscape networks. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 416-443.

2.6 Climate change and corridors

Collingham, Y. C.; Huntley, B. 2000. Impacts of habitat fragmentation and patch size upon migration rates. Ecological Applications. 10: 131-144.

Epps, C.W.; Palsboll, P.J.; Wehausen, J.D. [and others]. 2006. Elevation and connectivity define genetic refugia for mountain sheep as climate warms. Molecular Ecology. 15: 4295-4302.

Graham, R.W. 1988. The role of climatic change in the design of biological reserves: the paleoecological perspective for conservation biology. Conservation Biology. 2: 391-394.

Guertin, D.S.; Easterling, W.E.; Brandle, J.R. 1997. Climate change and forests in the Great Plains. BioScience. 47: 287-295.

Guo, G.; Brandle, J.; Schoeneberger, M.; Buettner, D. 2004. Simulating the dynamics of linear forests in Great Plains agroecosystems under changing climates. Canadian Journal of Forest Resources. 34: 2564-2572.

Hannah, L.; Midgley, G.F.; Millar, D. 2002. Climate change-integrated conservation strategies. Global Ecology and Biogeography. 11: 485-495.

Harris, J.A.; Hobbs, R.J.; Higgs, E.; Aronson, J. 2006. Ecological restoration and global climate change. Restoration Ecology. 14: 170-176.

Hobbs, R.J.; Hopkins, A.J. M. 1991. The role of conservation corridors in a changing climate. In: Saunders, D.A.; Hobbs, R.J., eds. Nature conservation 2: the role of corridors. Chipping Norton, Australia: Surrey Beatty: 281-290.

Hulme, P. 2005. Adapting to climate change: is there scope for ecological management in the face of a global threat? Journal of Applied Ecology. 42: 784-794.

Iverson, L.R.; Prasad, A.M. 2001. Potential changes in tree species richness and forest community types following climate change. Ecosystems. 4: 186-199.

Iverson, L.R.; Prasad, A.M. 2002. Potential redistribution of tree species habitat under five climate change scenarios in the eastern US. Forest Ecology and Management. 155: 205-222.

Iverson, L.R.; Prasad, A.M.; Schwartz, M.W. 1999. Modeling potential future individual tree-species distributions in the eastern United States under a climate change scenario" a case study with *Pinus virginiana*. Ecological Modeling. 115: 77-93.

Iverson, L.R.; Schwartz, M.W.; Prasad, A.M. 2004. How fast and far might tree species migrate in the eastern United States due to climate change? Global Ecology and Biogeography. 13: 209-219.

Katz, R.W.; Brown, B.G. 1992. Extreme events in a changing climate: variability is more important than averages. Climate Change. 21: 289-302.

Knox, J.C. 1993. Large increases in flood magnitude in response to modest changes in climate. Nature. 361: 430-432.

Malcolm, J.R.; Markham, A.; Neilson, R.P.; Garaci, M. 2002. Estimated migration rates under scenarios of global climate change. Journal of Biogeography. 29: 835-849.

Markham, A. 1996. Potential impacts of climate change on ecosystems: a review of implications for policymakers and conservation biologists. Climate Research. 6: 179-191.

McCarty, J.P. 2001. Ecological consequences of recent climate change. Conservation Biology. 15: 320-331.

Noss, R.F. 2001. Beyond Kyoto: forest management in a time of rapid climate change. Conservation Biology. 15: 578-590.

Opdam, P.; Wascher, D. 2004. Climate change meets habitat fragmentation: linking landscape and biogeographical scale levels in research and conservation. Biological Conservation. 117: 285-297.

Parmesan, C.; Ryrholm, N.; Stefanescu, C. [and others]. 1999. Poleward shifts in geographical ranges of butterfly species associated with regional warming. Nature. 399: 579-583.

Pearson, R.G.; Dawson, T.P. 2005. Long-distance plant dispersal and habitat fragmentation: identifying conservation targets for spatial landscape planning under climate change. Biological Conservation. 123: 389-401.

Peters, R.L.; Darling, J.D.S. 1985. The greenhouse effect and nature reserves. BioScience. 35: 707-717.

Scheraga, J.D.; Grambsch, A.E. 1998. Risks, opportunities, and adaptation to climate change. Climate Research. 10: 85-95.

Williams, P.; Hannah, L.; Andelman, S. [and others]. 2005. Planning for climate change: identifying minimum-dispersal corridors for the Cape Proteacea. Conservation Biology. 19: 1063-1074.

2.7 Stepping stones and gaps

Andreassen, H.P.; Ims, R.A.; Steinset, O.K. 1996. Discontinuous habitat corridors: effects on male root vole movements. Journal of Applied Ecology. 33: 555-560.

Bakker, V.J.; Van Vuren, D.H. 2004. Gap-crossing decisions by the red squirrel, a forest-dependent small mammal. Conservation Biology. 18: 689-697.

Baum, K.A.; Haynes, K.J.; Dillemuth, F.P.; Cronin, J.T. 2004. The matrix enhances the effectiveness of corridors and stepping stones. Ecology. 85: 2671-2676.

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Bosschieter, L.; Goedhart, P.W. 2005. Gap crossing decisions by reed warblers (*Acrocephalus scirpaceus*) in agricultural landscapes. Landscape Ecology. 20: 455-468.

Bowman, J.; Fahrig, L. 2002. Gap crossing by chipmunks: an experimental test of landscape connectivity. Canadian Journal of Zoology. 80: 1556-1561.

Bright, P.W. 1998. Behavior of specialist species in habitat corridors: arboreal dormice avoid corridor gaps. Animal Behavior. 56: 1485-1490.

Brooker, L.; Brooker, M.; Cale, P. 1999. Animal dispersal in fragmented habitat: measuring habitat connectivity, corridor use, and dispersal mortality. Conservation Ecology. 3(1): 4. <u>http://www.consecol.org/vol3/iss1/art4</u> [Date accessed: July 18, 2007].

Collinge, S.K. 1998. Spatial arrangement of habitat patches and corridors: clues from ecological field studies. Landscape and Urban Planning. 42: 157-168.

Collingham, Y. C.; Huntley, B. 2000. Impacts of habitat fragmentation and patch size upon migration rates. Ecological Applications. 10: 131-144.

Date, E.M.; Ford, H.A.; Recher, H.F. 1991. Frugivorous pigeons, stepping stones and weeds in northern New South Wales. In: Saunders, D.A.; Hobbs, R.J., eds. Nature conservation 2: the role of corridors. Chipping Norton, Australia: Surrey Beatty: 241-245.

Davies, Z.G.; Pullin, A.S. 2007. Are hedgerows effective corridors between fragments of woodland habitat? An evidencebased approach. Landscape Ecology. 22: 333-351.

Desrochers, A.; Hannon, S.J. 1997. Gap crossing decisions by forest songbirds during the post-fledging period. Conservation Biology. 11: 1204-1210.

Fischer, J.; Lindenmayer. D. 2002. The conservation value of paddock trees for birds in a variegated landscape in southern New South Wales. 2. paddock trees as stepping stones. Biodiversity and Conservation. 11: 833-849.

Freeman, R.E.; Stanley, E.H.; Turner, M.G. 2003. Analysis and conservation implications of landscape change in the Wisconsin River Floodplain. Ecological Applications. 13: 416-431.

Gilpin, M.E. 1980. The role of stepping-stone islands. Theoretical Population Biology. 17: 247-253.

Grubb, T.C.; Doherty, P.H. 1999. On home-range gap-crossing. Auk. 116: 618-628.

Haddad, N. 2000. Corridor length and patch colonization by a butterfly, *Junonia coenia*. Conservation Biology. 14: 738-745.

Jordán, F. 2000. A reliability-theory approach to corridor design. Ecological Modelling. 128: 211-220.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

Law, B.S.; Anderson, J.; Chidel, M. 1999. Bat communities in a fragmented forest landscape on the south-west slopes of New South Wales, Australia. Biological Conservation. 88: 333-345.

Loehle, C. 2007. Effect of ephemeral stepping stones on metapopulations on fragmented landscapes. Ecological Complexity. 4: 42-47.

MacArthur, R.M.; Wilson, E.O. 1967. The theory of island biogeography. Princeton, NJ: Princeton University Press. 224 p.

Machtans, C.S.; Villard, M.V.; Hannon, S.J. 1996. Use of riparian buffer strips as movement corridors by forest birds. Conservation Biology. 10: 1366-1379.

Nève, G.; Barascud, B.; Hughes, R. [and others]. 1996. Dispersal, colonization power and metapopluation structure in the vulnerable butterfly *Proclossiana eunomia* (Lepidoptera: Nymphalidae). Journal of Applied Ecology. 33: 14-22.

Potter, M.A. 1990. Movement of North Island Brown Kiwi (*Apteryx australis mantelli*) between forest remnants. New Zealand Journal of Ecology. 14: 17-24.

Rail, J.F.; Darveau, M.; Descrochers, A.; Huot, J. 1997. Territorial responses of boreal forest birds to habitat gaps. Condor. 99: 976-980.

Rich, A.C.; Dobkin, D.S.; Niles, L.J. 1994. Defining forest fragmentation by corridor width: the influence of narrow forestdividing corridors on forest-nesting birds in southern New Jersey. Conservation Biology. 8: 1109-1121.

Ruefenacht, B.; Knight, R.L. 1995. Influences of corridor continuity and width on survival and movement of deer mice *Peromyscus maniculatus*. Biological Conservation. 71: 269-274.

Selonen, V.;Hanski, I.K. 2003. Movements of the flying squirrel *Pteromys volans* in corridors and in matrix habitat. Ecography. 26: 641-651.

Shirley, S.M. 2006. Movement of forest birds across river and clearcut edges of varying riparian buffer strip widths. Forest Ecology and Management. 223: 190-199.

Simberloff, D.; Cox, J. 1987. Consequences and costs of conservation corridors. Conservation Biology. 1: 63-71.

Skagen, S.K.; Melcher, C.P.; Howe, W.H.; Knopf, F.L. 1998. Comparative use of riparian corridors and oases by migrating birds in southeast Arizona. Conservation Biology. 12: 896-909.

Strong, A.M.; Bancroft, G.T.. 1994. Postfledging dispersal of white-crowned pigeons: implications for conservation of deciduous seasonal forests in the Florida Keys. Conservation Biology. 8: 770-779.

van der Ree, R.; Bennett, A.F.; Gilmore, D.C. 2003. Gap-crossing by gliding marsupials: thresholds for use of isolated woodland patches in agricultural landscapes. Biological Conservation. 115: 241-249.

2.8 Buffers and corridors

Attum, O.; Lee, Y.M.; Roe, J.H.; Kingsbury, B.A. 2007. Upland-wetland linkages: relationship of upland and wetland characteristics with watersnake abundance. Journal of Zoology. 271: 134-139.

Brodie, J.R. 2001. Stream and riparian management for freshwater turtles. Journal of Environmental Management. 62: 443-455.

Brothers, T.; Spingarn, A. 1992. Forest fragmentation and alien plan invasion of central Indiana old-growth forests. Conservation Biology. 6: 91-100.

Burke, V.J.; Gibbons, J.W. 1995. Terrestrial buffer zones and wetland conservation: a case study of freshwater turtles in a Carolina Bay. Conservation Biology. 9: 1363-1369.

Cockle, K.L.; Richardson, J.S. 2003. Do riparian buffer strips mitigate the impacts of clearcutting on small mammals? Biological Conservation. 113: 133-140.

Gamble, L.R.; McGarigal, K.; Jenkins, C.L.; Timm, B.C. 2006. Limitations of regulated buffer zones for the conservation of marbled salamanders. Wetlands. 26: 298-306.

Groom, M.; Jensen, D.B.; Knight, R.L. [and others]. 1999. Buffer zones: benefits and dangers of compatible stewardship. In: Soulé, M.E.; Terborgh, J., eds. Continental conservation: scientific foundations of regional reserve networks. Washington, DC: Island Press: 171-189.

Homan, R.N.; Windmiller, B.S.; Reed, J.M. 2004. Critical thresholds associated with habitat loss for two vernal poolbreeding amphibians. Ecological Applications. 14: 1547-1553.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

Li, W.; Wang, Z.; Tang, H. 1999. Designing the buffer zone of a nature reserve: a case study in Yancheng Biosphere Reserve, China. Biological Conservation. 90: 159-165.

Miller, J.E.; Hess, G.R.; Moorman, C.E. 2007. Southern two-lined salamanders in urbanizing watersheds. Urban Ecosystems. 10: 73-85.

Noss, R.F.; Harris, L.D. 1986. Nodes, networks, and MUMs: preserving diversity at all scales. Environmental Management. 10: 299-309.

Perkins, D.W.; Hunter, M.L., Jr. 2006. Effects of riparian timber management on amphibians in Maine. Journal of Wildlife Management. 70: 657-670.

Regosin, J.; Windmiller, B.S.; Homan, R.N.; Reed, J.M. 2005. Variation in terrestrial habitat use by four pool-breeding amphibian species. Journal of Wildlife Management. 69: 1481-1493.

Roe, J.H.; Georges, A. 2007. Heterogeneous wetland complexes, buffer zones, and travel corridors: landscape management for freshwater reptiles. Biological Conservation. 135: 67-76.

Schaefer, J.M.; Brown, M.T. 1992. Designing and protecting river corridors for wildlife. Rivers. 3(1): 14-26.

Semlitsch, R.D. 1998. Biological delineation of terrestrial buffer zones for pond-breeding salamanders. Conservation Biology. 12: 113-119.

Semlitsch, R.D.; Bodie, J.R. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. Conservation Biology. 17: 1219-1228.

Vuori, K.M.; Joensuu, I. 1996. Impact of forest drainage on the macroinvertebrates of a small boreal headwater stream: do buffer zones protect lotic biodiversity? Biological Conservation. 77: 87-95.

Wells, M.P.; Brandon, K.E. 1993. The principles and practice of buffer zones and local participation in biodiversity conservation. Ambio. 22: 157-162.

Willson, J.D.; Dorcas, M.E. 2003. Effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management. Conservation Biology. 13: 1424-1436.

2.9 Corridor width

Andreassen, H.P.: Halle, S.; Ims, R.A. 1996. Optimal width of movement corridors for root voles: not too narrow and not too wide. Journal of Applied Ecology. 33: 63-70.

Arnold, G.W. 1983. The influence of ditch and hedgerow structure, length of hedgerows, and area of woodland and garden on bird numbers on farmland. Journal of Applied Ecology. 20: 731-750.

Askins, R.A. 1994. Open corridors in heavily forested landscape: impact on shrubland and forest-interior birds. Wildlife Society Bulletin. 22: 339-347.

Beier, P. 1993. Determining minimum habitat areas and habitat corridors for cougars. Conservation Biology. 7: 98-108.

Beier, P. 1995. Dispersal of juvenile cougars in fragmented habitat. Journal of Wildlife Management. 59: 228-237.

Beier, P.; Noss, R.F. 1998. Do habitat corridors provide connectivity? Conservation Biology. 12: 1241-1252.

Bennett, A.F. 1990. Habitat corridors and the conservation of small mammals in a fragmented forest environment. Landscape Ecology. 4: 109-122.

Bennett, A.F. 1999. Linkages in the landscape: the role of corridors and connectivity in wildlife conservation. Gland, Switzerland: IUCN. 254 p.

Brodie, J.R. 2001. Stream and riparian management for freshwater turtles. Journal of Environmental Management. 62: 443-455.

Boutin, C.; Jobin, B.; Bélanger, L. 2003. Importance of riparian habitats to flora conservation in farming landscapes of southern Quebec, Canada. Agriculture, Ecosystems and Environment. 94: 73-87.

Burbrink, F.T.; Phillips, C.A.; Heske, E.J. 1998. A riparian zone in southern Illinois as a potential dispersal corridor for reptiles and amphibians. Biological Conservation. 86: 107-115.

Crawford, J.A.; Semlitsch, R.D. 2007. Estimation of core terrestrial habitat for stream-breeding salamanders and delineation of riparian buffers for protection of biodiversity. Conservation Biology. 21: 152-158.

Darveau, M.; Beauchesne, P.; Belanger, L. [and others]. 1995. Riparian forest strips as habitat for breeding birds in boreal forest. Journal of Wildlife Management. 59: 67-78.

Dixon, J.D.; Oli, M.K.; Wooten, M.C. [and others]. 2006. Effectiveness of a regional corridor in connecting two Florida black bear populations. Conservation Biology. 20: 155-162.

Erman, D.C.; Newbold, J.C.; Roby, K.B. 1977. Evaluation of streamside buffer strips for protecting aquatic organisms. Tech. Completion Rep. Contribution 165. Davis, CA: University of CA-Davis, California Water Resource Center. 50 p.

Fischer, R.A.; Fishcenich, J.C. 2000. Design recommendations for riparian corridors and vegetated buffer strips. EMRRP Tech. Note Series. TN EMRRp-SR-24. Vicksburg, MS: U.S. Army Engineer Research and Development Center. 17 p. http://el.erdc.usace.army.mil/elpubs/pdf/sr24.pdf [Date accessed October 17, 2007].

Groom, J.D.; Grubb, T.C., Jr. 2002. Bird species associated with riparian woodland in fragmented, temperate-deciduous forest. Conservation Biology. 16: 832-836.

Haddad, N. 1999. Corridor and distance effects on interpatch movements: a landscape experiment with butterflies. Ecological Applications. 9: 612-622.

Haddad, N. 2000. Corridor length and patch colonization by a butterfly, *Junonia coenia*. Conservation Biology. 14:738-745.

Haddad, N.M.; Baum, K.A. 1999. An experimental test of corridor density on butterfly densities. Ecological Applications. 9: 623-633.

Hagar, J.C. 1999. Influences of riparian buffer width on bird assemblages in western Oregon. Journal of Wildlife Management. 63: 484-496.

Hannon, S.J.; Paszkowski, C.A.; Boutin, S. [and others]. 2002. Abundance and species composition of amphibians, small mammals, and songbirds in riparian forest buffer strips of varying widths in the boreal mixed wood of Alberta. Canadian Journal of Forest Research. 32: 1784-1800.

Harris, L.D.; Scheck, J. 1991. From implications to applications: the dispersal corridor principle applied to the conservation of biological diversity. In: Saunders, D.A.; Hobbs, R.J., eds. Nature conservation 2: the role of corridors. Chipping Norton, Australia: Surrey Beatty: 189-220.

Harrison, R.L. 1992. Toward a theory of inter-refuge corridor design. Conservation Biology. 6: 293-295.

Harvey, C.A. 2000. Colonization of agricultural windbreaks by forest trees: effects of connectivity and remnant trees. Ecological Applications. 10: 1762-1773.

Hilty, J.A.; Merenlender, A.M. 2004. Use of riparian corridors and vineyards by mammalian predators in northern California. Conservation Biology. 18: 126-135.

Hodges, M.F.; Krementz, D.G. 1996. Neotropical migratory breeding bird communities in riparian forests of different widths along the Altamaha River, Georgia. Wilson Bulletin. 108: 496-506.

Iwata, T.; Nakano, S.; Murakami, M. 2003. Stream meanders increase insectivorous bird abundance in riparian deciduous forests. Ecography. 26: 325-337.

Jenkins, D.G.; Brescacin, C.R.; Duxbury, C.V. [and others]. 2007. Does size matter for dispersal distance? Global Ecology and Biogeography. 16: 415-425.

Keller, C. M.; Robbins, C.S.; Hatfield, J.S. 1993. Avian communities in riparian forests of different widths in Maryland and Delaware. Wetlands. 13: 137-144.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

Kilgo, J.C.; Sargent, R.A.; Chapman, B.R.; Miller, K.V. 1998. Effect of stand width and adjacent habitat on breeding bird communities in bottomland hardwoods. Journal of Wildlife Management. 62: 72-83.

La Polla, V.N.; Barrett, G.W. 1993. Effects of corridor width and presence on the population dynamics of the meadow vole (*Microtus pennsylvanicus*). Landscape Ecology. 8: 25-37.

Ma, M.; Tarmi, S.; Helenius, J. 2002. Revisiting the species-area relationship in a semi-natural habitat: floral richness in agricultural buffer zones in Finland. Agriculture, Ecosystems and Environment. 89: 137-148.

Machtans, C.S.; Villard, M.V.; Hannon, S.J. 1996. Use of riparian buffer strips as movement corridors by forest birds. Conservation Biology. 10: 1366-1379.

Maisonneuve, C.; Rioux, S. 2001. Importance of riparian habitats for small mammal and herptofaunal communities in agricultural landscapes of southern Québec. Agriculture, Ecosystems and Environment. 83: 165-175.

Miller, J.E.; Hess, G.R.; Moorman, C.E. 2007. Southern two-lined salamanders in urbanizing watersheds. Urban Ecosystems. 10: 73-85.

Moring, J.R. 1982. Decrease in instream gravel permeability after clear-cut logging: an indication of intragravel conditions for developing salmonid eggs and alevins. Hydrobiologia. 88: 295-298.

Naiman, R.J.; Decamps, H.; Pollock, M. 1993. The role of riparian corridors in maintaining regional biodiversity. Ecological Applications. 3: 209-212.

Newmark, W.D. 1993. The role and design of wildlife corridors with examples from Tanzania. Ambio. 22: 500-504.

Peak, R.G.; Thompson, F.R., III. 2006. Factors affecting avian species richness and density in riparian areas. Journal of Wildlife Management. 70: 173-179.

Peak, R.G.; Thompson, F.R., III; Shaffer, T.L. 2004. Factors affecting songbird nest survival in riparian forests in a Midwestern agricultural landscape. Auk. 121: 726-737.

Pearson, S.F.; Manuwal, D.A. 2001. Breeding bird response to riparian buffer width in managing Pacific Northwest Douglas-Fir forests. Ecological Applications. 11: 840-853.

Perkins, D.W.; Hunter, M.L., Jr. 2006. Effects of riparian timber management on amphibians in Maine. Journal of Wildlife Management. 70: 657-670.

Pringle, C. 2003. What is hydrologic connectivity and why is it ecologically important? Hydrological Processes. 17: 2685-2689.

Quinn, J.M.; Boothroyd, I.K.G.; Smith, B.J. 2004. Riparian buffers mitigate effects of pine plantation on logging on New Zealand streams 2. Invertebrate communities. Forest Ecology and Management. 19: 129-146.

Ranney, J.W.; Bruner, M.C.; Levenson, J.B. 1981. The importance of edge in the structure and dynamics of forest islands. In: Burgess, R.L.; Sharpe, D.M., eds. Forest island dynamics in man-dominated landscapes. New York: Springer: 67-95.

Reeder, K.F.; Debinski, D.M.; Danielson, B.J. 2005. Factors affecting butterfly use of filter strips in Midwestern USA. Agriculture, Ecosystems and Environment. 109: 40-47.

Roe, J.H.; Georges, A. 2007. Heterogeneous wetland complexes, buffer zones, and travel corridors: landscape management for freshwater reptiles. Biological Conservation. 135: 67-76.

Rudolph, D.C.; Dickson, J.G. 1990. Streamside zone width and amphibian and reptile abundance. Southwestern Naturalist. 35: 472-476.

Ruefenacht, B.; Knight, R.L. 1995. Influences of corridor continuity and width on survival and movement of deer mice *Peromyscus maniculatus*. Biological Conservation. 71: 269-274.

Schaefer, J.M.; Brown, M.T. 1992. Designing and protecting river corridors for wildlife. Rivers. 3(1): 14-26.

Semlitsch, R.D. 1998. Biological delineation of terrestrial buffer zones for pond-breeding salamanders. Conservation Biology. 12: 113-119.

Semlitsch, R.D.; Bodie, J.R. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. Conservation Biology. 17: 1219-1228.

Shirley, S.M. 2006. Movement of forest birds across river and clearcut edges of varying riparian buffer strip widths. Forest Ecology and Management. 223: 190-199.

Shirley, S.M.; Smith, J.N.M. 2005. Bird community structure across riparian buffer strips of varying width in a coastal temperate forest. Biological Conservation. 125: 475-489.

Sinclair, K.E.; Hess, G.R.; Moorman, C.E.; Mason, J.H. 2005. Mammalian nest predators respond to greenway width, landscape context, and habitat structure. Landscape and Urban Planning. 71: 277-293.

Smith, R.J.; Schaefer, J.M. 1992. Avian characteristics of an urban riparian strip corridor. Wilson Bulletin. 104: 732-738.

Spackman, S.C.; Hughes, J.W. 1995. Assessment of minimum stream corridor width for biological conservation: species richness and distribution along mid-order streams in Vermont. Biological Conservation. 71: 325-332.

Tassone, J. 1981. Utility of hardwood leave strips for breeding birds in Virginia's central Piedmont. Blacksburg, VA: Virginia Polytechnic Institute and State University. M.S. thesis.

Talyor, P.D.; Fahrig, L.; With, K.A. 2006. Landscape connectivity: a return to the basics. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 29-43.

Triquet, A.M.; McPeek, G.A.; McComb, W.C. 1990. Songbird diversity in clearcuts with and without a riparian buffer strip. Journal of Soil and Water Conservation. 45: 500-503.

Vander Haegen, M.W.; DeGraaf, R.M. 1996. Predation on artificial nests in forested riparian buffer strips. Journal of Wildlife Management. 60: 542-550.

Vannote, R.L.; Minshall, G.W.; Cummins, K.W. [and others]. 1980. The river continuum concept. Canadian Journal of Fisheries and Aquatic Sciences. 37: 130-137.

Weldon, A.J. 2006. How corridors reduce indigo bunting nest success. Conservation Biology. 20: 1300-1305.

Wiens, J.A. 2002. Riverine landscapes: taking landscape ecology into the water. Freshwater Biology. 47: 501-515.

Wissmar, R.C.; Beschta, R.L. 1998. Restoration and management of riparian ecosystems: a catchment perspective. Freshwater Biology. 40: 571-585.

2.10 Edge effects of corridors

As, S. 1999. Invasion of matrix species in small habitat patches. Conservation Ecology. 3(1): 1. http://www.consecol.org/vol3/iss1/art1 [Date accessed: July 18, 2007].

Askins, R.A. 1994. Open corridors in heavily forested landscape: impact on shrubland and forest-interior birds. Wildlife Society Bulletin. 22: 339-347.

Bollinger, E.K.; Gavin, T.A. 2004. Responses of nesting bobolinks (*Dolichonyx Oryzivorus*) to habitat edges. Auk. 121: 767-776.

Brittingham, M.C.; Temple, S.A. 1983. Have cowbirds caused forest songbirds to decline? BioScience. 33: 31-35.

Brothers, T.; Spingarn, A. 1992. Forest fragmentation and alien plan invasion of central Indiana old-growth forests. Conservation Biology. 6: 91-100.

Burger, L.D.; Burger, L.W., Jr.; Faaborg, J. 1004. Effects of prairie fragementation on predation on artificial nests. Journal of Wildlife Management. 58: 249-254.

Cadenasso, M.L.; Pickett, S.T.A. 2001. Effects of edge structure on the flux of species into forest interiors. Conservation Biology. 15: 91-97.

Chasko, G.G.; Gates, J.E. 1982. Avian habitat suitability along a transmission line corridor in an oak-hickory forest region. Wildlife Monographs. 82: 1–41.

Chen, J.; Franklin, J.; Spies, T. 1995 Growing season microclimatic gradients from clearcut edges into old-growth Douglas-Fir forests. Ecological Applications. 5: 74-86.

Clarke, D.J.; Pearce, K.A.; White, J.G. 2006. Powerline corridors: degraded ecosystems or wildlife havens? Wildlife Research. 33: 615-626.

Coppendge, B.R.; Engle, D.M.; Masters, R.E.; Gregory, M.S. 2001. Avian response to landscape change in fragmented southern Great Plains grasslands. Ecological Applications. 11: 47-59.

Dignan, P.; Bren, L. 2003. Modelling light penetration edge effects for stream buffer design in mountain ash forest in southeastern Australia. Forest Ecology and Management. 179: 95-106.

Euskirchen, E.S.; Chen, J.; Bi, R. 2001. Effects of edges on plant communities in a managed landscape in northern Wisconsin. Forest Ecology and Management. 148: 93-108.

Fenske-Crawford, T.J.; Niemi, G.J. 1997. Predation of artificial ground nests at two types of edges in forest-dominated landscapes. Condor. 99: 13-24.

Fletcher, R.J., Jr.; Koford, R.F. 2003. Spatial responses of bobolinks (*Dolichonyx Oryzivorus*) near different types of edges in northern Iowa. Auk. 120: 799-810.

Fry, G.; Herlin, I.S. 1997. The ecological and amenity functions of woodland edges in the agricultural landscape: a basis for design and management. Landscape and Urban Planning. 37: 45-55.

Gates, J.E.; Gysel, L.W. 1978. Avian nest dispersion and fledgling success in field-forest ecotones. Ecology. 59: 871-883.

Gehlhausen, S.M.; Schwartz, M.W.; Augspurger, C.K. 2000. Vegetation and microclimate edge effects in two mixedmesophytic forest fragments. Plant Ecology. 147: 21-35.

Hansen, M.J.; Clevenger, A.P. 2005. The influence of disturbance and habitat on the presence of non-native plant species along transport corridors. Biological Conservation. 125: 249-259.

Harper, K.A.; Macdonald, S.E.; Burton, P.J. [and others]. 2005. Edge influences on forest structure and composition in fragmented landscapes. Conservation Biology. 19: 768-782.

Henningsen, J.C.; Best, L.B. 2005. Grassland bird use of riparian filter strips in southeast lowa. Journal of Wildlife Management. 69: 198-210.

Herlin, I.S. 2001. Approaches to forest edges as dynamic structures and functional concepts. Landscape Research. 26: 27-43.

Johnson, R.G.; Temple, S.A. 1990. Nest predation and brood parasitism of tallgrass prairie birds. Journal of Wildlife Management. 54: 106-111.

Kelsey, K.W.; Naugle, D.E.; Higgins, K.F. 2006. Planting trees in prairie landscapes: do the ecological costs outweigh the benefits? Natural Areas Journal. 26: 254-260.

Kennedy, C.; Wilkinson, J.; Balch, J. 2003. Conservation thresholds for land use planners. Washington, DC: Environmental Law Institute. 55 p.

Kuehl, A.K.; Clark, W.R. 2002. Predator activity related to landscape features in northern lowa. Journal of Wildlife Management. 66: 1224-1234.

Lahti, D.C. 2001. The "edge effect on nest predation" hypothesis after twenty years. Biological Conservation. 99: 365-374.

Laurance, W.F.; Yensen, E. 1991. Predicting the impacts of edge effects in fragmented habitats. Biological Conservation. 55: 77-92.

Lidicker, W.Z., Jr. 1999. Responses of mammals to habitat edges: an overview. Landscape Ecology. 14: 333-343.

Luken, J.O.; Hinton, A.C.; Baker, D.G. 1991. Forest edges associated with power-line corridors and implications for corridor siting. Landscape and Urban Planning. 20: 315-324.

Matlack, G.R. 1993. Sociological edge effects: spatial distribution of human impact in suburban forest fragments. Environmental Management. 17: 829-835.

Matlack, G.R. 1993. Microenvironment variation within and among forest edge sites in the Eastern United States. Biological Conservation. 66: 185-194.

McDonald, R.I.; Urban, D.L. 2006. Edge effects on species composition and exotic species abundance in the North Carolina Piedmont. Biological Invasions. 8: 1049-1060.

Murcia, C. 1995. Edge effects in fragmented forests: implications for conservation. Trends in Ecology and Evolution. 10: 58-62.

Newmark, W.D. 1993. The role and design of wildlife corridors with examples from Tanzania. Ambio. 22: 500-504.

Newton, J.L.; Heske, E.J. 2001. Predation on artificial nests in small grassland patches in east-central Illinois. American Midland Naturalist. 145: 29-39.

O'Leary, C.H.; Nyberg, D.W. 2000. Treelines between fields reduce density of grassland birds. Natural Areas Journal. 20: 243-249.

Ortega, Y.K.; Capen, D.E. 2002. Roads as edges: effects on birds in forested landscapes. Forest Science. 48: 381-390.

Paton, P.W.C. 1994. The effect of edge on avian nest success: how strong is the evidence? Conservation Biology. 8: 17-26.

Pierce, R.A.; Farrand, D.T.; Kurtz, W.B. 2001. Projecting the bird community response resulting from the adoption of shelterbelt agroforestry practices in Eastern Nebraska. Agroforestry Systems. 53: 333-350.

Ranney, J.W.; Bruner, M.C.; Levenson, J.B. 1981. The importance of edge in the structure and dynamics of forest islands. In: Burgess, R.L.; Sharpe, D.M., eds. Forest island dynamics in man-dominated landscapes. New York: Springer: 67-95.

Renfrew, R.B.; Ribic, C.A.; Nack, J.L. 2005. Edge avoidance by nesting grassland birds: a futile strategy in a fragmented landscape. Auk. 122: 618-636.

Ribic, C.A.; Sample, D.A. 2001. Associations of grassland birds with landscape factors in southern Wisconsin. American Midland Naturalist. 146: 105-121.

Rich, A.C.; Dobkin, D.S.; Niles, L.J. 1994. Defining forest fragmentation by corridor width: the influence of narrow forestdividing corridors on forest-nesting birds in southern New Jersey. Conservation Biology. 8: 1109-1121.

Ries, L.; Debinski, D.M. 2001. Butterfly responses to habitat edges in highly fragmented prairies of Central Iowa. Journal of Animal Ecology. 70: 840-852.

Ries, L.; Fletcher, R.J.; Battin, J.; Sisk, T.D. 2004. Ecological responses to habitat edges: mechanisms, models, and variability explained. Annual Review of Ecology, Evolution, and Systematics. 35: 491-522.

Rodewald, A.D.; Vitz, A.C. 2005. Edge and area-sensitivity of shrubland birds. Journal of Wildlife Management. 69: 681-688.

Saunders, D.A.; Hobbs, R.J.; Margules, C.R. 1991. Biological consequences of ecosystem fragmentation: a review. Conservation Biology. 5: 18-32.

Simberloff, D.; Farr, J.A.; Cox, J.; Mehlman, D. 1992. Movement corridors: conservation bargains or poor investments? Conservation Biology. 6: 493-504.

Sinclair, K.E.; Hess, G.R.; Moorman, C.E.; Mason, J.H. 2005. Mammalian nest predators respond to greenway width, landscape context, and habitat structure. Landscape and Urban Planning. 71: 277-293.

Stauffer, D.F.; Best, L.B. 1980. Habitat selection by birds of riparian communities: evaluating effects of habitat alterations. Journal of Wildlife Management. 44: 1-15.

Steinblums, I.J.; Froehlich, H.A.; Lyons, J.K. 1984. Designing stable buffer strips for stream protection. Journal of Forestry. 82: 49-52.

Sutcliffe, O.L.; Thomas, C.D. 1996. Open corridors appear to facilitate dispersal by ringlet butterflies between woodland clearings. Conservation Biology. 10: 1359-1365.

Watkins, R.Z.; Chen, J.; Pickens, J.; Brosofske, K.D. 2003. Effects of forest roads on understory plants in a managed hardwood landscape. Conservation Biology. 17: 411-419.

Weldon, A.J. 2006. How corridors reduce indigo bunting nest success. Conservation Biology. 20: 1300-1305.

Winter, M.; Johnson, D.H.; Faaborg, J. 2000. Evidence for edge effects on multiple levels in tallgrass prairie. Condor. 102: 256-266.

Yahner, R.H. 1988. Changes in wildlife communities near edges. Conservation Biology. 2: 333-339.

Yahner, R.H.; Mahan, C.G. 1997. Effects of logging roads on depredation of artificial ground nests in a forested landscape. Wildlife Society Bulletin. 25: 158-162.

Yates, E.D.; Levia, D.F., Jr.; Williams, C.L. 2004. Recruitment of three non-native invasive plants into a fragmented forest in southern Illinois. Forest Ecology and Management. 190: 119-130.

Yosef, R. 1994. The effects of fencelines on the reproductive success of loggerhead shrikes. Conservation Biology. 8: 281-285.

Young, A.; Mitchell, N. 1994. Microclimate and vegetation edge effects in fragmented podocarp-broadleaf forest in New Zealand. Biological Conservation. 67: 63-72.

2.11 Aquatic habitat and buffers

Albarino, R.J.; Balseiro, E.G. 2002. Leaf litter breakdown in Patagonian streams: native versus exotic trees and the effect of invertebrate size. Aquatic Conservation: Marine and Freshwater Ecosystems. 12: 181-192.

Allmendinger, N.E.; Pizzuto, J.E.; Potter, N., Jr. [an others]. 2005. The influence of riparian vegetation on stream width, eastern Pennsylvania, USA. Geological Society of America Bulletin. 117: 229-243.

Barton, D.R.; Taylor, W.D.; Biette, R.M. 1985. Dimensions of riparian buffer strips required to maintain trout habitat in southern Ontario streams. North American Journal of Fisheries Management. 5: 364-378.

Broadmeadow, S.; Nisbet, T.R. 2004. The effects of riparian forest management on the freshwater environment: a literature review of best management practices. Hydrology and Earth System Sciences. 8: 286-305.

Dong, J.; Chen, J.; Brosofske, K.D.; Naiman, R.J. 1998. Modelling air temperature gradients across managed small streams in western Washington. Journal of Environmental Management 5: 309-321.

Flebbe, P.A.; Dolloff, C.A. 1995. Trout use of woody debris and habitat in Appalachian streams of North Carolina. North American Journal of Fisheries Management. 15: 579-590.

Frimpong, E.A.; Sutton, T.M.; Lim, K.J. [and others]. 2005. Determination of optimal riparian forest buffer dimensions for stream biota-landscape association models using multimetric and multivariate responses. Canadian Journal of Fisheries and Aquatic Science. 62: 1-6.

Haberstock, A.E.; Nichols, H.G.; DesMeules, M.D. [and others]. 2000. Method to identify effective riparian buffer widths for Atlantic salmon habitat protection. Journal of the American Water Resources Association. 36: 1271-1286.

Hylander, K.; Jonsson, B.G.; Nilsson, C. 2002. Evaluating buffer strips along boreal streams using bryophytes as indicators. Ecological Applications. 12: 797-806.

Jones, E.B.D., III; Helfman, G.S.; Harper, J.O.; Bolstad. P.V. 1999. Effects of riparian forest removal on fish assemblages in southern Appalachian streams. Conservation Biology. 13: 1454-1465.

Kelly, D.J.; Bothwell, M.L.; Schindler, D.W. 2003. Effects of solar radiation on stream benthic communities: an intersite comparison. Ecology. 84: 2724-2740.

Kiffney, P.M.; Richardson, J.S.; Bull, J.P. Responses of periphyton and insects to experimental manipulation of riparian buffer width along forest streams. Journal of Applied Ecology. 40: 1060-1076.

Lee, P.; Symth, C.; Boutin, S. 2004. Quantitative review of riparian buffer width guidelines from Canada and the United States. Journal of Environmental Management. 70: 165-180.

McDade, M.H.; Swanson, F.J.; McKee, W.A. [and others]. 1990. Source distance for coarse woody debris entering small streams in western Oregon and Washington. Canadian Journal of Forest Research. 20: 326-330.

Meleason, M.A.; Gregory, S.V.; Bolte, J.P. 2003. Implications of riparian management strategies on wood in streams of the Pacific Northwest. Ecological Applications. 13: 1212-1221.

Miller, J.E.; Hess, G.R.; Moorman, C.E. 2007. Southern two-lined salamanders in urbanizing watersheds. Urban Ecosystems. 10: 73-85.

Milner, A.M.; Gloyne-Phillips, I.T. 2005. The role of riparian vegetation and woody debris in the development of macroinvertebrate assemblages in streams. River Research and Application. 21: 403-420.

Montgomery, D.R. 1997. What's best on the banks? Nature. 388: 328-329.

Muenz, T.K.; Golladay, S.W.; Vellidis, G.; Smith, L.L. 2006. Stream buffer effectiveness in an agriculturally influenced area, Southwestern Georgia: responses of water quality, macroinvertebrates, and amphibians. Journal of Environmental Quality. 35: 1924-1938.

Murphy, M.L.; Heifetz, J.; Johnson, S.W. [and others]. 1986. Effects of clear-cut logging with and without buffer strips on juvenile salmonids in Alaskan streams. Canadian Journal of Fisheries and Aquatic Science. 43: 1521-1533.

Newbold, J.D.; Erman, D.C.; Roby, K.B. 1980. Effects of logging on macroinvertebrates in streams with and without buffer strips. Canadian Journal of Fisheries and Aquatic Science. 37: 1076-1085.

Ormerod, S.J.; Rundle, S.D.; Lloyd, E.C.; Douglas, A.A. 1993. The influence of riparian management on the habitat structure and macroinvertebrate communities of upland streams draining plantation forests. Journal of Applied Ecology. 30: 13-24.

Parkyn, S.M.; Davies-Colley, R.J.; Halliday, N.J. [and others]. 2003. Planted riparian buffer zones in New Zealand: do they live up to expectations? Restoration Ecology. 11: 436-447.

Quinn, J.M.; Boothroyd, I.K.G.; Smith, B.J. 2004. Riparian buffers mitigate effects of pine plantation on logging on New Zealand streams 2. Invertebrate communities. Forest Ecology and Management. 19: 129-146.

Reid, L.M.; Hilton, S. 1998. Buffering the buffer. Gen. Tech. Rep. PSW-GTR-168. Arcata, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Redwood Sciences Laboratory. 10 p. http://www.fs.fed.us/psw/publications/documents/gtr-168/08reid.pdf. [Date accessed: September 28, 2007].

Reinhart, K.O.; VandeVoort, R. 2006. Effect of native and exotic leaf litter on macroinvertebrate communities and decomposition in western Montana stream. Diversity and Distributions. 12: 776-781.

Roth, N.E.; Allan, J.D.; Erickson, D.L. 1996. Landscape influences on stream biotic integrity assessed at multiple spatial scales. Landscape Ecology. 11: 141-156.

Roy, A.H.; Freeman, M.C.; Freeman, B.J. [and others]. 2006. Importance of riparian forest in urban catchments contingent on sediment and hydrologic regimes. Environmental Management. 37: 523-539.

Sweeney, B.W.; Bott, T.L.; Jackson, J.K. [and others]. 2004. Riparian deforestation, stream narrowing, and loss of stream ecosystem services. Proceedings of the National Academy of Science. 101: 14132-14137.

Teels, B.M.; Rewa, C.A.; Myers, J. 2006. Aquatic condition response to riparian buffer establishment. Wildlife Society Bulletin. 34: 927-935.

Vesely, D.G.; McCombs, W.C. 2002. Salamander abundance and amphibian species richness in riparian buffer strips in the Oregon Coast Range. Forest Science. 48: 291-297.

Wang, L.; Lyons, J.; Kanehl, P.; Bannerman, R. 2001. Impacts of urbanization on stream habitat and fish across multiple spatial scales. Environmental Management. 28: 255-266.

Willson, J.D.; Dorcas, M.E. 2003. Effects of habitat disturbance on stream salamanders: implications for buffer zones and watershed management. Conservation Biology. 13: 1424-1436.

Wooster, D.E.; DeBano, S.J. 2006. Effect of woody riparian patches in croplands on stream macroinvertebrates. Archive für Hydrobiologie. 165: 241-268.

2.12 Stream temperature and buffers

Anbumozhi, V.; Radhakrishnan, J.; Yamaji, E. 2005. Impact of riparian buffer zones on water quality and associated management considerations. Ecological Engineering. 24: 517-523.

Barton, D.R.; Taylor, W.D.; Biette, R.M. 1985. Dimensions of riparian buffer strips required to maintain trout habitat in southern Ontario streams. North American Journal of Fisheries Management. 5: 364-378.

Beschta, R.L. 1997. Riparian shade and stream temperature: an alternative perspective. Rangelands. 19: 25-28.

Blann, K.; Nerbonne, J.F.; Vondracek, B. 2002. Relationships of riparian buffer type to water temperature in the Driftless area ecoregion of Minnesota. North American Journal of Fisheries Management. 22: 441-451.

Brosofske, K.D.; Chen, J.; Naiman, R.J.; Franklin, J.F. 1997. Harvesting effects on microclimatic gradients from small streams to uplands in western Washington. Ecological Applications. 7: 1188-1200.

Brown, G.W. 1969. Predicting temperatures of small streams. Water Resources Research. 5: 68-75.

Brown, G.W.; Krygier, J.T. 1970. Effects of clear-cutting on stream temperatures. Water Resources Research. 6: 1133-1139.

Caissie, D. 2006. The thermal regime of rivers: a review. Freshwater Biology. 51: 1389-1406.

Chen, J.; Saunders, S.C.; Crow, T.R. [and others]. 1999. Microclimate in forest ecosystem and landscape ecology. BioScience. 49: 299-297.

Davies-Colley, R.J.; Payne, G.W.; van Elswijk, M. 2000. Microclimate gradients across a forest edge. New Zealand Journal of Ecology. 24: 111-121.

Davies, P.; Cook, D.; Rutherford, K.; Walshe, T. 2004. Managing high in-stream temperatures using riparian vegetation. River and Riparian Land Management Technical Guideline No. 5. Canberra, Australia: Land and Water Australia. 24 p.

Dignan, P.; Bren. L. 2003. Modelling light penetration edge effects for stream buffer design in mountain ash forest in southeastern Australia. Forest Ecology and Management. 179: 95-106.

Feller, M.C. 1981. Effects of clearcutting and slashburning on stream temperature in southwestern British Columbia. Water Resources Bulletin. 17: 863-867.

Greene, G.E. 1950. Land use and trout streams. Journal of Soil and Water Conservation. 5: 125-126.

Hewlett, J.D.; Fortson, J.C. 1982. Stream temperature under an inadequate buffer strip in the southeast piedmont. Water Resources Bulletin. 18: 983-988.

Johnson, S.L.; Jones, J.A. 2000. Stream temperature responses to forest harvest and debris flows in western Cascades, Oregon. Canadian Journal of Fisheries and Aquatic Sciences. 57 (supplement 2): 30-39.

Karr, J.R.; Schlosser, I.J. 1978. Water resources and the land-water interface. Science. 201: 229-234.

Larson, L.L.; Larson, S.L. 1996. Riparian shade and stream temperature: a perspective. Rangelands. 18: 149-152.

Macdonald, J.S.; MacIsaac, E.A.; Herunter, H.E. 2003. The effect of variable-retention riparian buffer zones on water temperatures in small headwater streams in sub-boreal forest ecosystems of British Columbia. Canadian Journal of Forest Research. 33: 1371-1382.

Mitchell, S. 1999. A simple model for estimating mean monthly stream temperatures after riparian canopy removal. Environmental Management. 24: 77-83.

Moore, R.D.; Spittlehouse, D.L.; Story, A. 2005. Riparian microclimate and stream temperature response to forest harvesting: a review. Journal of the American Water Resources Association. 41: 813-834.

O'Laughlin, J.; Belt, G.H. 1995. Functional approaches to riparian buffer strip design. Journal of Forestry. 93: 29-32.

Osborne, L.L.; Kovacic, D.A. 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. Freshwater Biology. 29: 243-258.

Parkyn, S.M.; Davies-Colley, R.J.; Halliday, N.J. [and others]. 2003. Planted riparian buffer zones in New Zealand: do they live up to expectations? Restoration Ecology. 11: 436-447.

Quigley, T.M. 1981. Estimating contribution of overstory vegetation to stream surface shade. Wildlife Society Bulletin. 9: 22-27.

Rishel, G.B.; Lynch, J.A.; Corbett, E.S. 1982. Seasonal stream temperature changes following forest harvesting. Journal of Environmental Quality. 11: 112-116.

Saunders, S.C.; Chen, J.; Crow, T.R.; Brosofske, K.D. 1998. Hierarchical relationships between landscape structure and temperature in a managed forest landscape. Landscape Ecology. 13: 381-395.

Sridhar, V.; Sansone, A.L.; LaMarche, J. [and others]. 2004. Prediction of stream temperature in forested watersheds. Journal of American Water Resources Association. 40: 197-213.

Webb, B.W.; Crisp. D.T. 2006. Afforestation and stream temperature in a temperate maritime environment. Hydrological Processes. 20: 51-66.

Wilkerson, E.; Hagan, J.M.; Siegel, D.; Whitman, A.A. 2006. The effectiveness of different buffer widths for protecting headwater stream temperatures in Maine. Forest Science. 52: 221-231.

Zwieniecki, M.A.; Newton, M. 1999. Influence of streamside cover and stream features on temperature trends in forested streams of western Oregon. Western Journal of Applied Forestry. 14: 106-113.

2.13 Roads and wildlife crossings

Aresco, M.J. 2005. Mitigation measures to reduce highway mortality of turtles and other herpetofauna at a north Florida lake. Journal of Wildlife Management. 69: 549-560.

Ascensão, F.; Mira, A. 2007. Factors affecting culvert use by vertebrates along two stretches of road in southern Portugal. Ecological Research. 22: 57-66.

Ashley, E.P.; Robinson, J.T. 1996. Road mortality of amphibians, reptiles, and other wildlife on the Long Point Causeway, Lake Erie, Ontario. Canadian Field Naturalist. 110: 403-412.

Cavallaro, L.; Sanden, K.; Schellhase, J.; Tanaka, M. 2005. Designing road crossings for safe wildlife passage: Ventura county guidelines. Santa Barbara, CA: University of California. 90 p. M.S. thesis. http://www.bren.ucsb.edu/research/documents/corridors final.pdf [Date accessed July 19, 2007].

Clevenger, A.P.; Chruszcz, B.; Gunson, K. 2001. Drainage culverts as habitat linkages and factors affecting passage by animals. Journal of Applied Ecology. 38: 1340-1349.

Clevenger, A.P.; Waltho, N. 2000. Factors influencing the effectiveness of wildlife underpasses in Banff National Park, Alberta, Canada. Conservation Biology. 14: 47-56.

Clevenger, A.P.; Waltho, N. 2005. Permformance indices to identify attributes of highway crossing structures facilitating movement of large mammals. Biological Conservation. 121: 453-464.

Clevenger, A.P.; Wierzchowski, K. 2006. Maintaining and restoring connectivity in landscapes fragmented by roads. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 502-535.

Dodd, C.K., Jr.; Barichivich, W.J.; Smith, L.L. 2004. Effectiveness of a barrier wall and culverts in reducing wildlife mortality on a heavily traveled highway in Florida. Biological Conservation. 118: 619-631.

Foster, M.L.; Humphrey, S.R. 1995. Use of highway underpasses by Florida panthers and other wildlife. Wildlife Society Bulletin. 23: 95-100.

Hunt, A.; Dickens, H.J.; Whelan, R.J. 1987. Movement of mammals through tunnels under railway lines. Australian Zoologist. 24: 89-93.

Jackson, S.D.; Griffin, C.R. 2000. A strategy for mitigating highway impacts on wildlife. In: Messmer, T.A.; West, B., eds. Wildlife and highways: seeking solutions to an ecological and socio-economic dilemma. Washington, DC: The Wildlife Society:143-159.

Jaeger, J.A.; Fahrig, L. 2004. Effects of road fencing on population persistence. Conservation Biology. 18: 1651-1657.

Lesbarreres, D.; Lode, T.; Merila, J. 2004. What type of amphibian tunnel could reduce road kills? Oryx. 38: 220-223.

Little, S.J.; Harcourt, R.G.; Clevenger, A.P. 2002. Do wildlife passages act as prey-traps? Biological Conservation. 107: 135-145.

Mader, H.J. 1984. Animal habitat isolation by roads and agricultural fields. Biological Conservation. 29: 81-96.

Mazerolle, M.J. 2004. Drainage ditches facilitate frog movements in a hostile landscape. Landscape Ecology 20: 579-590.

McDonald, W.; St. Clair, C.C. 2004. Elements that promote highway crossing structure use by small mammals in Banff National Park. Journal of Applied Ecology. 41: 82-93.

McDonald, W.; St. Clair, C.C. 2004. The effects of artificial and natural barriers on the movement of small mammals in Banff National Park, Canada. Oikos. 105: 397-407.

Ng, S.J.; Dole, J.W.; Sauvajot, S.; Riley, S.P.D.; Valone, T.J. 2004. Use of highway undercrossings by wildlife in southern California. Biological Conservation. 115: 499-507.

Reed, D.F.; Woodard, T.W.; Pojar, T.M. 1975. Behavioral response of mule deer to a highway underpass. Journal of Wildlife Management. 39: 361-367.

Rodriguez, A.; Crema, G.; Delibes, M. 1996. Use of non-wildlife passages across a high speed railway by terrestrial vertebrates. Journal of Applied Ecology. 33: 1527-1540.

Taylor, B.D.; Goldingay, R.L. 2003. Cutting the carnage: wildlife usage of road culverts in north-eastern New South Wales. Wildlife Research. 30: 529-537.

Trombulak, S.C.; Frissell, C.A. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology. 14: 18-30.

Yanes, M.; Velasco, J.M.; Suarez, F. 1995. Permeability of roads and railways to vertebrates: the importance of culverts. Biological Conservation. 71: 217-222.

2.14 Roadside corridors

Berger, R.L. 2005. Integrated roadside vegetation management. NCHRP Synthesis 341. Washington, DC: Transportation Research Board. 62 p.

Bergin, T.M.; Best, L.B.; Freemark, K.E. 1997. An experimental study of nest predation on artificial nests in roadsides adjacent to agricultural habitats in Iowa. Wilson Bulletin. 109: 437-448.

Bergin, T.M.; Best, L.B.; Freemark, K.E.; Koehler, K.J. 2000. Effects of landscape structure on nest predation in roadsides on nest predation in roadsides of a Midwestern agroecosystem: a multiscale analysis. Landscape Ecology. 15: 131-143.

Best, L.B.; Freemark, K.E.; Dinsmore, J.J.; Camp, M. 1995. A review and synthesis of habitat use by breeding birds in agricultural landscapes. American Midland Naturalist. 134: 1-29.

Bolger, D.T., Scott, T.A.; Rotenberry, J.T. 2001. Use of corridor-like landscape structures by bird and small mammal species. Biological Conservation. 102: 213-224.

Brown, G.P.; Phillips, B.L.; Webb, K.K.; Shine, R. 2006. Toad on the road: use of roads as dispersal corridors by cane toads (*Bufo marinus*) at an invasion front in tropical Australia. Biological Conservation. 133: 88-94.

Bryan, G.C.; Best, L.B. 1991. Bird abundance and species richness in grassed waterways in Iowa rowcrop fields. American Midland Naturalist. 126: 90-102.

Bryan, G.C.; Best, L.B. 1994. Avian nest density and success in grassed waterways in Iowa rowcrop fields. Wildlife Society Bulletin. 22: 583-592.

Camp, M.; Best, L.B. 1993. Bird abundance and species richness in roadsides adjacent to Iowa rowcrop fields. Wildlife Society Bulletin. 21: 315-325.

Camp, M.; Best, L.B. 1994. Nest density and nesting success of birds in roadsides adjacent to rowcrop fields. American Midland Naturalist. 131: 347-358.

Carroll, J.P.; Crawford, R.D. 1991. Roadside nesting by gray partridge in north-central North Dakota. Wildlife Society Bulletin. 19: 286-291.

Forman, R.T.T.; Sperling, D.; Bissonette, J.A. [and others]. 2003. Roadside Ecology. Covelo, CA: Island Press. 424 p.

Forman, R.T.T.; Alexander, L.E. 1998. Roads and their major ecological effects. Annual Review of Ecological Systems. 29: 207-231.

Gelbard, J.L.; Belnap, J. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. Conservation Biology. 17: 420-432.

Hansen, M.J.; Clevenger, A.P. 2005. The influence of disturbance and habitat on the presence of non-native plant species along transport corridors. Biological Conservation. 125: 249-259.

Harper-Lore, B.; Wilson, M. 2000. Roadside Use of Native Plants. Covelo, CA: Island Press. 665 p.

Herkert, J.R.; Sample, D.W.; Warner, R.W. 1996. Management of Midwestern grassland landscapes for the conservation of migratory birds. In: Management of agricultural landscapes for the conservation of neotropical migratory birds. Gen. Tech. Rep. NC – 187. St. Paul, MN: Department of Agriculture. Forest Service, North Central Forest Experiment Station: 89-116.

Horn, D.J.; Koford, R.K. 2000. Relation of grassland bird abundance to mowing of Conservation Reserve Program fields in North Dakota. Wildlife Society Bulletin. 28: 653-659.

Lonsdale, W.M.; Lane, A.M. 1994. Tourist vehicles as vectors of weed seeds in Kakadu National Park, Northern Australia. Biological Conservation. 69: 277-283.

Mauritzen, M.; Bergers, P.J.M.; Andreassen, H.P. [and others]. 1999. Root vole movement patterns: do ditches function as habitat corridors? Journal of Applied Ecology. 36: 409-421.

Mazerolle, M.J. 2004. Drainage ditches facilitate frog movements in a hostile landscape. Landscape Ecology. 20: 579-590.

Meunier, F.D.; Corbin, J.; Verheyden, C.; Jouventin, P. 1999. Effects of landscape type and extensive management on use of mortorway roadsides by small mammals. Canadian Journal of Zoology. 77: 108-117.

Meunier, F.D.; Verheyden, C.; Jouventin, P. 1999. Bird communities of highway verges: influence of adjacent habitat and roadside management. Acta Oecologica. 20: 1-13.

Meunier, F.D.; Verheyden, C.; Jouventin, P. 2000. Use of roadsides by diurnal raptors in agricultural landscapes. Biological Conservation. 92: 291-298.

Morrison, D.G. 1981. Use of prairie vegetation on disturbed sites. Transportation Research Record. 822: 10-17.

Munguira, M.L.; Thomas, J.A. 1992. Use of road verges by butterfly and burnet populations, and the effect of roads on adult dispersal and mortality. Journal of Applied Ecology. 29: 316-329.

Panzer, R. 2002. Compatibility of prescribed burning with the conservation of inscets in small, isolated prairie reserves. Conservation Biology. 16: 1296-1307.

Parendes, L.A.; Jones, J.A. 2000. Role of light availability and dispersal in exotic plant invasion along roads and streams in the H.J. Andrews Experimental Forest, Oregon. Conservation Biology. 14: 64-75.

Parr, T.W.; Way, J.M. 1988. Management of roadside vegetation: the long-term effects of cutting. Journal of Applied Ecology. 25: 1073-1087.

Pirnat, J. 2000. Conservation and management of forest patches and corridors in suburban landscapes. Landscape and Urban Planning. 52: 135-143.

Reijnen, R.; Foppen, R.; Veenbaas, G. 1997. Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. Biodiversity and Conservation. 6: 567-581.

Ries, L.; Debinski, D.M.; Wieland, M.L. 2001. Conservation value of roadside prairie restoration to butterfly communities. Conservation Biology. 15: 401-411.

Schippers, P.; Joenje, W. 2002. Modeling the effect of fertilizer, mowing, disturbance and width on biodiversity of plant communities of field boundaries. Agriculture, Ecosystems and Environment. 93: 351-365.

Shochat, E.; Wolfe, E.H.; Patten, M.A. [and others]. 2005. Tallgrass prairie management and bird nest success along roadsides. Biological Conservation. 121: 399-407.

Swengel, A.B. 1996. Effects of fire and hay management on abundance of prairie butterflies. Biological Conservation. 76: 73-85.

Tikka, P.M.; Hogmander, H.; Koski, R. 2001. Road and railway verges serve as dispersal corridors for grassland plants. Landscape Ecology. 16: 659-666.

Trombulak, S.C.; Frissell, C.A. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology. 14: 18-30.

Tyser, R.W.; Worley, C.A. 1992. Alien flora in grasslands adjacent to road and trail corridors in Glacier National Park, Montana (USA). Conservation Biology. 6: 253-262.

Varchola, J.M.; Dunn, J.P. 1999. Changes in ground beetle assemblages in farming systems bordered by complex or simple roadside vegetation. Agriculture, Ecosystems and Environment. 73: 41-49.

Viles, R.L.; Rosier, D.J. 2001. How to use roads in the creation of greenways: case studies in three New Zealand landscapes. Landscape and Urban Planning. 55: 15-27.

Voorhees, L.D.; Cassel, J.F. 1980. Highway right-of-way: mowing versus succession as related to duck nesting. Journal of Wildlife Management. 44: 155-163.

Warner, R.E.; Joselyn, G.B. 1986. Responses of Illinois ring-neck pheasant populations to block roadside management. Journal of Wildlife Management. 50: 525-532.

Way, J.M. 1977. Roadside verges and conservation in Britain: a review. Biological Conservation. 12: 65-74.

Wilcox, D.A. 1989. Migration and control of purple loosestrife (*Lythrum salicaria*) along highway corridors. Environmental Management. 13: 365-370.

Wilson, S.D. 1989. The suppression of native prairie by alien species introduced for revegetation. Landscape and Urban Planning. 17: 113-119.

3.0 Stable and Productive Soils

3.1 Buffers and cropland management

Balesdent, J; Chenu, C.; Balabane, M. 2000. Relationship of soil organic matter dynamics to physical protection and tillage. Soil and Tillage Research. 53: 215-230.

Bradford, J.M.; Huang, C. 1987. Interrill soil erosion as affected by tillage and residue cover. Soil and Tillage Research. 31: 353-361.

Chow, T.L.; Rees, H.W.; Daigle, J.L. 1999. Effectiveness of terraces/grassed waterway systems for soil and water conservation: A field evaluation. Journal of Soil and Water Conservation. 54: 577-583.

Forman, R.T.T.; Buadry, J. 1984. Hedgerows and hedgerow networks in landscape ecology. Environmental Management. 8: 495-510.

Holland, J.M. 2004. The environmental consequences of adopting conservation tillage in Europe: reviewing the evidence. Agriculture, Ecosystems and Environment. 103: 1-25.

House, G.J.; Brust, G.E. 1989. Ecology of low input, no-tillage agroecosystems. Agriculture, Ecosystems and Environment. 27: 331-345.

Jørgensen, S.E.; Nielsen, S.N. 1996. Application of ecological engineering principles in agriculture. Ecological Engineering. 7: 373-381.

Kay, B.D.; VandenBygaart, A.J. 2002. Conservation tillage and depth stratification of porosity and soil organic matter. Soil and Tillage Research. 66: 107-118.

Langdale, G.W.; Barnett, A.P.; Leonard, R.A.; Fleming, W.G. 1979. Reduction of soil erosion by the no-till system in the southern piedmont. Transactions of the American Society of Agricultural Engineers. 22: 82-86.

Liebig, M.A.; Tanaka, D.L.; Wienhold, B.J. 2004. Tillage and cropping effects on soil quality indicators in the northern Great Plains. Soil and Tillage Research. 78: 131-141.

Mwendera, E.J.; Feyen, J. 1994. Effects of tillage and rainfall on soil surface roughness and properties. Soil Technology. 7: 93-103.

Prato, T.; Shi, H-Q.; Rhew, R.; Brusven, M. 1989. Soil erosion and nonpoint-source pollution control in a Idaho watershed. Journal of Soil and Water Conservation. 44: 323-328.

Shipitalo, M.J.; Dick, W.A.; Edwards, W.M. 2000. Conservation tillage and macropore factors that affect water movement and fate of chemicals. Soil and Tillage Research. 53: 167-183.

Van Doren, C.A.; Stauffer, R.S.; Kidder, E.H. 1950. Effect of contour farming on soil loss and runoff. Soil Science Society of American Proceedings. 15: 413–417.

3.2 Windbreaks for wind erosion control

Bouvet, T.; Loubet, B.; Wilson, J.D.; Tuzet, A. 2007. Filtering of windborne particles by a natural windbreak. Boundary-Layer Meteorology. 123: 481-509.

Brandle, J.R.; Hodges, L.; Zhou, X.H. 2004. Windbreaks in North American agricultural systems. Agroforestry Systems. 61: 65-78.

Brandle, J.R; Johnson, B.B.; Akeson, T. 1992. Field windbreaks: are they economical? Journal of Production Agriculture. 5: 393-398.

Cornelis, W.M.; Gabriels, D. 2005. Optimal windbreak design for wind-erosion control. Journal of Arid Environments. 61: 315-332.

De Jong, E.; Kowalchuk, T.E. 1995. The effect of shelterbelts on erosion and soil properties. Soil Science. 159: 337-345.

Forman, R.T.T.; Buadry, J. 1984. Hedgerows and hedgerow networks in landscape ecology. Environmental Management. 8: 495-510.

Heisler, G.M.; DeWalle, D.R. 1988. Effects of windbreak structure on wind flow. Agriculture, Ecosystems and Environment. 22/23: 41-69.

Helmers, G.; Brandle, J.R. 2005. Optimum windbreak spacing in Great Plains agriculture. Great Plains Research. 15: 179-198.

Loeffler, A.E.; Gordon, A.M.; Gillespie, T.J. Optical porosity and windspeed reduction by coniferous windbreaks in southern Ontario. Agroforestry System. 17: 119-133.

Lyles, L. 1988. Basic wind erosion processes. Agriculture, Ecosystems and Environment. 22/23: 91-101.

McConkey, D.G.; Dyck, F.B. 1996. Summerfallow oilseed barrier strips for wind erosion control: influences on the subsequent crop. Canadian Journal of Plant Sciences. 76: 675-682.

Raupach, M.R.; Woods, N.; Dorr, G. [and others]. 2001. The entrapment of particles by windbreaks. Atmospheric Environment. 35: 3373-3383.

Scholten, H. 1988. Snow distribution on crop fields. Agriculture, Ecosystems and Environment. 22/23: 363-380.

Tibke, G. 1988. Basic principles of wind erosion control. Agriculture, Ecosystems and Environment. 22/23: 103-122.

Ticknor, K.A. 1988. Design and use of field windbreaks in wind erosion control systems. Agriculture, Ecosystems and Environment. 22/23: 123-132.

Wang, H.; Takle, E.S. 1996. On shelter efficiency of shelterbelts in oblique wind. Agricultural and Forest Meteorology. 81: 95-117.

Wilson, J.D. 2005. Deposition of particles to a thin windbreak: the effect of a gap. Atmospheric Environment. 39: 5525-5531.

Zhou, X.H.; Brandle, J.R.; Mize, C.W.; Takle, E.S. 2004. Three-dimensional aerodynamic structure of a tree shelterbelt: definition, characterization and working models. Agroforestry Systems. 63: 133-147.

3.3 Herbaceous wind barriers

Aase, J.K.; Siddoway, F.H. 1976. Influence of tall wheatgrass wind barriers on soil drying. Agronomy Journal. 68: 627-631.

Aase, J.K.; Siddoway, F.H.; Black, A.L. 1985. Effectiveness of grass barriers for reducing wind erosiveness. Journal of Soil and Water Conservation. 40: 354-357.

Black, A.L.; Aase, J.K. 1988. The use of perennial herbaceous barriers for water conservation and the protection of soils and crops. Agriculture, Ecosystems and Environment. 22/23: 135-148.

Boldes, U.; Colman, J. Maranon Di Leo, J. 2001. Field study of the flow behind single and double row herbaceous windbreaks. Journal of Wind Engineering and Industrial Aerodynamics. 89: 665-687.

Brandle, J.R.; Hodges, L.; Zhou, X.H. 2004. Windbreaks in North American agricultural systems. Agroforestry Systems. 61: 65-78.

Brandle, J.R; Johnson, B.B.; Akeson, T. 1992. Field windbreaks: are they economical? Journal of Production Agriculture. 5: 393-398.

Cornelis, W.M.; Gabriels, D. 2005. Optimal windbreak design for wind-erosion control. Journal of Arid Environments. 61: 315-332.

De Jong, E.; Kowalchuk, T.E. 1995. The effect of shelterbelts on erosion and soil properties. Soil Science. 159: 337-345.

Forman, R.T.T.; Buadry, J. 1984. Hedgerows and hedgerow networks in landscape ecology. Environmental Management. 8: 495-510.

Helmers, G.; Brandle, J.R. 2005. Optimum windbreak spacing in Great Plains agriculture. Great Plains Research. 15: 179-198.

Heisler, G.M.; DeWalle, D.R. 1988. Effects of windbreak structure on wind flow. Agriculture, Ecosystems and Environment. 22/23: 41-69.

Lyles, L. 1988. Basic wind erosion processes. Agriculture, Ecosystems and Environment. 22/23: 91-101.

McConkey, D.G.; Dyck, F.B. 1996. Summerfallow oilseed barrier strips for wind erosion control: influences on the subsequent crop. Canadian Journal of Plant Sciences. 76: 675-682.

Raupach, M.R.; Woods, N.; Dorr, G. [and others]. 2001. The entrapment of particles by windbreaks. Atmospheric Environment. 35: 3373-3383.

Scholten, H. 1988. Snow distribution on crop fields. Agriculture, Ecosystems and Environment. 22/23: 363-380.

Tibke, G. 1988. Basic principles of wind erosion control. Agriculture, Ecosystems and Environment. 22/23: 103-122.

Ticknor, K.A. 1988. Design and use of field windbreaks in wind erosion control systems. Agriculture, Ecosystems and Environment. 22/23: 123-132.

Wang, H.; Takle, E.S. 1996. On shelter efficiency of shelterbelts in oblique wind. Agricultural and Forest Meteorology. 81: 95-117.

Wilson, J.D. 2005. Deposition of particles to a thin windbreak: the effect of a gap. Atmospheric Environment. 39: 5525-5531.

3.4 Grassed waterways

Chow, T.L.; Rees, H.W.; Daigle, J.L. 1999. Effectiveness of terraces/grassed waterway systems for soil and water conservation: A field evaluation. Journal of Soil and Water Conservation. 54: 577-583.

Corolo, F.G.; Ferro, V.; Termini, D. 2002. Flow velocity measurements in vegetated channels. Journal of Hydraulic Engineering. 128: 664-673.

Dabney, S.M.; Moore, M.T.; Locke, M.A. 2006. Integrated management of in-field, edge-of-field, and after-field buffers. Journal of American Water Resources Association. 42: 15-24.

Fiener, P.; Auerswald, K. 2003. Effectiveness of grassed waterways in reducing runoff and sediment delivery from agricultural watersheds. Journal of Environmental Quality. 32: 927-936.

Fiener, P.; Auerswald, K. 2003. Concept and effects of a multi-purpose grassed waterway. Soil Use and Management. 19: 65-72.

Fiener, P.; Auerswald, K. 2005. Measurement and modeling of concentrated runoff in grassed waterways. Journal of Hydrology. 301: 198-215.

Gwinn, W.R.; Ree, W.O. 1980. Maintenance effects on the hydraulic properties of a vegetation lined channel. Paper Number 79-2063. St. Joseph, MI: American Society of Agricultural Engineers.

Samani, J.M.V.; Kouwen, N. 2002. Stability and erosion in grassed channels. Journal of Hydraulic Engineering. 128: 40-45.

Temple, D.M. 1982. Flow retardance of submerged grass channel linings. Transactions of the American Society of Agricultural Engineers. 25: 1300-1303.

Temple, D.M. 1985. Stability of grass-lined channels following mowing. Transactions of the American Society of Agricultural Engineers. 28: 750-754.

Temple, D.M. 1999. Flow resistance of grass-lined channel banks. Applied Engineering in Agriculture. 15: 129-133.

Temple, D.M.; Robinson, K.M.; Ahring, R.M.; Davis, A.G. 1987. Stability design of grass-lined open channels. Agriculture Handbook 667. Washington, DC: U.S. Department Of Agriculture, Agricultural Research Service. 175 p. http://www.info.usda.gov/CED/ftp/CED/AH-667.pdf [Date accessed: October 19, 2007].

3.5 Phytoremediation buffers

Aprill, W.; Sims, R.C. 1990. Evaluation of the use of prairie grasses for stimulating polycyclic aromatic hydrocarbon treatment in soil. Chemosphere. 20: 253-265.

Burken, J.G.; Schnoor, J.L. 1997. Uptake and metabolism of atrazine by poplar trees. Environmental Science and Technology. 31: 1399-1406.

Davis, L.C.; Castro-Diaz, S.; Zhang, Q.; Erickson, L.E. 2002. Benefits of vegetation for soils with organic contaminants. Critical Reviews in Plant Sciences. 21: 457-491.

Dickinson, N.M. 2000. Strategies for sustainable woodland on contaminated sites. Chemosphere. 41: 259-263.

Dickinson, N.M.; MacKay, J.M.; Goodman, J.M.; Putwain, P.D. 2000. Planting trees on contaminated soils: issues and guidelines. Land Contamination and Reclamation. 8: 87-102.

French, C.J.; Dickinson, N.M.; Putwain, P.D. 2006. Woody biomass phytoremediation of contaminated brownfield land. Environmental Pollution. 141: 387-395.

Glick, B.R. 2003. Phytoremediation: synergistic use of plants and bacteria to clean up the environment. Biotechnology Advances. 21: 383-393.

Kuzovkina, Y.A.; Quigley, M.F. 2005. Willows beyond wetlands: uses of *Salix* L. species for environmental projects. Water, Air, and Soil Pollution. 162: 183-204.

Licht, L.A.; Isebrands, J.G. 2005. Linking phytoremediated pollutant removal to biomass economic opportunities. Biomass and Bioenergy. 28: 203-218.

Pilon-Smits, E. 2005. Phytoremediation. Annual Review of Plant Biology. 56: 15-39.

Prasad, M.N.V. 2003. Phytoremediation of metal-polluted ecosystems: hype for commercialization. Russian Journal of Plant Physiology. 50: 686-700.

Pulford, I.D.; Watson, C. 2003. Phytoremediation of heavy metal-contaminated land by trees – a review. Environment International. 29: 529-540.

Raskin, I.; Ensley, B.D. 2000. Phytoremediation of toxic metals: using plants to clean up the environment. New York: John Wiley and Sons. 304 p.

Rockwood, D.L.; Naidu, C.V.; Carter, D.R. [and others]. 2004. Short-rotation woody crops and phytoremediation: opportunities for agroforestry? Agroforestry Systems. 61: 51-63.

Susarala, S.; Medina, V.F.; McCutcheon, S.C. 2002. Phytoremediation: an ecological solution to organic chemical contamination. Ecological Engineering. 18: 647-658.

USEPA. 2000. Introduction to phytoremediation. Pub. No. 600/R-99/107. Cincinnati, OH: U.S. Environmental Protection Agency. 104 p. <u>http://www.cluin.org/download/remed/introphyto.pdf</u>. [Date accessed: September 28, 2007].

Volk, T.A.; Abrahamson, L.P.; Nowak, C.A. [and others]. 2006. The development of short-rotation willow in the northeastern United States for bioenergy and bioproducts, agroforestry and phytoremediation. Biomass and Bioenergy. 30: 715-727.

Westphal, L.M.; Isebrands, J.G. 2001. Phytoremediation of Chicago's brownfields – considerations of ecological approaches and social issues. Chicago: Brownfields 2001 proceedings Brownfields. 9 p. <u>http://ncrs.fs.fed.us/pubs/jrnl/2001/nc_2001_Westphal_001.pdf</u>. [Date accessed: September 28, 2007].

4.0 Alternative Income

4.1 Buffers and ecosystem services

Benedict, M.A.; and McMahon, E.T. 2006. Green infrastructure: linking landscapes and communities. Washington, DC: Island Press. 320 p.

Bergen, S.D.; Bolton, S.M.; Fridley, J.L. 2001. Design principles for ecological engineering. Ecological Engineering. 18: 201-210.

Cable. T.T.; Cook, P.S. 1990. The use of windbreaks by hunters in Kansas. Journal of Soil and Water Conservation. 45: 574-577.

Cook, P.S.; Cable, T.T. 1990. The economic value of windbreaks for hunting. Wildlife Society Bulletin. 18: 337-342.

Fausold, C.H.; Lilieholm, R.J. 1999. The economic value of open space: a review and synthesis. Environmental Management. 23: 307-320.

Graham, D.W.; Smith, V.H. 2004. Designed ecosystem services: application of ecological principles in wastewater treatment engineering. Frontiers in Ecology and the Environment. 2: 199-206.

Hill, D.B.; Buck, L.W. 2000. Forest farming practices. In: Garrett, H.E.; Rietveld, W.J.; Fisher, R.F. North American agroforestry: an integrated science and practice. Madison, WI: American Society of Agronomy: 283-320.

Jørgensen, S.E.; Nielsen, S.N. 1996. Application of ecological engineering principles in agriculture. Ecological Engineering. 7: 373-381.

Josiah, S.J.; St-Pierre, R.; Brott, H.; Brandle, J. 2004. Productive conservation: diversifying farm enterprises by producing specialty woody products in agroforestry systems. Journal of Sustainable Agriculture. 23: 93-108.

Mitsch, W.J. 1992. Landscape design and the role of created, restored, and natural riparian wetlands in controlling nonpoint source pollution. Ecological Engineering. 1: 27-47.

Nowak, D.J. 1994. Air pollution removal by Chicago's urban forest. In: McPherson, E.G.; Nowak, D.J.; Rowntree, R.A., eds. Chicago's urban forest ecosystem: results of the Chicago Urban Forest Climate Project. Gen. Tech. Rep. NE-186. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 63-81.

Robles-Diaz-de-Leon, L.F.; Kangas, P. 1999. Evaluation of potential gross income from non-timber products in a model riparian forest for the Chesapeake Bay watershed. Agroforestry Systems. 44: 215-225.

4.2 Carbon sequestration

Coleman, M.D.; Isebrands, J.G.; Tolsted, D.N.; Tolbert, V.R. 2004. Comparing soil carbon of short rotation poplar plantations with agricultural crops and woodlots in north central United States. Environmental Management. 33: s229-s308.

Corre, M.D.; Schnabel, R.R.; Shaffer, J.A. 1999. Evaluation of soil organic carbon under forests, cool-season and warmseason grasses in northeastern US. Soil Biology and Biochemistry. 31: 1531-1539.

Dixon, R.K. 1995. Agroforestry systems: sources or sinks of greenhouse gases? Agroforestry Systems. 31: 99-116.

Kirschbaum, M.U.F. 2003. Can trees buy time? An assessment of the role of vegetation sinks as part of the global carbon cycle. Climatic Change. 58: 47-71.

Kort, J.; Turnock, R. 1999. Carbon reservoir and biomass in Canadian prairie shelterbelts. Agroforestry Systems. 44: 175-186.

Kursten, E.; Burschel, P. 1993. C02-mitigation by agroforestry. Water, Air, and Soil Pollution. 70: 533-544.

Marquez, C.O.; Cambardella, C.A.; Isenhart, T.M.; Schultz, R.C. 1999. Assessing soil quality in a riparian buffer by testing organic matter fractions in central Iowa, USA. Agroforestry Systems. 44: 133-140.

McCarty, G.W.; Richie, J.C. 2002. Impact of soil movement on carbon sequestration in agricultural ecosystems. Environmental Pollution. 116: 423-430.

McHale, M.R.; McPherson, E.G.; Burke, I.C. 2007. The potential of urban tree plantings to be cost effective in carbon credit markets. Urban Forestry and Urban Greening. 6: 49-60.

Montagnini, F.; Nair, P.K. 2004. Carbon sequestration: an underexploited environmental benefit of agroforestry systems. Agroforestry Systems. 61: 281-295.

Nowak, D.J. 1993. Atmospheric carbon reduction by urban trees. Journal of Environmental Management. 37: 207-217.

Nowak, D.J.; Crane, D.E. 2002. Carbon storage and sequestration by urban trees in the USA. Environmental Pollution. 116: 381-389.

Paul, K.I.; Polglase, P.J.; Nyakuengama, J.G.; Khanna, P.K. 2002. Changes in soil carbon following afforestation. Forest Ecology and Management. 168: 241-257.

Peichl, M.; Thevathasan, N.V.; Gordon, A.M. [and others]. 2006. Carbon sequestration potentials in temperate tree-based intercropping systems, southern Ontario, Canada. Agroforestry Systems. 66: 243-257.

Sauer, T.J.; Cambardella, C.A. Brandle, J.R. 2007. Soil carbon an tree litter dynamics in a red cedar-scotch pine shelterbelt. Agroforestry Systems. 71: 163-174.

Schroeder, P. 1994. Carbon storage benefits of agroforestry systems. Agroforestry Systems. 27: 89-97.

Sharrow, S.H.; Ismail, S. 2004. Carbon and nitrogen storage in agroforests, tree plantations, and pastures in western Oregon, USA. Agroforestry Systems. 60: 123-130.

Tufekcioglu, A.; Raich, J.W.; Isenhart, T.M.; Schultz, R.C. 2001. Soil respiration within riparian buffers and adjacent crop fields. Plant and Soil. 229: 117-124.

Tufekcioglu, A.; Raich, J.W.; Isenhart, T.M.; Schultz, R.C. 2003. Biomass, carbon, and nitrogen dynamics of multi-species riparian buffers within an agricultural watershed in Iowa, USA. Agroforestry Systems. 57: 187-198.

Uri, N.D. 2001. Conservation practices in U.S. agriculture and their impact on carbon sequestration. Environmental Monitoring and Assessment. 70: 323-344.

Wright, L.L.; Hughes, E.E. 1993. U.S. carbon offset potential using biomass energy systems. Water, Air, and Soil Pollution. 70: 483-497.

4.3 Multi-story cropping in buffers

Hill, D.B.; Buck, L.W. 2000. Forest farming practices. In: Garrett, H.E.; Rietveld, W.J.; Fisher, R.F. North American agroforestry: an integrated science and practice. Madison, WI: American Society of Agronomy: 283-320.

Josiah, S.J.; St-Pierre, R.; Brott, H.; Brandle, J. 2004. Productive conservation: diversifying farm enterprises by producing specialty woody products in agroforestry systems. Journal of Sustainable Agriculture. 23: 93-108.

Robles-Diaz-de-Leon, L.F.; Kangas, P. 1999. Evaluation of potential gross income from non-timber products in a model riparian forest for the Chesapeake Bay watershed. Agroforestry Systems. 44: 215-225.

Wiersum, K.F. 2004. Forest gardens as an `intermediate' land-use system in the nature-culture continuum: characteristics and future potential. Agroforestry Systems. 61/62: 123-134.

4.4 Windbreaks and crop yields

Baldwin, C.S. 1988. The influence of field windbreaks on vegetable and specialty crops. Agriculture, Ecosystems and Environment. 22/23: 191-203.

Brandle, J.R.; Hodges, L.; Zhou, X.H. 2004. Windbreaks in North American agricultural systems. Agroforestry Systems. 61: 65-78.

Brandle, J.R.; Johnson, B.B.; Akeson, T. 1992. Field windbreaks: are they economical? Journal of Production Agriculture. 5: 393-398.

Cleugh, H.A. 1998. Effects of windbreaks on airflow, microclimates and crop yields. Agroforestry Systems. 41: 55-84.

Finch, S.J. 1988. Field windbreak: design criteria. Agriculture, Ecosystems and Environment. 22/23: 215-228.

Grala, R.K.; Colletti, J.P. 2003. Estimates of additional maize yields required to offset costs of tree-windbreaks in midwestern USA. Agroforestry Systems. 59: 11-20.

Heisler, G.M.; DeWalle, D.R. 1988. Effects of windbreak structure on wind flow. Agriculture, Ecosystems and Environment. 22/23: 41-69.

Helmers, G.; Brandle, J.R. 2005. Optimum windbreak spacing in Great Plains agriculture. Great Plains Research. 15: 179-198.

Kort, J. 1988. Benefits of windbreaks to field and forage crops. Agriculture, Ecosystems and Environment. 22/23: 165-190.

Loeffler, A.E.; Gordon, A.M.; Gillespie, T.J. Optical porosity and windspeed reduction by coniferous windbreaks in Southernn Ontario. Agroforestry System. 17: 119-133.

McNaughton, K.G. 1988. Effects of windbreaks on turbulent transport and microclimate. Agriculture, Ecosystems and Environment. 22/23: 17-39.

Norton, R.L. 1988. Windbreaks: benefits to orchard and vineyard crops. Agriculture, Ecosystems, and Environment 22/23:205-213.

Scholten, H. 1988. Snow distribution on crop fields. Agriculture, Ecosystems and Environment. 22/23: 363-380.

Zhou, X.H.; Brandle, J.R.; Mize, C.W.; Takle, E.S. 2004. Three-dimensional aerodynamic structure of a tree shelterbelt: definition, characterization and working models. Agroforestry Systems. 63: 133-147.

4.5 Alley cropping

Delate, K.; Holzmueller, E.; Frederick, D.D. [and others]. 2005. Tree establishment and growth using forage ground covers in an alley-cropped system in midwestern USA. Agroforestry Systems. 65: 43-52.

Garrett, H.E.; McGraw, R.L. 2000. Alley cropping practices. In: Garrett, H.E.; Rietveld, W.J.; Fisher, R.F. North American agroforestry: an integrated science and practice. Madison, WI: American Society of Agronomy: 149-188.

Garrity, D.P.; Mercado, A.R., Jr. 1994. Nitrogen fixation capacity in the component species of contour hedgerows: how important? Agroforestry Systems. 27: 241-258.

Gillespie, A.R.; Jose, S.; Mengel, D.B. [and others]. 2000. Defining competition vectors in a temperate alley cropping system in the midwestern USA: 1. production physiology. Agroforestry Systems. 48: 25-40.

Jose, S.; Gillespie, A.R.; Seifert, J.R.; Biehle, D.J. 2000. Defining competition vectors in temperate alley cropping system in the midwestern USA: 2. competition for water. Agroforestry Systems. 48: 41-59.

Jose, S.; Gillespie, A.R.; Seifert, J.R. [and others]. 2000. Defining competition vectors in temperate alley cropping system in the midwestern USA: 3. competition for nitrogen and litter decomposition dynamics. Agroforestry Systems 48:41-59.

Mungai, N.W.; Motavalli. P.P. 2006. Litter quality effects on soil carbon and nitrogen dynamics in temperate alley cropping systems. Applied Soil Ecology. 31: 32-42.

Ntayombya, P.; Gordon, A.M. 1995. Effects of black locust on productivity and nitrogen nutrition of intercropped barley. Agroforestry Systems. 29: 239-254.

Seiter, S.; William, R.D.; Hibbs, D.E. 1999. Crop yield and tree-leaf production in three planting patterns of temperatezone alley cropping in Oregon, USA. Agroforestry Systems. 46: 273-288.

Stamps, W.T.; Woods, T.W.; Linit, M.J.; Garrett, H.E. 2002. Arthropod diversity in alley cropped black walnut stands in eastern Missouri, USA. Agroforestry Systems. 56: 167-175.

Vandermeer, J. 1997. Maximizing crop yield in alley crops. Agroforestry Systems. 40: 199-206.

4.6 Biofuel buffers

Abrahamson, L.P.; Robison, D.J.; Volk, T.A. [and others]. 1998. Sustainability and environmental issues associated with willow bioenergy development in New York, USA. Biomass and Bioenergy. 15: 17-22.

Alley, J.L.; Garrett, H.E.; McGraw, R.L. [and others]. 1999. Forage legumes as living mulches for trees in agroforestry practices – preliminary results. Agroforestry Systems. 44: 281-291.

Christian, D.P.; Hoffman, W.; Hanowski, J.M. [and others]. 1998. Bird and mammal diversity on woody biomass plantations in North America. Biomass and Bioenergy. 14: 395-402.

Farrell, A.E.; Plevin, R.J.; Turner, B.T. [and others]. 2006. Ethanol can contribute to energy and environmental goals. Science. 311: 506-508.

Fike, J.H.; Parrish, D.J.; Wolf, D.D. [and others]. 2006. Long-term yield potential of switchgrass-for-biofuel systems. Biomass and Bioenergy. 30: 198-206.

Graham, R.L.; Wright, L.L.; Turhollow, A.F. 1992. The potential for short-rotation woody crops to reduce U.S. CO2 emissions. Climatic Change. 22: 223-238.

Gruenewald, H.; Brandt, B.K.V.; Schneider, B.U. [and others]. 2007. Agroforestry systems for the production of woody biomass for energy transformation purposes. Ecological Engineering. 29: 319-328.

Hall, D.O.; Scrase, J.I. 1998. Will biomass be the environmentally friendly fuel of the future? Biomass and Bioenergy. 15: 357-367.

Keoleian, G.A.; Volk, T.A. 2005. Renewable energy from willow biomass crops: life cycle energy, environmental and economic performance. Critical Reviews in Plant Science. 24: 385-406.

Kuemmel, B.; Langer, V.; Magid, J. [and others]. 1998. Energetic, economic and ecological balances of combined food and energy system. Biomass and Bioenergy. 15: 407-416.

Lemus, R.; Brummer, E.C.; Moore, K.J. [and others]. 2002. Biomass yield and quality of 20 switchgrass populations in southern Iowa, USA. Biomass and Bioenergy. 23: 433-442.

Lewandowski, I.; Scurlock, J.M.O.; Lindvall, E.; Christou, M. 2003. The development and current status of perennial rhizomatous grasses as energy crops in the US and Europe. Biomass and Bioenergy. 25: 335-361.

Madakadze, J.C.; Stewart, K.; Peterson, P.R. [and others]. 1999. Cutting frequency and nitrogen fertilization effects on yield and nitrogen concentration of switchgrass in a short season area. Crop Science. 39: 552-557.

McLaughlin, R.A.; Pope, P.E.; Hansen, E.A. 1985. Nitrogen fertilization and ground cover in a hybrid poplar plantation: effects on nitrate leaching. Journal of Environmental Quality. 14: 241-245.

McLaughlin, S.B.; Walsh, M.E. 1998. Evaluating environmental consequences of producing herbaceous crops for bioenergy. Biomass and Bioenergy. 14: 317-324.

Murray, L.D.; Best, L.B. 2003. Short-term bird response to harvesting switchgrass for biomass in Iowa. Journal of Wildlife Management. 67: 611-621.

Paine, L.K; Peterson, T.L.; Undersander, D.J. [and others]. 1996. Some ecological and socio-economic considerations for biomass energy crop production. Biomass and Bioenergy. 10: 231-242.

Parrish, D.J.; Fike, J.H. 2005. The biology and agronomy of switchgrass for biofuels. Critical Reviews in Plant Sciences. 24: 423-459.

Powlson, D.S.; Riche, A.B.; Shield, J. 2005. Biofuels and other approaches for decreasing fossil fuel emissions form agriculture. Annals of Applied Biology. 146: 193-201.

Ranney, J.W.; Mann, L.K. 1994. Environmental considerations in energy crop production. Biomass and Bioenergy. 6: 211-228.

Roth, A.M.; Sample, D.W.; Ribic, C.A. [and others]. 2005. Grassland bird response to harvesting switchgrass as a biomass energy crop. Biomass and Bioenergy. 28: 490-498.

Sanderson, M.A.; Read, J.C.; Reed, R.L. 1999. Harvest management of switchgrass for biomass feedstock and forage production. Agronomy Journal. 91: 5-10.

Shapouri, H.; Duffield, J.A.; Wang, M. 2003. The energy balance of corn ethanol revisited. Transactions of the American Society of Agricultural Engineers. 46: 959-968.

Spinelli, R.; Nati, C.; Magagnotti, N. 2006. Biomass harvesting from buffer strips in Italy: three options compared. Agroforestry Systems. 68: 113-121.

Turhollow, A. 2000. Costs of producing biomass from riparian buffer strips. ORNL/TM-1999/146. Oak Ridge, TN: Oak Ridge National Laboratory, Energy Division. 72 p. <u>http://www.ornl.gov/~webworks/cpr/v823/rpt/108548.pdf</u>. [Date accessed: September 25, 2007].

Vogel, K.P.; Brejda, J.J.; Walters, D.T.; Buxton, D.R. 2002. Switchgrass biomass production in the Midwest USA: harvest and nitrogen management. Agronomy Journal. 94: 423-420.

Volk, T.A.; Abrahamson, L.P.; Nowak, C.A. [and others]. 2006. The development of short-rotation willow in the northeastern United States for bioenergy and bioproducts, agroforestry and phytoremediation. Biomass and Bioenergy. 30: 715-727.

Volk, T.A.; Verwijst, T.; Tharakan, P.J. [and others]. 2004. Growing fuel: a sustainability assessment of willow biomass crops. Frontiers in Ecology and the Environment. 2: 411-418.

Wright, L.L. 1994. Production technology status of woody and herbaceous crops. Biomass and Bioenergy. 6: 191-209.

4.7 Energy conservation: site

Akbari, H. 2002. Shade trees reduce building energy use and Co2 emissions from power plants. Environmental Pollution. 116: S119-S126.

Akbari, H.; Kurn, D.M.; Bretz, S.E.; Hanford, J.W. 1997. Peak power and cooling energy savings of shade trees. Energy and Buildings. 25: 139-148.

Brown, R.D.; Gillespie, T.J. 1995. Microclimatic landscape design. New York: John Wiley and Sons. 212 p.

DeWalle, D.R.; Heisler, G.M. 1983. Windbreak effects on air infiltration and space heating in a mobile home. Energy and Buildings. 5: 279-288.

DeWalle, D.R.; Heisler. G.M. 1988. Use of windbreaks for home energy conservation. Agriculture, Ecosystems and Environment. 22/23: 243-260.

Harrje, D.T.; Buckley, C.E.; Heisler, G.M. 1982. Building energy reductions: windbreak optimization. Journal of Energy Division. 108: 143-152.

Heisler, G.M. 1986. Effects of individual trees o the solar radiation climate of small buildings. Urban Ecology. 9: 337-359.

Heisler, G.M. 1986. Energy savings with trees. Journal of Arboriculture. 12: 113-125.

Hutchison, B.A.; Taylor, F.G. 1983. Energy conservation mechanisms and potentials of landscape design to ameliorate building microclimates. Landscape Journal. 2: 19-39.

Jones, B.W.; Oreszczyn, T. 1987. The effects of shelterbelts on microclimate and on passive solar gains. Building and Environment. 22: 101-110.

McPherson, E.G. 1988. Functions of buffer plantings in urban environments. Agriculture, Ecosystems and Environment. 22/23: 281-298.

McPherson, E.G.; Dougherty, E. 1989. Selecting trees for shade in the southwest. Journal of Arboriculture. 15: 35-43.

McPherson, E.G.; Herrington, L.P.; Heisler, G.M. 1988. Impacts of vegetation on residential heating and cooling. Energy and Buildings. 12: 41-51.

McPherson, E.G.; Rowntree, R.A. 1993. Energy conservation potential of urban tree planting. Journal of Arboriculture. 19: 321-331.

McPherson, E.G.; Rowntree, R.A.; Wagar, J.A. 1995. Energy-efficient landscapes. In: Bradley, G.A., ed. Urban forest landscapes: integrating multidisciplinary perspectives. Seattle: University of Washington Press: 150-160.

McPherson, E.G.; Simpson, J.R. 2003. Potential energy savings in buildings by an urban tree planning programme in California. Urban Forestry and Urban Greening. 2: 73-86.

Meier, A.K. 1990. Strategic landscaping and air-conditioning savings: a literature review. Energy and Buildings. 15/16: 478-486.

Robinette, G.O. 1977. Landscape planning for energy conservation. Reston, VA: Environmental Design Press. 227 p.

Rudie, R., Jr.; Dewers, R.S. 1984. Effects of tree shade on home cooling requirements. Journal of Arboriculture. 10: 320-322.

Spronken-Smith, R.A.; Oke, T.R. 1998. The thermal regime of urban parks in two cities with different summer climates. International Journal of Remote Sensing. 19: 2085-2104.

Stathopoulos, T.; Chiovitti, D.; Dodaro, L. 1994. Wind shielding effects of trees on low buildings. Building and Environment. 29: 141-150.

Youngberg, R.J. 1983. Shading effects of deciduous trees. Journal of Arboriculture. 9: 295-297.

4.8 Energy conservation: landscape

Akbari, H. 2002. Shade trees reduce building energy use and CO2 emissions from power plants. Environmental Pollution. 116: S119-S126.

Akbari, H.; Pomerantz, M.; Taha, H. 2001. Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. Solar Energy. 70: 295-310.

Bernatzky, A. 1982. The contribution of trees and green spaces to a town climate. Energy and Buildings. 5: 1-10.

Chang, C.; Li, M.; Chang, S. 2007. A preliminary study on the local cool-island intensity of Taipei city parks. Landscape and Urban Planning. 80: 386-395.

Georgi, N.J.; Zafiriadis, K. 2006. The impact of park trees on microclimate in urban areas. Urban Ecosystems. 9: 195-209.

Givoni, B. 1991. Impact of planted areas on urban environmental quality: a review. Atmospheric Environment. 25B: 289-299.

Honjo, T.; Takakura, T. 1990. Simulation of thermal effects of urban green areas on their surrounding areas. Energy and Buildings. 15/16: 443-446.

McPherson, E.G. 1988. Functions of buffer plantings in urban environments. Agriculture, Ecosystems and Environment. 22/23: 281-298.

McPherson, E.G.; Simpson, J.R. 2003. Potential energy savings in buildings by an urban tree planning programme in California. Urban Forestry and Urban Greening. 2: 73-86.

Meleason, M.A.; Quinn, J.M. 2004. Influence of riparian buffer width on air temperature at Whangapoua Forest, Coromandel Peninsula, New Zealand. Forest Ecology and Management. 191: 365-371.

Oke, T.R.; Crowther, J.M.; McNaughton, K.G. [and others]. 1989. The micrometeorology of the urban forest. Philosophical Transactions of the Royal Society of London Series B Biological Sciences. 324: 335-349.

Saito, I.; Ishihara, O.; Katayama, T. 1991. Study of the effect of green areas on the thermal environment in an urban area. Energy and Buildings. 25/26: 493-498.

Simpson, J.R.; McPherson, E.G. 1996. Potential of tree shade for reducing residential energy use in California. Journal of Arboriculture. 22: 10-18.

Spronken-Smith, R.A.; Oke, T.R.; Lowry, W.P. 2000. Advection and the surface energy balance across an irrigated urban park. International Journal of Climatology. 20: 1033-1047.

Spronken-Smith, R.A.; Oke, T.R. 1998. The thermal regime of urban parks in two cities with different summer climates. International Journal of Remote Sensing. 19: 2085-2104.

Stathopoulos, T.; Chiovitti, D.; Dodaro, L. 1994. Wind shielding effects of trees on low buildings. Building and Environment. 29: 141-150.

Taha, H.; Akbari, H.; Rosenfeld, A. 1991. Heat island and oasis effects of vegetative canopies: micro—meteorological field-measurements. Theoretical and Applied Climatology. 44: 123-138.

Upmanis, H.; Eliasson, J.; Lindqvist, S. 1998. The influence of green areas on nocturnal temperatures in a high latitude city (Goteborg, Sweden). International Journal of Climatology. 18: 681-700.

Vu, T.C.; Asaeda, T.; Abu, E.M. 1998. Reductions in air conditioning energy caused by a nearby park. Energy and Buildings. 29: 83-92.

Wang, F. 2006. Modelling sheltering effects of trees on reducing space heating in office buildings in a windy city. Energy and Buildings. 38: 1443-1454.

4.9 Crop pollinator habitat

Altieri, M.A. 1983. Vegetational designs for insect-habitat management. Environmental Management. 7: 3-7.

Altieri, M.A.; Nicholls, C.I.; Fritz, M.A. 2005. Manage insects on your farm: a guide to ecological strategies. Beltsville, MD: Sustainable Agriculture Network. 130 p. <u>http://www.sare.org/publications/insect/insect.pdf</u>. [Date accessed: September 25, 2007].

Banaszak, J. 1992. Strategy for conservation of wild bees in an agricultural landscape. Agriculture, Ecosystems and Environment. 40: 179-192.

Gathmann, A.; Tscharntke, T. 2002. Foraging ranges of solitary bees. Journal of Animal Ecology. 71: 757-764.

Issacs, R.; Tuell, J. 2007. Conserving native bees on farmland. Bulletin E-2985. East Lansing, MI: Michigan State University. 4 p. <u>http://nativeplants.msu.edu/pdf/E2985ConservingNativeBees.pdf</u>. [Date accessed: September 26, 2007].

Kearns, C.A.; Inouye, D.W.; Waser, N.M. 1998. Endangered mutualisms: the conservation of plant-pollinator interactions. Annual Review of Ecology and Systematics. 29: 83-112.

Kells, A.R.; Holland, J.M.; Goulson, D. 2001. The value of uncropped field margins for foraging bumblebees. Journal of Insect Conservation. 5: 283-291.

Kremen, C.; Williams, N.M.; Bugg, R.L. [and others]. 2004. The area requirements of an ecosystem service: crop pollination by native bee communities in California. Ecology Letters. 7: 1109-1119.

Lagerloef, J.; Stark, J.; Svensson, B. 1992. Margins of agricultural fields as habitats for pollinating insects. Agriculture, Ecosystems and Environment. 40: 117-124.

Mayer, D. F.; Johansen, C.A.; Baird, C.R. 1999. How to reduce bee poisoning from pesticides. PNW-518. Pullman, WA: Washington State University. 15 p. <u>http://cru.cahe.wsu.edu/CEPublications/pnw0518/pnw0518.pdf</u>. [Date accessed: September 26, 2007].

Morandin, L.; Winston, M.L. 2006. Pollinators provide economic incentive to preserve natural land in agroecosystems. Agriculture, Ecosystems and Environment. 116: 289-292.

Pywell, R.F.; Warman, E.A.; Sparks, T.H. [and others]. 2004. Assessing habitat quality for butterflies on intensively managed arable farmland. Biological Conservation. 118: 313-325.

Pywell, R.F.; Warman, E.A.; Carvell, C. [and others]. 2005. Providing foraging resources for bumblebees in intensively farmed landscapes. Biological Conservation 121:479-494.

Reeder, K.F.; Debinski, D.M.; Danielson, B.J. 2005. Factors affecting butterfly use of filter strips in midwestern USA. Agriculture, Ecosystems and Environment. 109: 40-47.

Ricketts, T.H.; Williams, N.M.; Mayfield, M.M. Connectivity and ecosystem services: crop pollination in agricultural landscapes. In: Crooks, K.R.; Sanjayan, M., eds. Connectivity conservation. Cambridge, UK: Cambridge University Press. 255-289.

Russell, K.N.; Ikerd, H.; Droege, S. 2005. The potential conservation value of unmowed powerline strips for native bees. Biological Conservation. 124: 133-148.

Smallidge, P.J.; Leopold, D.J. 1997. Vegetation management for the maintenance and conservation of butterfly habitats in temperate human-dominated landscapes. Landscape and Urban Planning. 38: 259-280.

Vaughan, M.; Shepherd, M.; Kremen, C.; Black, S.H. 2004. Farming for bees: guidelines for providing native bee habitat on farms. Portland, OR: Xerces Society. 44 p.

http://www.xerces.org/Pollinator_Insect_Conservation/Farming_for_Bees_2nd_edition.pdf. [Date accessed: September 26, 2007].

Walter-Hellwig, K.; Frankl, R. 2000. Foraging habitats and foraging distances of bumblebees in agricultural landscapes. Journal of Applied Entomology. 124: 299-306.

4.10 Economic impact of trails

Correll, M.R.; Lillydahl, J.R.; Singell, L.D. 1978. The effects of greenbelts on residential property values: some findings on the political economy of open space. Land Economics. 54: 207-217.

Fausold, C.H.; Lilieholm, R.J. 1999. The economic value of open space: a review and synthesis. Environmental Management. 23: 307-320.

Lindsey, G.; Knaap, G. 1999. Willingness to pay for urban greenway projects. Journal of American Planning Association. 65: 297-313.

Lindsey, G.; Man, J.; Payton, S.; Dickson, K. 2004. Property values, recreation values, and urban greenways. Journal of Park and Recreation Administration. 22: 69-90.

Litman, T.A. 2003. Economic value of walkability. Transportation Research Record. 1828: 3-11.

Maryland Greenways Commission. 1994. Analysis of economic impacts of the Northern Central Rail Trail. Annapolis, MD: Maryland Department of Natural Resources. <u>http://ntl.bts.gov/DOCS/430.html</u>. [Date accessed: September 26, 2007].

Moore, R.L.; Graefe, A.R.; Gitelson, R.J. 1994. The economic impact of rail-trails. Journal of Park and Recreation Administration. 12: 63-72.

National Park Service. 1995. Economic impacts of protecting rivers, trails, and greenway corridors. Washington, DC: National Park Service. 154 p. <u>http://www.nps.gov/pwro/rtca/econ_all.pdf</u>. [Date accessed: September 26, 2007].

Nelson, N. 2004. Evaluating the economic impact of community open space and urban forests: a literature review. Athens, GA: University of Georgia, Institute for Ecology, River Basin Center. 17 p. http://www.rivercenter.uga.edu/publications/pdf/guf hedonic lit review.pdf. [Date accessed: September 26, 2007].

Siderelis, C.; Moore, R. 1995. Outdoor recreation net benefits of rail-trails. Journal of Leisure Research. 27: 344-359.

4.11 Greenways and property values

Anderson, L.M.; Cordell, H.K. 1988. Influence of trees on residential property values in Athens, Georgia: a survey based on actual sales prices. Landscape and Urban Planning. 15: 153-164.

Arendt, R. 2004. Linked landscapes creating greenway corridors through conservation subdivision design strategies in the northeastern and central United States. Landscape and Urban Planning. 68: 241-269. Bolitzer, B.; Netusil, N.R. 2000. The impact of open spaces on property values in Portland, Oregon. Journal of Environmental Management. 59: 185-193.

Campbell, H.S.; Munroe, D.K. 2007. Greenways and greenbacks: the impact of the Catawba Regional Trail on property values in Charlotte, North Carolina. Southeastern Geographer. 47: 118-137.

Correll, M.R.; Lillydahl, J.R.; Singell, L.D. 1978. The effects of greenbelts on residential property values: some findings on the political economy of open space. Land Economics. 54: 207-217.

Crompton, J.L. 2001. The impacts of parks on property values: a review of the empirical evidence. Journal of Leisure Research. 33: 1-31.

Fausold, C.H.; Lilieholm, R.J. 1999. The economic value of open space: a review and synthesis. Environmental Management. 23: 307-320.

Geoghegan, J. 2002. The value of open spaces in residential land use. Land Use Policy. 19: 91-98.

Greer, D.L. 2000. Omaha recreational trails: their effect on property values and public safety. Omaha, NE: University of Nebraska, Recreation and Leisure Studies Program. 18 p. <u>http://atfiles.org/files/pdf/omahastudy.pdf</u>. [Date accessed: September 26, 2007].

Irwin, E.G. 2002. The effects of open space on residential property values. Land Economics. 78: 465-480.

Kulshreshtha, S.N.; Gillies, J.A. 1993. Economic evaluation of aesthetic amenities: a case study of a river view. Water Resources Bulletin. 29: 257-266.

Lindsey, G.; Payton, S.; Man, J.; Ottensmann, J. 2003. Public choices and property values: evidence from greenways in Indianapolis. Indianapolis: Center for Urban Policy and the Environment. 12 p. http://atfiles.org/files/pdf/lindseypropyalues.pdf. [Date accessed: September 26, 2007].

Lindsey, G.;Man, J.; Payton, S.; Dickson, K. 2004. Property values, recreation values, and urban greenways. Journal of Park and Recreation Adminstration. 22: 69-90.

Luttik, J. 2000. The value of trees, water, and open space as reflected by house prices in the Netherlands. Landscape and Urban Planning. 48: 161-167.

Lutzenhiser, M.; Netusil, N.R. 2001. The effect of open spaces on a home's sale price. Contemporary Economic Policy. 19: 291-298.

Mooney, S.; Eisgruber, L.M. 2001. The influence of riparian protection measures on residential property values: the case of the Oregon Plan for salmon and watersheds. Journal of Real Estate Finance and Economics. 22: 273-286.

Nicholls, S.; Crompton, J.L. 2005. The impact of greenways on property values: evidence from Austin, Texas. Journal of Leisure Research. 37: 321-341.

Puncochar, B.; Lagerwey, P. 1987. Evaluation of the Burke-Gilman Trail's effect on property values and crime. Seattle, WA: Seattle Engineering Department, Office for Planning. <u>http://www.brucefreemanrailtrail.org/pdf/Burke-Gilman.pdf</u>. [Date accessed: September 26, 2007].

Streiner, C.; Loomis, J.B. 1995. Estimating the benefits of urban stream restoration using the hedonic price method. Rivers. 5: 267-278.

Tyrvainen, L.; Miettinen, A. 2000. Property prices and urban forest amenities. Journal of Environmental Economics and Management. 39: 205-223.

Tyrvainen, L. 1997. The amenity value of the urban forest: an application of the hedonic pricing method. Landscape and Urban Planning. 37: 211-222.

5.0 Protection and Safety

5.1 Managing insect pests with buffers

Altieri, M.A. 1983. Vegetational designs for insect-habitat management. Environmental Management. 7: 3-7.

Altieri, M.A.; Nicholls, C.I. 2004. Effects of agroforestry systems on the ecology and management of insect pest populations. In: Gurr, G.M.; Wratten, S.D.; Altieri, M.A., eds. Ecological engineering for pest management. Ithaca, NY: Cornell University Press:143-154.

Altieri, M.A.; Nicholls, C.I.; Fritz, M.A. 2005. Manage insects on your farm: a guide to ecological strategies. Beltsville, MD: Sustainable Agriculture Network. 130 p. <u>http://www.sare.org/publications/insect/insect.pdf</u>. [Date accessed: September 25, 2007].

Altieri, M.A.; Todd, J.W. 1981. Some influences of vegetational diversity on insect communities of Georgia soybean fields. Protection Ecology. 3: 333–338.

Altieri, M.A.; Whitcomb, W.H. 1979. The potential use of weeds in the manipulation of beneficial insects. Horticultural Science. 14: 12-18.

Asteraki, E.J.; Hart, B.J.; Ings, T.C.; Manley, W.J. 2004. Factors influencing the plant and invertebrate diversity of arable field margins. Agriculture, Ecosystems and Environment. 102: 219-231.

Bhar, R.; Fahrig, L. 1998. Local vs. landscape effects of woody field borders as barriers to crop pest movement. Conservation Ecology. 2(2): 3 http://www.consecol.org/vol2/iss2/art3. [Date accessed: August 14, 2007].

Bianchi, F.J.J.A.; Booij, C.J.H.; Tscharntke, T. 2006 Sustainable pest regulation in agricultural landscapes: a review on landscape composition, biodiversity and natural pest control. Proceedings of the Royal Society B. 273: 1715-1727.

Bianchi, F.J.J.A.; van der Werf, W. 2003. The effect of the area and configuration of hibernation sites on the control of aphids by *Coccinella septempunctata* in agricultural landscapes: a simulation study. Environmental Entomology. 32: 1290-1304.

Bianchi, F.J.J.A.; van Wingerden, W.K.R.E.; Griffioen, A.J. [and others]. 2005. Landscape factors affecting the control of *Mamestra brassicae* by natural enemies in brussel sprout. Agriculture, Ecosystem and Environment. 107: 145-150.

Collins, K.L.; Boatman, N.D.; Wilcox, A. [and others]. 2002. Influence of beetle banks on cereal aphid predation in winter wheat. Agriculture, Ecosystems and Environment. 93: 337-350.

Collins, K.L.; Boatman, N.D.; Wilcox, A.; Holland, J.M. 2003. A 5-year comparison of overwintering polyphagous predator densities within a beetle bank and two conventional hedgebanks. Annuals of Applied Biology. 143: 63-71.

Corbett, A.; Rosenheim, J.A. 1996. Impact of natural enemy overwintering refuge and its interaction with the surrounding landscape. Ecological Entomology. 21: 155-164.

Den Belder, E.; Elderson, J.; van den Brink, W.J.; Schelling, G. 2002. Effect of woodlots on thrips density in leek fields: a landscape analysis. Agriculture, Ecosystems and Environment. 91: 139-145.

Dennis, P.; Fry, G.L.A. 1993. Field margins: can they enhance natural enemy population densities and general arthropod diversity on farmland. Agriculture, Ecosystems and Environment. 40: 95-115.

Denys, C.; Tscharntke, T. 2002. Plant-insect communities and predator-prey ratios in field margin strips, adjacent crop fields, and fallows. Oecologia. 130: 315-324.

Dix, M.E.; Johnson, R.J.; Harrell, M.O. [and others]. 1995. Influences of trees on abundance of natural enemies of insect pests: a review. Agroforestry Systems. 29: 303-311.

Elliot, N.C.; Kieckhefer, R.W.; Michels, G.W., Jr.; Giles, K.L. 2002. Predator abundance in alfalfa fields in relation to aphids within-field vegetation, and landscape matrix. Environmental Entomology. 31: 253-260.

Epila, J.S.O. 1988. Wind, crop pests and agroforest design. Agricultural Systems. 26: 99-110.

Frank, S.D.; Shrewsbury, P.M. 2004. Effect of conservation strips on the abundance and distribution of natural enemies and predation of *Agrotis ipsilon* on golf course fairways. Environmental Entomology. 33: 1662-1672.

Gurr, G.M.; Wratten, S.D.; Luna, J.M. 2003. Multi-function agricultural biodiversity: pest management and other benefits. Basic and Applied Ecology. 4: 107-116.

Hawkins, B.A.; Cornell, H.V. 1994. Maximum parasitism rates and successful biological control. Science. 266:1886.

Holland, J.; Fahrig, L. 2000. Effect of woody borders on insect density and diversity in crop fields: a landscape-scale analysis. Agriculture, Ecosystems and Environment. 78: 115-122.

Jobin, E.; Choiniere, L.; Belanger, L. 2001. Bird use of three types of field margins in relation to intensive agriculture in Quebec, Canada. Agriculture, Ecosystems and Environment. 84: 131-143.

Kemp, J.C.; Barrett, G.W. 1989. Spatial patterning: impact of uncultivated corridors on arthropod populations within soybean Agroecosystems. Ecology. 70: 114-128.

Kinross, C.; Wratten, S.D.; Gurr, G.M. 2004. Pest management and wildlife conservation: compatible goals for ecological engineering? In: Gurr, G.M.; Wratten, S.D.; Altieri, M.A., eds. Ecological engineering for pest management. Ithaca, NY: Cornell University Press: 199-218.

Kirk, D.A.; Evenden, M.D.; Mineau, P. 1996. Past and current attempts to evaluate the role of birds as predators of insect pests in temperate agriculture. In: Nolan, V., Jr.; Ketterson, E.D., eds. Current Ornithology 13. New York: Plenum Press: 175-269.

Kruess, A.; Tscharntke, T. 1994. Habitat fragmentation, species loss, and biological control. Science. 264: 1581-1584.

Landis, D.A.; Wratten, S.D.; Gurr, G.M. 2000. Habitat management to conserve natural enemies of arthropod pests in agriculture. Annual Review of Entomology. 45: 175-201.

Lee, J.C.; Menalled, F.D.; Landis, D.A. 2001. Refuge habitats modify impact of insecticide disturbance on carabid beetle communities. Journal of Applied Ecology. 38: 472-483.

MacLeod, A.; Wratten, S.D.; Sotherton, N.W.; Thomas, M.B. 2004. Beetle banks as refuges for beneficial arthropods in farmland. Agricultural and Forest Entomology. 6: 147-158.

Marino, P.; Landis, D.A. 1996. Effect of landscape structure on parasitoid diversity and parasitism in agroecosystems. Ecological Applications. 6: 276-284.

Menalled, F.D.; Costamagna, A.C.; Marino, P.C.; Landis, D.A. 2003. Temporal variation in the response of parasitoids to agricultural landscape structure. Agriculture, Ecosystems and Environment. 96: 29-35.

Menalled, F.D.; Marino, P.C.; Gage, S.H.; Landis, D.A. 1999. Does agricultural landscape structure affect parasitism and parasitoid diversity? Ecological Applications. 9: 634-641.

Nicholls, C. I.; Parrella, M.; Altieri, M. 2001. The effects of a vegetational corridor on the abundance and dispersal of insect biodiversity within a northern California organic vineyard. Landscape Ecology. 16: 133-146.

Nicholls, C.I.; Altieri, M.A. 2004.Agroecological bases of ecological engineering for pest management. In: Gurr, G.M.; Wratten, S.D.; Altieri, M.A., eds. Ecological engineering for pest management. Ithaca, NY: Cornell University Press: 33-54.

Norris, R.F.; Kogan, M. 2000. Interactions between weeds, arthropod pests and their natural enemies in managed ecosystems. Weed Science. 48: 94-158.

Panzer, R. 2002. Compatibility of prescribed burning with the conservation of inscets in small, isolated prairie reserves. Conservation Biology. 16: 1296-1307.

Pasek, J. 1988. Influence of wind and windbreaks on local dispersal of insects. Agriculture, Ecosystems and Environment. 22/23: 539-554.

Pfiffner, L.; Wyss, E. 2004. Use of sown wildflower strips to enhance natural enemies of agricultural pests. . In: Gurr, G.M.; Wratten, S.D.; Altieri, M.A., eds. Ecological engineering for pest management. Ithaca, NY: Cornell University Press: 165-186.

Pickett, C.H.; Bugg, R.L. 1998. Enhancing biological control: habitat management to promote natural enemies of agricultural pests. Berkeley, CA: University of California Press. 421 p.

Pywell, R.F.; James, K.L.; Herbert, I. [and others]. 2005. Determinants of overwintering habitat quality for beetles and spiders on arable farmland. Biological Conservation. 123: 79-90.

Pywell, R.F.; Warman, E.A.; Hulmes, L. [and others]. 2006. Effectiveness of new agri-environment schemes in providing foraging resources for bumblebees in intensively farmed landscapes. Biological Conservation. 129: 192-206.

Rodenhouse, N.L.; Barrett, G.W.; Zimmerman, D.W.; Kemp, J.C. 1992. Effects of uncultivated corridors on arthropod abundances and crop yields in soybean agroecosystems. Agriculture, Ecosystems and Environment. 38: 179-191.

Russell, K.N.; Ikerd, H.; Droege, S. 2005. The potential conservation value of unmowed powerline strips for native bees. Biological Conservation. 124: 133-148.

Saska, P.; Vodde, M.; Heijerman, T. [and others]. 2007. The significance of a grassy field boundary for the spatial distribution of carabids within two cereal fields. Agriculture, Ecosystems and Environment. 122: 427-434.

Schimdt, M.H.; Thies, C.; Tscharntke, T. 2004. Landscape context of arthropod biological control In: Gurr, G.M.; Wratten, S.D.; Altieri, M.A., eds. Ecological engineering for pest management. Ithaca, NY: Cornell University Press: 55-63.

Sotherton, N.W. 1995. Beetle banks - helping nature to control pests. Pesticide Outlook. 6: 13-17.

Stamps. W.T.; Dailey, T.W.; Gruenhagen, N.M. 2007. Infestation of European corn borer, *Ostrinia nubilalis* in Midwestern USA fields with herbaceous borders. Agriculture, Ecosystems and Environment. 121: 430-434.

Thies, C.; Steffan-Dewenter, I.; Tscharntke, T. 2003. Effects of landscape context on herbivory and parasitism at different spatial scales. Oikos. 101: 18-25.

Thies, C.; Tscharntke, T. 1999. Landscape structure and biological control in agroecosystems. Science. 285: 893-895.

Thomas, C.F.G.; Marshall, E.J.P. 1999. Arthropod abundance and diversity in differently vegetated margins of arable fields. Agriculture, Ecosystems and Environment. 72: 131-144.

Thomas, M.B.; Wratten, S.D.; Sotherton, N.W. 1991. Creation of 'island' habitats in farmland to manipulate populations of beneficial arthropods: predator densities and emigration. Journal of Applied Ecology. 28: 906-917.

Thomas, M.B.; Wratten, S.D.; Sotherton, N.W. 1992. Creation of 'island' habitats in farmland to manipulate populations of beneficial arthropods: predator densities and species composition. Journal of Applied Ecology. 29: 524-531.

Thomas, S. 2000. Progress on beetle banks in UK arable farming. Pesticide Outlook. 11: 51-53.

Thomas, S.; Noordhuis, R.; Holland, J.; Goulson, D. 2002. Botanical diversity of beetle banks: effects of age and comparison with conventional arable field margins in southern UK. Agricultural, Ecosystems and Environment. 93: 403-412.

Tremblay, A.; Mineau, P.; Stewart, R.K. 2001. Effects of bird predation on some insect populations in corn. Agriculture, Ecosystems and Environment. 83: 143-152.

Tscharntke, T.; Steffan-Dewenter, I.; Kruess. A.; Thies, C. 2002. Contribution of small habitat fragments to conservation of insect communities of grassland-cropland landscapes. Ecological Applications. 12: 354-363.

Van Emden, H.F. 1965. The role of uncultivated land in the biology of crop pests and beneficial insects. Scientific Horticulture. 17: 121–136.

Van Emden, H.F.; Williams, G.F. 1974. Insect stability and diversity in agro-ecosystems. Annual Review of Entomology. 19: 455–475.

Varchola, J.M.; Dunn, J.P. 2001. Influence of hedgerow and grassy field borders on ground beetle activity in fields of corn. Agriculture, Ecosystems and Environment. 83: 153-163.

Wilkinson, T.K.; Landis, D.A. 2005. Habitat diversification in biological control: the role of plant resources. In: Wackers, F.L.; van Rijn, P.C.J.; Bruin, J., eds. Plant provided food for carnivorous insects. Cambridge, MA: Cambridge University Press: 305-325.

With, K.A., Pavuk, D.M.; Worchuck, J.L. [and others]. 2002. Threshold effects of landscape structure on biological control in agroecosystems. Ecological Applications. 12: 52-65.

Woodcock, B.A.; Potts, S.G.; Pilgrim, E. [and others]. 2007. The potential of grass field margin management for enhancing beetle diversity in intensive livestock farms. Journal of Applied Ecology. 44: 60-69.

Wratten, S.D.; van Emden, H.F. 1995. Habitat management for enhanced activity of natural enemies of insect pests. In: Glen, D.M.; Greaves, M.P.; Anderson, H.M., eds. Ecology and integrated farming systems. Bristol, UK: John Wiley and Sons: 117-145.

5.2 Plants that attract beneficial insects

Al-Doghairi, M.A.; Cranshaw, W.S.. 1999. Surveys on visitation of flowering landscape plants by common biological control agents in Colorado. Journal of the Kansas Entomological Society. 72: 190-196.

Altieri, M.A.; Nicholls, C.I.; Fritz, M.A. 2005. Manage insects on your farm: a guide to ecological strategies. Beltsville, MD: Sustainable Agriculture Network. 130 p. <u>http://www.sare.org/publications/insect/insect.pdf</u>. [Date accessed: September 25, 2007].

Bugg, R. 1994. Using cover crops to manage arthropods of orchards: A review. Agriculture, Ecosystems and Environment. 50:11–28.

Colley, M.R.; Luna, J.M. 2000. Relative attractiveness of potential beneficial insectary plants to aphidophagous hoverflies. Environmental Entomology. 29: 1054-1059.

Defour, R. 2000. Farmscaping to enhance biological control. Fayetteville, AR: Appropriate Technology Transfer for Rural Areas. 40 p. <u>http://attra.ncat.org/attra-pub/PDF/farmscaping.pdf</u>. [Date accessed: September 26, 2007].

Fiedler, A.; Tuell, J.; Issacs, R.; Landis, D. 2007. Attracting beneficial insects with native flowering plants. Bulletin E-2973. East Lansing, MI: Michigan State University. 5 p. <u>http://nativeplants.msu.edu/pdf/E2973.pdf</u>. [Date accessed: September 26, 2007].

Jones, G.A.; Gillett, J.L. 2005. Intercropping with sunflowers to attract beneficial insects in organic agriculture. Florida Entomologist. 88: 91-96.

Landis, D.; Fiedler, A. 2005. Enhancing biological control with native plants. East Lansing, MI: Michigan State University. http://nativeplants.msu.edu/. [Date accessed: September 26, 2007].

Nicholls, C.I.; Parrella, M.P.; Altieri, M.A. 2000. Reducing the abundance of leafhoppers and thrips in northern California organic vineyard through maintenance of full season floral diversity with summer cover crops. Agricultural and Forest Entomology. 2: 107-113.

Pickett, C.H.; Bugg, R.L. 1998. Enhancing biological control: habitat management to promote natural enemies of agricultural pests. Berkeley, CA: University of California Press. 421 p.

Stamps, W.T.; Linit, M.J. 1998. Plant diversity and arthropod communities: implications for temperate agroforestry. Agroforestry Systems. 39: 73-89.

5.3 Buffers and spray drift

Brown, R.B.; Carter, M.H.; Stephenson, G.R. 2004. Buffer zone and windbreak effects on spray drift deposition in a simulated wetland. Pest Management Science. 60: 1085-1090.

Burn, A. 2003. Pesticide buffer zones for the protection of wildlife. Pest Management Science. 59: 583-590.

CSIRO. 2002. Spray drift management: principles, strategies and supporting information. Victoria, Australia: CSIRO Publishing. 83 p. <u>http://downloads.publish.csiro.au/books/download.cfm?ID=3452</u>. [Date accessed: September 26, 2007].

Dabrowski, J.M.; Bollen, A.; Bennett, E.R.; Schulz, R. 2005. Pesticide interception by emergent aquatic macrophytes: potential to mitigate spray –drift input in agricultural streams. Agriculture, Ecosystems and Environment. 111: 340-348.

Davis, B.N.; Brown, M.J.; Frost, A.J. [and others]. 1994. The effects of hedges on spray deposition and on the biological impact of pesticide spray drift. Ecotoxicology and Environmental Safety. 27: 281-293.

Davis, B.N.; Lakhani, K.H.; Yates, T.J. [and others]. 1993. Insecticide drift from ground-based, hydraulic spraying of peas and brussels sprouts: bioassays for determining buffer zones. Agriculture, Ecosystems and Environment. 43: 93-108.

Davis, B.N.; Williams, C.T. 1990. Buffer zone widths for honeybees from ground and aerial spraying of insecticides. Environmental Pollution. 63: 247-259.

de Snoo, G.R. 1999. Unsprayed field margins: effects on environment, biodiversity and agricultural practice. Landscape and Urban Planning. 46: 151-160.

de Snoo, G.R.; de Wit, P.J. 1998. Buffer zones for reducing pesticide drift to ditches and risks to aquatic organisms. Ecotoxicology and Environmental Safety. 41: 112-118.

de Snoo, G.R.; van der Poll, R.J. 1999. Effect of herbicide drift on adjacent boundary vegetation. Agriculture, Ecosystems and Environment. 73: 1-6.

Felsot, A. S.; Foss, S.; Yu, J. 2003. Deposition of pesticides in riparian buffer zones following aerial applications to Christmas tree plantations. In: Coats, J.; Yamamoto, H., eds. Pesticide science: environmental fate & effects of pesticides. Washington, DC: American Chemical Society: 241-260.

Feng, J.C.; Thompson, D.G.; Reynolds, P.E. 1990. Fate of glyphosate in a Canadian forest watershed. 1. aquatic residues and off-target deposit assessment. Journal of Agricultural Food Chemistry. 38: 1110-1118.

Frank, R.; Johnson, K.; Braun, H.E. [and others]. 1991. Monitoring air, soil, stream and fish for aerial drift of permethrin. Environmental Monitoring and Assessment. 16: 137-150.

Frank, R.; Ripley, B.D.; Lampman, W. [and others]. 1994. Comparative spray drift studies of aerial and ground applications 1983-1985. Environmental Monitoring and Assessment. 29: 167-181.

Helson, B.V.; Payne, N.J.; Sundaram, K.M.S. 1993. Impact assessment of spray drift from silvicultural aerial applications of permethrin on aquatic invertebrates using mosquito bioassays. Environmental Toxicology and Chemistry. 12: 1635-1642.

Longley, M.; Cilgi, T.; Jepson, P.C.; Sotherton, N.W. 1997. Measurements of pesticide spray drift deposition into field boundaries and hedgerows: 1. summer applications. Environmental Toxicology and Chemistry. 16: 165-172.

Marrs, R.H.; Frost, A.J.; Plant, R.A.; Lunnis, P. 1992. The effects of herbicide drift on semi-natural vegetation: the use of buffer zones to minimize risks. Aspects of Applied Biology. 29: 57-64.

Marrs, R.H.; Frost, A.J.; Plant, R.A.; Lunnis, P. 1992. Aerial applications of asulam: a bioassay technique for assessing buffer zones to protect sensitive sites in upland Britain. Biological Conservation. 59: 19-23.

Mayer, D. F.; Johansen, C.A.; Baird, C.R. 1999. How to reduce bee poisoning from pesticides. PNW-518. Pullman, WA: Washington State University. 15 p. <u>http://cru.cahe.wsu.edu/CEPublications/pnw0518/pnw0518.pdf</u>. [Date accessed: September 26, 2007].

Michael, J.L. 2004. Best management practices for silvicultural chemicals and the science behind them. Water, Air, and Soil Pollution: Focus. 4: 95-117.

Miller, P.C.H.; Lane, A.G.; Walklate, P.J.; Richardson, G.M. 2000. The effect of plant structure on the drift of pesticides at field boundaries. Aspects of Applied Biology. 57: 75-82.

Parkin, C.S.; Merritt, C.R. 1988. The measurement and prediction of spray drift. Aspects of Applied Biology. 17: 351-361.

Payne, N.J. 1992. Off-target glyphosate from aerial silvicultural applications and buffer zones required around sensitive areas. Pesticide Science. 34: 1-8.

Payne, N.J.; Helson, B.V.; Sundaram, K.M.S.; Fleming, R.A. 1988. Estimating buffer zone widths for pesticide applications. Pesticide Science. 24: 147-161.

Payne, N.J.; Feng, J.C.; Reynolds, P.E. 1990. Off-target deposits and buffer zones required around water for aerial glyphosate applications. Pesticide Science. 30: 183-198.

Pinder, L.C.V.; House, W.A.; Farr, I.S. 1993. Effects of insecticides on freshwater invertebrates. In: Cooke, A.S., ed. The environmental effects of pesticide drift. Peterborough, UK: English Nature Report: 64-75.

Reichenberger, S.; Bach, M.; Skitschak, A.; Frede, H. 2007. Mitigation strategies to reduce pesticide inputs into groundand surface water and their effectiveness; a review. Science of the Total Environment. 384: 1-35.

Richardson, G.M.; Walklate, P.J.; Baker, D.E. 2004. Spray drift from apple orchards with deciduous windbreaks. Aspects of Applied Biology. 71: 149-156.

Robinson, R.C.; Parsons, R.G.; Barbe, G. [and others]. 2000. Drift control and buffer zones for helicopter spraying of bracken (*Pteridium aquilinum*). Agriculture, Ecosystems and Environment. 79: 215-231.

Teske, M.E. 1996. An introduction to aerial spray modeling with FSCBG. Journal of American Mosquito Control Association. 12: 353-358.

Teske, M.E.; Bird, S.L.; Esterly, D.M. 2002. AgDRIFT: A model for estimating near-field spray drift from aerial applications. Environmental Toxicology and Chemistry. 21: 659-671.

Ucar, T.; Hall. F.R. 2001. Windbreaks as a pesticide drift management strategy. Pest Management Science. 57: 663-675.

Ucar, T.; Hall, F.R.; Tew, J.T.; Hacker, J.K. 2003. Wind tunnel studies on spray deposition on leaves of tree species used for windbreaks and exposure of honey bees. Pest Management Science. 59: 358-364.

Wenneker, M.; Heijne, B.; Zande, J.C. van de. 2005. Effect of natural windbreaks on drift reduction in orchard spraying. Communications in Agricultural and Applied Biological Sciences. 70: 961-969.

Wilson, A.G.; Harper, L.A.; Baker, H. 1986. Evaluation of insecticide residues and droplet drift following aerial application to cotton in New South Wales. Australian Journal of Experimental Agriculture. 26: 237-243. http://www.publish.csiro.au/?act=view_file&file_id=EA9860237.pdf. [Date accessed: September 26, 2007].

Woods, N.; Craig, I.P.; Dorr, G.; Young, B. 2001. Spray drift of pesticides arising from aerial application in cotton. Journal of Environmental Quality. 30: 697-701.

5.4 Weed control with buffers

Asteraki, E.J.; Hart, B.J.; Ings, T.C.; Manley; W.J. 2004. Factors influencing the plant and invertebrate diversity of arable field margins. Agriculture, Ecosystems and Environment. 102: 219-231.

Damschen, E.I.; Haddad, N.M.; Orrock, J.L. [and others]. 2006. Corridors increase plant species richness at large scales. Science. 313: 1284-1286.

Devlaeminck, R.; Bossuyt, B.; Hermy, M. 2005. Seed dispersal from a forest into adjacent cropland. Agriculture, Ecosystems and Environment. 107: 57-64.

Gelbard, J.L.; Belnap, J. 2003. Roads as conduits for exotic plant invasions in a semiarid landscape. Conservation Biology. 17: 420-432.

Harvey, C.A. 2000. Colonization of agricultural windbreaks by forest trees: effects of connectivity and remnant trees. Ecological Applications. 10: 1762-1773.

Holmes, R.J.; Froud-Williams, R.J. 2005. Post-dispersal weed seed predation by avian and non-avian predators. Agriculture, Ecosystems and Environment. 105: 23-27.

Landis, D.A.; Menalled, F.D.; Costamagna, A.C.; Wilkinson, T.K. 2005. Manipulating plant resources to enhance beneficial arthropods in agricultural landscapes. Weed Science. 53: 902-908.

Marino, P.C.; Gross, K.L.; Landis, D.A. 1997. Weed seed loss due to predation in Michigan maize fields. Agriculture, Ecosystems and Environment. 66: 189-197.

Marino, P.C.; Westerman, P.R.; Pinkert, C.; van der Werf, W. 2005. Influence of seed density and aggregation on postdispersal weed seed predation in cereal fields. Agriculture, Ecosystems and Environment. 106: 17-25.

Marshall, E.J.P. 1989. Distribution patterns of plants associated with arable field edges. Journal of Applied Ecology. 26: 247-257.

Marshall, E.J.P.; Moonen, A.C. 2002. Field margins in northern Europe: their functions and interactions with agriculture. Agriculture, Ecosystems and Environment. 89: 5-21.

Menalled, F.D.; Lee, J.C.; Landis, D.A. 2001. Herbaceous filter strips in agroecosystems: implications for ground beetle (Coleoptera: Carabidae) conservation and invertebrate weed seed predation. Great Lakes Entomologist. 34: 77-91.

Menalled, F.D.; Marino, P.C.; Renner, K.A.; Landis, D.A. 2000. Post-dispersal weed seed predation in Michigan crop fields as a function of agricultural landscape structure. Agriculture, Ecosystems and Environment. 77: 193-202.

Panetta, F.D.; Hopkins, A.J.M. 1991. Weeds in corridors: invasion and management. In: Saunders, D.A.; Hobbs, R.J., eds. Nature conservation 2: the role of corridors. Chipping Norton, Australia: Surrey Beatty: 341-351.

Povey, F.D.; Smith, H.; Watt, T.A. 1993. Predation of annual grass weed seeds in arable field margins. Annals of Applied Biology. 122: 323-328.

Smith, H.; Firbank, L.G.; Macdonald, D.W. 1999. Uncropped edges of arable fields managed for biodiversity do not increase weed occurrence in adjacent crops. Biological Conservation. 89: 107-111.

Westerman, P.R.; Wes, J.S.; Kropff, M.J.; van der Werf, W. 2003. Annual losses of weed seeds due to predation in organic cereal fields. Journal of Applied Ecology. 40: 824-836.

5.5 Buffers and road intersections

AASHTO. 2001. Guidelines for geometric design of very low volume local roads (ADT<400). Washington, DC: American Association of State Highway and Transportation Officials. 94 p.

Haines, C.W.; Dines, N.T. 1997. Time-saver standards for landscape architecture. New York: McGraw-Hill. 928 p.

Mok, J.H.; Landphair, H.C.; Naderi, J.R. 2006. Landscape improvement impacts on roadside safety in Texas. Landscape and Urban Planning. 78: 263-274.

Turner, D.S.; Mansfield, E.R. 1990. Urban trees and roadside safety. Journal of Transportation Engineering. 116: 90-104.

5.6 Managing shade

Haines, C.W.; Dines, N.T. 1997. Time-saver standards for landscape architecture. New York: McGraw-Hill. 928 p.

NOAA. 2007. Solar position calculator. National Oceanic Atmospheric Administration (NOAA). Earth System Research Lab. <u>http://www.srrb.noaa.gov/highlights/sunrise/azel.html</u>. [Date accessed: September 26, 2007].

Rudie, R., Jr.; Dewers, R.S. 1984. Effects of tree shade on home cooling requirements. Journal of Arboriculture. 10: 320-322.

SBSE. 2007. Pilkington sun angle calculator. Society of Building Science Educators. http://www.sbse.org/resources/sac/PSAC Manual.pdf. [Date accessed: September 26, 2007].

5.7 Managing drifting snow

Forman, R.T.T.; Buadry, J. 1984. Hedgerows and hedgerow networks in landscape ecology. Environmental Management. 8: 495-510.

Heisler, G.M.; DeWalle, D.R. 1988. Effects of windbreak structure on wind flow. Agriculture, Ecosystems and Environment. 22/23: 41-69.

Loeffler, A.E.; Gordon, A.M; Gillespie, T.J. Optical porosity and windspeed reduction by coniferous windbreaks in southern Ontario. Agroforestry System. 17: 119-133.

Peterson, T.C.; Schmidt, R.A. 1983. Outdoor scale modeling of shrub barriers in drifting snow. Agricultural and Forest Meteorology. 31: 167-181.

Shaw, D.L. 1988. The design and use of living snow fences in North America. Agriculture, Ecosystems and Environment. 22/23: 351-362.

Tabler, R.D. 1991. Snow fence guide. SHRP-H-320. Washington, DC: National Research Council, Strategic Highway Research Program. 76 p. <u>http://onlinepubs.trb.org/onlinepubs/shrp/SHRP-H-320.pdf</u>. [Date accessed: September 26, 2007].

Tabler, R.D. 1994. Design guidelines for the control of blowing and drifting snow. Washington, DC: National Research Council, Strategic Highway Research Program. 389 p. <u>http://onlinepubs.trb.org/onlinepubs/shrp/SHRP-H-381.pdf</u>. [Date accessed: September 26, 2007].

Wight, B. 1988. Farmstead windbreaks. Agriculture, Ecosystems and Environment. 22/23: 261-280.

5.8 Windbreaks for livestock

Bird, P.R. 1998. Tree windbreaks and shelter benefits to pasture in temperate grazing systems. Agroforestry Systems. 41: 35-54.

Dronen, S.I. 1988. Layout and design criteria for livestock windbreaks. Agriculture, Ecosystems and Environment. 22/23: 231-240.

Forman, R.T.T.; Buadry, J. 1984. Hedgerows and hedgerow networks in landscape ecology. Environmental Management. 8: 495-510.

Heisler, G.M.; DeWalle, D.R. 1988. Effects of windbreak structure on wind flow. Agriculture, Ecosystems and Environment. 22/23: 41-69.

Loeffler, A.E.; Gordon, A.M; Gillespie, T.J. Optical porosity and windspeed reduction by coniferous windbreaks in southern Ontario. Agroforestry System. 17: 119-133.

Quam, V.C.; Johnson, L.; Wight, B.; Brandle, J.R. 1994. Windbreaks for livestock production. EC 94-1766-X. Lincoln, NE: University of Nebraska Cooperative Extension. 6 p. <u>http://www.unl.edu/nac/morepublications/ec1766.pdf</u>. [Date accessed: September 26, 2007].

Read, R.A. 1957. Effect of livestock concentration on surface-soil porosity within shelterbelts. Journal of Forestry. 55: 529-530.

Shaw, D.L. 1988. The design and use of living snow fences in North America. Agriculture, Ecosystems and Environment. 22/23: 351-362.

Timm, R.M. 1988. Vertebrate pest management in windbreak systems. Agriculture, Ecosystems and Environment. 22/23: 555-570.

5.9 Flood attenuation and buffers

Hey, D.L.; Philippi, N.S. 1995. Flood reduction through wetland restoration: the upper Mississippi River basin as a case history. Restoration Ecology. 3(1): 4-17.

McAllister, L.S.; Peniston, B.E.; Leibowitz, S.G. [and others]. 2000. A synoptic assessment for prioritizing wetland restoration efforts to optimize flood attenuation. Wetlands. 20: 70-83.

Mitsch, W.J. 1992. Landscape design and the role of created, restored, and natural riparian wetlands in controlling nonpoint source pollution. Ecological Engineering. 1: 27-47.

Ogawa, H.; Male, J.W. 1986. Simulating the flood mitigation roles of wetlands. Journal of Water Resources Planning and Management. 112: 114-128.

Potter, K.W. 1994. Estimating potential reduction flood benefits of restored wetlands. Water Resources Update. 97: 34-38.

Russell, G.D.; Hawkins, C.P.; O'Neill, M.P. 1997. The role of GIS in selecting sites for riparian restoration based on hydrology and land use. Restoration Ecology. 5 (4): 56-68.

Smakhtin, V.U.; Batchelor, A.L. 2005. Evaluating wetland flow regulating functions using discharge time-series. Hydrological Processes. 19: 1293-1305. Turner-Gillespie, D.F.; Smith, J.A.; Bates, P.D. 2003. Attenuating reaches and the regional flood response of an urbanizing drainage basin. Advances in Water Resources. 26: 673-684.

Zelder, J.B. 2003. Wetlands at your service: reducing impacts of agriculture at the watershed scale. Frontiers in Ecology and Environment. 1(2): 65-72.

5.10 Waterbreaks

Allen, S.B.; Dwyer, J.P.; Wallace, D.C.; Cook, E.A. 2003. Missouri River flood of 1993: role of woody corridor width in levee protection. Journal of American Water Resources Association. 39: 923-933.

Dwyer, J.P.; Wallace, D.C.; Larsen, D.R. 1997. Value of woody river corridors in levee protection along the Missouri River in 1993. Journal of the American Water Resources Association. 33: 481-489.

Geyer, W.A.; Neppl, T.; Brooks, K.; Carlisle, J. 2000. Woody vegetation protects streambank stability during the 1993 flood in central Kansas. Journal of Soil and Water Conservation. 55: 483-486.

Shields, F.D.; Gray, D.H. 1992. Effects of woody vegetation on sandy levee integrity. Water Resources Bulletin. 28: 917-931.

Wallace, D.C.; Geyer, W.A.; Dwyer, J.P. 2000. Waterbreaks: managed trees for floodplains. Agroforestry Notes 19. Lincoln, NE: USDA National Agroforestry Center. 4 p. <u>http://www.unl.edu/nac/agroforestrynotes/an19sa04.pdf</u>. [Date accessed: September 26, 2007].

5.11 Wildfire defensible buffer zones

Anchorage Wildfire Partnership. 2004. Firewise vegetation guide: protect your home from wildland fire. Anchorage, AK: Anchorage Wildlife Partnership. 10 p.

http://www.muni.org/iceimages/fire1/Firewise%20Alaska%202003%20vegetation%20guide.pdf. [Date accessed: September 26, 2007].

Bond, W.J; van Wilgen, B. 1996. Fire and Plants. New York: Chapman and Hall. 276 p.

Dennis, F.C. 2007. Creating wildfire-defensible zones. Pub. 6.302. Fort Collins, CO: Colorado State University Cooperative Extension. <u>http://www.greenhouse.colostate.edu/pubs/natres/06302.html</u>. [Date accessed: September 26, 2007].

Dennis, F.C. 2007. Fire-resistant landscaping. Pub. 6.303. Fort Collins, CO: Colorado State University Cooperative Extension. <u>http://www.greenhouse.colostate.edu/pubs/natres/06303.html</u>. [Date accessed: September 26, 2007].

Dennis, F.C. 2007. Firewise plant materials. Pub. 6.305. Fort Collins, CO: Colorado State University Cooperative Extension. <u>http://www.greenhouse.colostate.edu/pubs/natres/06305.html</u>. [Date accessed: September 26, 2007].

Doran, J.D.; Randall, C.K.; Long, A.J. 2004. Selecting and maintaining firewise plants for landscaping. Gainsville, FL: University of Florida, Institute of Food and Agricultural Sciences Extension Publication. 8 p. <u>http://edis.ifas.ufl.edu/pdffiles/FR/FR14700.pdf</u>. [Date accessed: September 26, 2007].

IHBS. 2004. Is your home protected from wildfire disaster? Tampa, FL: Institute for Business and Home Safety (IHBS). 25 p. <u>http://www.firewise.org/resources/files/wildfr2.pdf</u>. [Date accessed: September 26, 2007].

6.0 Aesthetics and Visual Quality

6.1 <u>Rural-urban land use buffer</u>

Arendt, R. 2004. Linked landscapes creating greenway corridors through conservation subdivision design strategies in the northeastern and central United States. Landscape and Urban Planning. 68: 241-269.

Brush, R.; Chenoweth, R.E.; Barman, T. 2000. Group differences in the enjoyability of driving through rural landscapes. Landscape and Urban Planning. 47 :39-45.

Dwyer, J.F.; Schroeder, H.W.; Gobster, P.H. 1991. The significance of urban trees and forests: towards a deeper understanding of values. Journal of Arboriculture. 17: 276-284.

Erickson, D.L.; Ryan, R.L., De Young, R. 2002. Woodlots in the rural landscape: landowner motivations and management attitudes in a Michigan case study. Landscape and Urban Planning. 58: 101-112.

Kuo, F.E. 2001. Coping with poverty: impacts of environment and attention in the inner city. Environment and Behavior. 33: 5-34.

McPherson, G. 1988. Functions of buffer plantings in urban environments. Agriculture, Ecosystems and Environment. 22/23: 281-298.

Nassauer, J.I. 1993. Ecological function and the perception of suburban residential landscapes. In: Gobster, R., ed. Managing urban and high-use recreation settings. Gen. Tech. Rep. NC-163. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 55-60.

Schoeneberger, M.M.; Bentrup, G.; Francis, C.F. 2001. Ecobelts: reconnecting agriculture and communities. In: Flora, C.B., ed. Interactions between agroecosystems and rural human communities. Boca Raton, FL: CRC Press. 239-260 p.

Smardon, R.C. 1988. Perception and aesthetics of the urban environment: review of the role of vegetation. Landscape and Urban Planning. 15: 86-106.

Sullivan, W.C. 1994. Perceptions of the rural-urban fringe: citizen preferences for natural and developed settings. Landscape and Urban Planning. 29: 85-101.

Sullivan, W.C.; Anderson, O.M.; Lovell, S.T. 2004. Agricultural buffers at the rural-urban fringe: an examination of approval by farmers, residents, and academics in the Midwestern United States. Landscape and Urban Planning. 69: 299-313.

6.2 Windbreaks for odor control

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 1998. Urban woodlands: their role in reducing the effects of particulate pollution. Environmental Pollution. 99: 347-360.

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 2000. The capture of particulate pollution by trees at five contrasting urban sites. Arboricultural Journal. 24: 209-230.

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 2000. Particulate pollution capture by urban trees: effect of species and windspeed. Global Change Biology. 6: 995-1003.

Bennett, J.H.; Hill, A.C. 1973. Absorption of gaseous air pollutants by a standardized canopy. Journal of Air Pollution Control Association. 23: 203-206.

Elkiey, T.; Ormond, D.P.; Marie, B. 1982. Foliar sorption of sulfur dioxide, nitrogen dioxide, and ozone by ornamental woody plants. Horticultural Science. 17: 358-360.

Hill, A.C. 1971. Vegetation: a sink for atmospheric pollutants. Journal of Air Pollution Control Association. 21: 341-346.

Khan, F.I.; Abbasi, S.A. 2000. Attenuation of gaseous pollutants by greenbelts. Environmental Monitoring and Assessment 64: 457-475.

Lin, X.J.; Barrington, S.; Nicell, J. [and others]. 2006. Influence of windbreaks on livestock odour dispersion plume in the field. Agriculture, Ecosystems and Environment 116:263-272.

Lin, X.J.; Barrington, S.; Nicell, J. [and others]. 2007. Livestock odour dispersion as affected by natural windbreaks. Water, Air, and Soil Pollution. 182: 263-273.

Lin, X.J.; Barrington, S.; Nicell, J.; Choiniére, D. 2007.Effect of natural windbreaks on maximum odour dispersion distance. Canadian Biosystems Engineering. 49: 6.21-6.32.

Reischl, A.; Reissinger, M.; Thoma, H.; Hutzinger, O. 1989. Accumulation of organic air constituents by plant surfaces. Chemosphere. 18: 561-568.

Thernelius, S.M. 1997. Wind tunnel testing of odor transportation from swine production facilities. Ames, IA: Iowa State University. 111 p. M.S. thesis.

Tyndall, J.; Colletti, J. 2000. Air quality and shelterbelts: odor mitigation and livestock production literature review. Ames, IA: Iowa State University, Forestry Department. 74 p.

Tyndall, J.; Colletti, J. 2007. Mitigating swine odor with strategically designed shelterbelt systems: a review. Agroforestry Systems. 69: 45-65.

Welke, B.; Ettlinger, K.; Riederer, M. 1998. Sorption of volatile organic chemicals in plant surfaces. Environmental Science and Technology. 32: 1099-1104.

6.3 Air quality buffers

Akbari, H. 2002. Shade trees reduce building energy use and Co2 emissions from power plants. Environmental Pollution. 116: S119-S126.

Akbari, H.; Pomerantz, M.; Taha, H. 2001. Cool surfaces and shade trees to reduce energy use and improve air quality in urban areas. Solar Energy. 70: 295-310.

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 1998. Urban woodlands: their role in reducing the effects of particulate pollution. Environmental Pollution. 99: 347-360.

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 2000. Effective tree species for local air-quality management. Journal of Arboriculture. 26: 12-19.

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 2000. The capture of particulate pollution by trees at five contrasting urban sites. Arboricultural Journal. 24: 209-230.

Beckett, K.P.; Freer-Smith, P.; Taylor, G. 2000. Particulate pollution capture by urban trees: effect of species and windspeed. Global Change Biology 6: 995-1003.

Benjamin, M.T.; Winer, A.M. 1998. Estimating the ozone-forming potential of urban trees and shrubs. Atmospheric Environment. 32: 53-68.

Bernatzky, A. 1982. The contribution of trees and green spaces to a town climate. Energy and Buildings. 5: 1-10.

Carlisle, A.J.; Sharp, N.C.C. 2001. Exercise and outdoor ambient air pollution. British Journal of Sports Medicine. 35: 214-222.

Desanto, R.S.; Glaser, R.A.; McMillen, W.P. [and others]. 1976. Open space as an air resource management measure. volume II: design criteria. EPA-450/3-76-028b. Research Triangle Park, NC: U.S. Environmental Protection Agency. 183 p.

Dochinger, L.S. 1980. Interception of airborne particles by tree plantings. Journal of Environmental Quality. 9: 265-268.

Everett, M.D. 1974. Roadside air pollution hazards in recreational land use planning. Journal of the American Institute of Planning. 40: 83-89.

Fowler, D.; Cape, J.N.; Unsworth, M.H. [and others]. 1989. Deposition of atmospheric pollutants on forests [and discussion]. Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences. 324: 247-265.

Freer-Smith, P.H.; Holloway, S.; Goodman, A. 1996. The uptake of particulates by an urban woodland: site description and particulate composition. Environmental Pollution. 95: 27-35.

Hagevik, G.; Mandelker, D.; Brail, R. 1974. The contribution of urban planning to air quality. EPA-450/3-75-038. Research Triangle Park, NC: U.S. Environmental Protection Agency.

Hill, A.C. 1971. Vegetation: a sink for atmospheric pollution. Journal of the Air Pollution Control Association. 21: 341-346.

Hosker, R.P., Jr.; Lindberg, S.E.1982. Review: atmospheric deposition and plant assimilation of gases and particles. Atmospheric Environment. 16: 889-910.

Kapoor, R.K.; Gupta, V.K. 1984. Air pollution attention coefficient concept for optimization of greenbelt. Atmospheric Environment. 18: 1107-1113.

Khan, F.I.; Abbasi, S.A. 2000. Attenuation of gaseous pollutants by greenbelts. Environmental Monitoring and Assessment. 64: 457-475.

Madders, M.; Lawrence, M. 1982. The role of woodland in air pollution control. Quarterly Journal of Forestry. 76: 256-260.

Madders, M.; Lawrence, M. 1985. The contribution made by vegetation buffer zones to improved air quality in urban areas. Tasks for Vegetation Science. 14: 175-181.

McPherson, E.G.; Scott, K.I.; Simpson, J.R. 1998. Estimating cost effectiveness of residential yard trees for improving air quality in Sacramento, California, using existing models. Atmospheric Environment. 32: 75-84.

Nowak, D.J. 1994. Air pollution removal by Chicago's urban forest. In: McPherson, E.G.; Nowak, D.J.; Rowntree, R.A., eds. Chicago's urban forest ecosystem: results of the Chicago Urban Forest Climate Project. Gen. Tech. Rep. NE-186. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 63-81.

Nowak, D.J.; Crane, D.E. 2002. Carbon storage and sequestration by urban trees in the USA. Environmental Pollution. 116: 381-389.

Nowak, D.J.; Crane, D.E.; Stevens, J.C. 2006. Air pollution removal by urban trees and shrubs in the United States. Urban Forestry and Urban Greening. 4: 115-123.

Nowak, D.J.; Stevens, J.C.; Sisinni, S.M.; Luley, J.C. 2002. Effects of urban tree management and species selection on atmospheric carbon dioxide. Journal of Arboriculture. 28: 113-122.

Scott, K.I.; Simpson, J.R.; McPherson, E.G. 1999. Effects of tree cover on parking lot microclimate and vehicle emissions. Journal of Arboriculture. 25: 129-141.

Smith, W.H. 1984. Pollutant uptake by plants. In: Treshow, M., ed. Air pollution and plant life. New York: Wiley and Sons: 417-450.

Smith, W.H. 1990. Air pollution and forests. New York: Springer-Verlag. 618 p.

Smith, W.H.; Dochinger, S. 1976. Capability of metropolitan trees to reduce atmospheric contaminants. Gen. Tech. Rep. NE-22. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 49-59.

Thernelius, S.M. 1997. Wind tunnel testing of odor transportation from swine production facilities. Ames, IA: Iowa State University. 111 p. M.S. thesis.

Thorne, L.; Hanson, G.P. 1972. Species differences in rates of vegetal ozone absorption. Environmental Pollution. 3: 303-312.

Tyndall, J.; Colletti, J. 2000. Air quality and shelterbelts: odor mitigation and livestock production literature review. Ames, IA: Iowa State University, Forestry Department. 74 p.

Varshney, C.K.; Mitra, I. 1993. Importance of hedges in improving urban air quality. Landscape and Urban Planning. 25: 75-83.

Weathers, K.C.; Cadenasso, M.L.; Pickett, S.T.A. 2001. Forest edges as nutrient and pollutant concentrators: potential synergisms between fragmentation, forest canopies, and the atmosphere. Conservation Biology. 15: 1506-1514.

Yang, J.; McBride, J.; Zhou, J.; Sun. Z. 2005. The urban forest in Beijing and its role in air pollution reduction. Urban Forestry and Urban Greening. 3: 65-78.

6.4 Buffers for noise control

Anderson, L.M.; Mulligan, B.E.; Goodman, L.S. 1984. Effects of vegetation on human response to sound. Journal of Arboriculture. 10: 45-49.

Aylor, D.E. 1972. Noise reduction by vegetation and ground. Journal of the Acoustical Society of America. 51: 197-205.

Bullen, R.; Fricke, F. 1982. Sound propagation through vegetation. Journal of Sound and Vibration. 80: 11-23.

Cook, D.I.; Haverbeke, D.F.V. 1971. Trees and shrubs for noise abatement. Bulletin RB246. Lincoln, NE: University of Nebraska, College of Agricultural Experimental Station. 77 p.

Cook, D.I.; Haverbeke, D.F.V. 1972. Trees, shrubs, and landforms for noise control. Journal of Soil and Water Conservation. 27: 259-261.

Cook, D.I.; Haverbeke, D.F.V. 1974. Tree-covered land-forms for noise control. Bulletin RB263. Lincoln, NE: University of Nebraska, College of Agricultural Experimental Station. 52 p.

Cook, D.I.; Haverbeke, D.F.V. 1977. Suburban noise control with plant materials and solid barriers. Bulletin EM100. Lincoln, NE: University of Nebraska, College of Agricultural Experimental Station Bulletin. 74 p.

Embleton, T.F.W. 1963. Sound propagation in homogeneous deciduous and evergreen woods. Journal of the Acoustical Society of America. 35: 1119-1125.

Fang, C.F.; Ling, D.L. 2003. Investigation of the noise reduction provided by tree belts. Landscape and Urban Planning. 63: 187-195.

Fang, C.F.; Ling, D.L. 2005. Guidance for noise reduction provided by tree belts. Landscape and Urban Planning. 71: 29-34.

Fricke, F. 1984. Sound attenuation in forests. Journal of Sound and Vibration. 92: 149-158.

Harris, R.A. 1985. Vegetative barriers: an alternative highway noise abatement measure. Noise Control Engineering Journal. 27: 4-8.

Harris, R.A.; Cohn, L.F. 1985. Use of vegetation for abatement of highway traffic noise. Journal of Urban Planning and Development. 111: 34-48.

Heisler, G.M. 1977. Trees modify metropolitan climate and noise. Journal of Arboriculture. 3: 201-207.

Kotzen, B. 2004. Plants and environmental noise barriers. Acta Horticulturae. 643: 265-275.

Kragh, J. 1979. Pilot study on railway noise attenuation by belts of trees. Journal of Sound and Vibration. 66: 407-415.

Kragh, J. 1981. Road traffic noise attenuation by belts of trees. Journal of Sound and Vibration. 74: 235-241.

Martens, M.J.M. 1981. Noise abatement in plant monocultures and plant communities. Applied Acoustics. 14: 167-189.

Reethof, G. 1973. Effect of plantings on radiation of highway noise. Journal of the Air Pollution Control Association. 23: 185-189.

Reethof, G.; Heisler, G.M. 1976. Trees and forests for noise abatement and visual screening. In: Gen. Tech. Rep. NE-22. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 39-48.

Reethof, G.; McDaniel, O.H.; Heisler, G.M. 1977. Sound adsorption characteristics of tree bark and forest floor. In: Gen. Tech. Rep. NE-25. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 206-217.

Whitcomb, C.D.; Stowers, J.F. 1973. Sound abatement with hedges. HortScience. 8: 128-129.

6.5 Developing an ecological aesthetic

Balling, J.D.; Falk, J.H. 1982. Development of visual preference for natural environments. Environment and Behavior. 14: 5-28.

Brown, T.C.; Daniel, T.C. 1984. Modeling forest scenic beauty: concepts and application to ponderosa pine. Res. Pap. RM-256. Fort Collins, CO: U.S. Department of Agriculture, Forest Services, Rocky Mountain Forest and Range Experiment Station. 35 p.

Brush, R.O. 1979. The attractiveness of woodlands: perceptions of forest landowners in Massachusetts. Forest Science. 25: 495-506.

Coeterier, J.F.; Dijkstra, H. 1976. Research on the visual perception and application of visual changes in a hedgerow landscape. Landscape and Urban Planning. 3: 421-452.

Cook, P.S.; Cable, T.T. 1995. The scenic beauty of shelterbelts on the Great Plains. Landscape and Urban Planning. 32: 63-69.

Dutcher, D.D.; Finley, J.C.; Luloff, A.E.; Johnson, J. 2004. Landowner perceptions of protecting and establishing riparian forests: a qualitative analysis. Society and Natural Resources. 17: 319-332.

Dwyer, J.F.; Schroeder, H.W.; Gobster, P.H. 1991. The significance of urban trees and forests: towards a deeper understanding of values. Journal of Arboriculture. 17: 276-284.

Egoz, S.; Bowring, J.; Perkins, H.C. 2001. Tastes in tension: form, function, and meaning in New Zealand's farmed landscapes. Landscape and Urban Planning. 57: 177-196.

Egoz, S.; Bowring, J.; Perkins, H.C. 2006. Making a 'mess' in the countryside: organic farming and the threats to sense of place. Landscape Journal. 25: 54-66.

Erickson, D.L.; Ryan, R.L.; De Young, R. 2002. Woodlots in the rural landscape: landowner motivations and management attitudes in a Michigan case study. Landscape and Urban Planning. 58: 101-112.

Fry, G.; Herlin, I.S. 1997. The ecological and amenity functions of woodland edges in the agricultural landscape: a basis for design and management. Landscape and Urban Planning. 37: 45-55.

Gobster, P.H. 1999. An ecological aesthetic for forest landscape management. Landscape Journal. 18: 54-64.

Gregory, K.J.; Davis, R.J. 1993. The perception of riverscape aesthetics: an example from two Hampshire rivers. Journal of Environmental Management. 39: 171-185.

Hands, D.E.; Brown, R.D. 2002. Enhancing visual preference of ecological rehabilitation sites. Landscape and Urban Planning. 58: 57-70.

Herzog, T.R. A cognitive analysis of preference for waterscapes. 1985. Journal of Environmental Psychology. 5: 225-241.

Herzog, T.R.; Herbert, E.J.; Kaplan, R.; Crooks, C.L. 2000. Cultural and developmental comparisons of landscape perceptions and preferences. Environment and Behavior. 32: 323-346.

Kaplan, R.; Kaplan, S.; Ryan, R.L. 1998. With people in mind: design and management of everyday nature. Washington DC: Island Press. 244 p.

Karjalainen, E.; Komulainen, M. 1998. Field afforestation preferences: a case study in northeastern Finland. Landscape and Urban Planning. 43: 79-90.

Kellomaki, S.; Savolainen, R. 1984. The scenic value of the forest landscape as assessed in the field and the laboratory. Landscape Planning. 11: 97-107.

Kuo, F.E. 2001. Coping with poverty: impacts of environment and attention in the inner city. Environment and Behavior. 33: 5-34.

Lamb, R.J.; Purcell, A.T. 1990. Perception of naturalness in landscape and its relationship to vegetation structure. Landscape and Urban Planning. 19: 333-352.

Lohr, V.I.; Pearson-Mims, C.H. 2006. Responses to scenes with spreading, rounded, and conical tree forms. Environment and Behavior. 38: 667-688.

Matsuoka, R.H. 2002. Increasing the acceptability of urban nature through effective cues to care: a study of the Lower Arroyo Seco Natural Park, Pasadena, California. Pomona, CA: California State Polytechnic University. M.S. thesis.

Misgav, A. 2000. Visual preference of the public for vegetation groups in Israel. Landscape and Urban Planning. 48: 143-159.

Nassauer, J.I. 1988. The aesthetics of horticulture: neatness as a form of care. HortScience. 23: 973-977.

Nassauer, J.I. 1992. The appearance of ecological systems as a matter of policy. Landscape Ecology. 6: 239-250.

Nassauer, J.I. 1993. Ecological function and the perception of suburban residential landscapes. In: Gobster, R., ed. Managing urban and high-use recreation settings. Gen. Tech. Rep. NC-163. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 55-60.

Nassauer, J.I. 1995. Messy ecosystems: orderly frames. Landscape Journal. 14: 161-170.

Nassauer, J.I. 2004. Monitoring the success of metropolitan wetland restorations: cultural sustainability and ecological function. Wetlands. 24: 756-765.

Nelson, W.R., Jr. 1976. Esthetic considerations in the selection and use of trees in the urban environment. In: Gen. Tech. Rep. NE-22. Upper Darby: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 13-24 p.

Ode, A. 2003. Visual aspects in urban woodland management and planning. Alnarp, Sweden: Swedish University of Agricultural Sciences. 41 p. Ph.D. dissertation.

Parsons, R. 1995. Conflict between ecological sustainability and environmental aesthetics: conundrum, canard or curiosity. Landscape and Urban Planning. 32: 227-244.

Ribes, R.G. 1989. The aesthetics of forestry: what has empirical preference research taught us. Environmental Management. 13: 55-74.

Ryan, R.L. 1998. Local perceptions and values for a midwestern river corridor. Landscape and Urban Planning. 42: 225-237.

Ryan, R.L.; Erickson, D.L.; De Young, R. 2003. Farmers' motivations for adopting conservation practices along riparian zones in a mid-western agricultural landscape. Journal of Environmental Planning and Management. 46: 19-37.

Schrader, C.C. 1995. Rural greenway planning: the role of streamland perception in landowner acceptance of land management strategies. Landscape and Urban Planning. 33: 375-390.

Schroeder, H.W.; Green, T.L. 1985. Public preference for tree density in municipal parks. Journal of Arboriculture. 11: 272-277.

Schroeder, H.W.; Orland, B. 1994. Viewer preference for spatial arrangement of park trees: an application of videoimaging technology. Environmental Management. 18: 119-128. Sheppard, S.R.J. 2000. Beyond visual resource management: emerging theories of an ecological aesthetic and visible stewardship. In: Sheppard, S.R.J.; Harshaw, H., eds. Forests and landscapes: linking ecology, sustainability, and aesthetics. Wallingford, UK: CABI, IUFRO Research Series: 149-173.

Smardon, R.C. 1988. Perception and aesthetics of the urban environment: review of the role of vegetation. Landscape and Urban Planning. 15: 86-106.

Sullivan, W.C. 1994. Perceptions of the rural-urban fringe: citizen preferences for natural and developed settings. Landscape and Urban Planning. 29: 85-101.

Summit, J.; Sommer, R. 1999. Further studies of preferred tree shapes. Environment and Behavior. 31: 550-576.

Ulrich, R.1986. Human response to vegetation and landscapes. Landscape and Urban Planning. 13: 29-44.

Urban, M.A. 2005. Values and ethical beliefs regarding agricultural drainage in central Illinois, USA. Society and Natural Resources. 18: 173-189.

Yarrow, C. 1966. A preliminary survey of the public's concepts of amenity in British forestry. Forestry. 39: 59-67.

6.6 Attractive roadside corridors

Akbar, K.F.; Hale, W.H.G.; Headley, A.D. 2003. Assessment of scenic beauty of the roadside vegetation in northern England. Landscape and Urban Planning. 63: 139-144.

Brush, R.; Chenoweth, R.E.; Barman, T. 2000. Group differences in the enjoyability of driving through rural landscapes. Landscape and Urban Planning. 47: 39-45.

Cackowski, J.M.; Nasar, J.L. 2003. The restorative effects of roadside vegetation: implications for automobile driver anger and frustration. Environment and Behavior. 35: 736-751.

Clay, G.R.; Daniel, T.C. 2000. Scenic landscape assessment: the effects of land management jurisdiction on public perception of scenic beauty. Landscape and Urban Planning. 49: 1-13.

Cook, P.S.; Cable, T.T. 1995. The scenic beauty of shelterbelts on the Great Plains. Landscape and Urban Planning. 32: 63-69.

Dwyer, J.F.; Schroeder, H.W.; Gobster, P.H. 1991. The significance of urban trees and forests: towards a deeper understanding of values. Journal of Arboriculture. 17: 276-284.

Froment, J. and G. Domon. 2006. Viewer appreciation of highway landscapes: the contribution of ecologically managed embankments in Quebec, Canada. Landscape and Urban Planning. 78: 14-32

Hands, D.E.; Brown, R.D. 2002. Enhancing visual preference of ecological rehabilitation sites. Landscape and Urban Planning 58:57-70.

Kaplan, R.; Kaplan, S.; Ryan, R.L. 1998. With people in mind: design and management of everyday nature. Washington DC: Island Press. 244 p.

Kellomaki, S.; Savolainen, R. 1984. The scenic value of the forest landscape as assessed in the field and the laboratory. Landscape Planning. 11: 97-107.

Mok, J.H.; Landphair, H.C.; Naderi, J.R. 2006. Landscape improvement impacts on roadside safety in Texas. Landscape and Urban Planning. 78: 263-274.

Nelson, W.R., Jr. 1976. Esthetic considerations in the selection and use of trees in the urban environment. In: Gen. Tech. Rep. NE-22. Upper Darby: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 13-24 p.

Sullivan, W.C.; Lovell, S.T. 2006. Improving the visual quality of commercial development at the rural-urban fringe. Landscape and Urban Planning. 77: 152-166.

Summit, J.; Sommer, R. 1999. Further studies of preferred tree shapes. Environment and Behavior. 31: 550-576.

Turner, D.S.; Mansfield, E.R. 1990. Urban trees and roadside safety. Journal of Transportation Engineering. 116: 90-104.

Ulrich, R.S. 1973. Scenery and the shopping trip: the roadside environment as a factor in route choice. Michigan Geographical Publication No. 12. Ann Arbor, MI: University of Michigan.

Ulrich, R.1986. Human response to vegetation and landscapes. Landscape and Urban Planning. 13: 29-44.

Wolf, K.L. 2003. Freeway roadside management: the urban forest beyond the white line. Journal of Arboriculture. 29: 127-136.

6.7 Buffers for visual screening

Brush, R.O.; Williamson, D.N.; Fabos, J.G. 1979. Visual screening potential of forest vegetation. Urban Ecology. 4: 207-216.

Drummond, R.R.; Lackey, E.E. 1956. Visibility in some forest stands of the United States. Tech. Rep. EP-36. Natick, MA: Environmental Protection Research Division, Headquarters Quartermaster Research and Development Command. 25 p.

Hull, R.B.; Robertson, D.P.; Buhyoff, G.J.; Kendra, A. 2000. What are we hiding behind the visual buffer strip? Journal of Forestry. 98: 34-38.

Kaplan, R.; Kaplan, S.; Ryan, R.L. 1998. With people in mind: design and management of everyday nature. Washington DC: Island Press. 244 p.

McPherson, G. 1988. Functions of buffer plantings in urban environments. Agriculture, Ecosystems and Environment. 22/23: 281-298.

Mok, J.H.; Landphair, H.C.; Naderi, J.R. 2006. Landscape improvement impacts on roadside safety in Texas. Landscape and Urban Planning. 78: 263-274.

Reethof, G.; Heisler, G.M. 1976. Trees and forests for noise abatement and visual screening. In: Gen. Tech. Rep. NE-22. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 39-48.

Turner, D.S.; Mansfield, E.R. 1990. Urban trees and roadside safety. Journal of Transportation Engineering. 116: 90-104.

7.0 Outdoor Recreation

7.1 Trail design and wildlife

Beale, C.M.; Monaghan, P. 2004. Human disturbance: people as predation-free predators? Journal of Applied Ecology. 41: 335-343.

Benninger-Truax, M.; Vankat, J.L.; Schaefer, R.L. 1992. Trail corridors as habitat and conduits for movement of plant species in Rocky Mountain National Park, Colorado. Landscape Ecology. 6: 269-278.

Boyle, S.A.; Samson, F.B. 1985. Effects of nonconsumptive recreation on wildlife: a review. Wildlife Society Bulletin. 13: 110-116.

Briffett, C. 2001. Is managed recreational use compatible with effective habitat and wildlife occurrence in urban open space corridor systems? Landscape Research. 26: 137-163.

Cole, D. 1993. Minimizing conflict between recreation and nature conservation. In: Smith, D.S; Hellmund, P.C., eds. Ecology of greenways. Minneapolis: Minnesota Press: 105-122.

Colorado State Parks. 1998. Planning trails with wildlife in mind. Denver: Trails and wildlife task force, Colorado state parks, and Hellmund Associates. 51 p.

Dickens, S.J.M.; Gerhardt, F.; Collinge, S.K. 2005. Recreational portage trails as corridors facilitating non-native plant invasions of the Boundary Waters Canoe Area Wilderness. Conservation Biology. 19: 1653-1657.

Hesselbarth, W.; Vachowski, B. 2004. Trail construction and maintenance handbook. 0023-2839-MTDC-P. U.S. Department of Agriculture, Forest Service, Technology and Development Program. http://www.fhwa.dot.gov/environment/fspubs/00232839/. [Date accessed: September 24, 2007].

Hickman, S. 1990. Evidence of edge species attraction to nature trails within deciduous forest. Natural Areas Journal. 10: 3-5.

Kent, R.L.; Elliott, C.L. 1995. Scenic routes linking and protecting natural and cultural landscape features: a greenway skeleton. Landscape and Urban Planning. 33: 341-355.

Mason, J.; Moorman, C.; Hess, G.; Sinclair, K. 2007. Designing suburban greenways to provide habitat for forest-breeding birds. Landscape and Urban Planning. 80:.53-164.

Miller, S.; Knight, R.; Miller, C. 1998. Influence of recreational trails on breeding bird communities. Ecological Applications. 8: 162-169.

Miller, S.; Knight, R.; Miller, C. 2001. Wildlife responses to pedestrians and dogs. Wildlife Society Bulletin. 29: 124-132.

Poague, K.L.; Johnson, R.J.; Young, L.J. 2000. Bird use of rural and urban converted railroad right-of-ways in southeast Nebraska. Wildlife Society Bulletin. 28: 852-864.

Potito, A.P; Beatty, S.W. 2005. Impacts of recreation trails on exotic and ruderal species distribution in grassland areas along the Colorado Front Range. Environmental Management. 36: 230-236.

Schiller, A.; Horn, S.P. 1997. Wildlife conservation in urban greenways of the mid-southeastern United States. Urban Ecosystems. 1: 103-116.

Sinclair, K.E.; Hess, G.R.; Moorman, C.E.; Mason, J.H. 2005. Mammalian nest predators respond to greenway width, landscape context, and habitat structure. Landscape and Urban Planning. 71: 277-293.

Steinholtz, R.T.; Vachowski, B. 2001. Wetland trail design and construction. Tech. Rep. 0123-2833-MTDC. U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. http://www.fhwa.dot.gov/environment/fspubs/01232833/. [Date accessed: September 24, 2007].

Stohlgren, T.J.; Bull, K.A.; Otsuki, Y.; Villa, C.A.; Lee, M. 1998. Riparian zones as havens for exotic plant species in central grasslands. Plant Ecology. 138: 113-125.

Taylor, A.R.; Knight, R.L. 2003. Wildlife responses to recreation and associated visitor perceptions. Ecological Applications. 13: 951-963.

Tyser, R.W.; Worley, C.A. 1992. Alien flora in grasslands adjacent to road and trail corridors in Glacier National Park, Montana (USA). Conservation Biology. 6: 253-262.

7.2 Flight initiation distance buffers

Altmann, M. 1958. The flight distance in free-ranging big game. Journal of Wildlife Management. 22:.207-209.

Beale, C.M.; Monaghan, P. 2004. Human disturbance: people as predation-free predators? Journal of Applied Ecology. 41:.335-343.

Blumstein, D.T.; Fernandez-Juricic, E.; Zollner, P.A.; Garity, S.C. 2005. Inter-specific variation in avian responses to human disturbance. Journal of Applied Ecology. 42: 943-953.

Blumstein, D.T.; Anthony, L.L.; Horcourt, R.; Ross, G. 2003. Testing a key assumption of wildlife buffer zones: is flight initiation distance a species-specific trait. Biological Conservation. 110: 97-100.

Colorado State Parks. 1998. Planning trails with wildlife in mind. Denver: Trails and wildlife task force, Colorado state parks, and Hellmund Associates. 51 p.

Cooke, A.S. 1980. Observations on how close certain passerine species will tolerate an approaching human in rural and suburban areas. Biological Conservation. 18: 85-88.

Erwin, R.M. 1989. Responses to human intruders by birds nesting in colonies: experimental results and management guidelines. Colonial Waterbirds. 12: 104-108.

Fernandez-Juricic, E.; Vaca, R.; Schroeder, N. 2004. Spatial and temporal responses of forest birds to human approaches in a protected area and implications for two management strategies. Biological Conservation. 117: 407-416.

Fernandez-Juricic, E.; Venier, M.P.; Renison, D.; Blumstein, D.T. 2005. Sensitivity of wildlife to spatial patterns of recreationist behavior: a critical assessment of minimum approaching distances and buffer areas for grassland birds. Biological Conservation. 125: 225-235.

Holmes, T.L.; Knight, R.L.; Stegall, L.; Craig, G.R. 1993. Response of wintering grassland raptors to human disturbance. Wildlife Society Bulletin. 21: 461-468.

Miller, S.; Knight, R.; Miller, C. 1998. Influence of recreational trails on breeding bird communities. Ecological Applications. 8: 162-169.

Miller, S.; Knight, R.; Miller, C. 2001. Wildlife responses to pedestrians and dogs. Wildlife Society Bulletin. 29: 124-132.

Richardson, C.T.; Miller, C.K. 1997. Recommendations for protecting raptors from human disturbance: a review. Wildlife Society Bulletin. 25: 634-638.

Rodgers, J.A., Jr.; Smith, H.T. 1995. Set-back distances to protect nesting bird colonies from human disturbance in Florida. Conservation Biology. 9: 89-99.

Rodgers, J.A., Jr.; Smith, H.T. 1997. Buffer zone distances to protect foraging and loafing waterbirds from human disturbance in Florida. Wildlife Society Bulletin. 25: 139-145.

Schultz, R.D.; Bailey, J.A. 1978. Responses of national park elk to human activity. Journal of Wildlife Management. 42: 91-100.

Taylor, A.R.; Knight, R.L. 2003. Wildlife responses to recreation and associated visitor perceptions. Ecological Applications. 13: 951-963.

7.3 Trails along riparian corridors

Cole, D. 1993. Minimizing conflict between recreation and nature conservation. In: Smith, D.S.; Hellmund, P.C., eds. Ecology of greenways. Minnepolis: Minnesota Press: 105-122.

Hellmund, P.C.; Smith, D.S. 2006. Designing greenways: sustainable landscapes for nature and people. Washington, DC: Island Press. 270 p.

Hesselbarth, W.; Vachowski, B. 2004. Trail construction and maintenance handbook. 0023-2839-MTDC-P. U.S. Department of Agriculture, Forest Service, Technology and Development Program. <u>http://www.fhwa.dot.gov/environment/fspubs/00232839/</u>. [Date accessed: September 24, 2007].

Manning, R.E. 1979. Impacts of recreation on riparian soils and vegetation. Water Resources Bulletin. 15: 30-43.

Miller, J.R.; Hobbs, N.T. 2000. Recreational trails, human activity, and nest predation in lowland riparian areas. Landscape and Urban Planning. 50: 227-236.

Miller, J.R.; Wiens, J.A.; Hobbs, N.T.; Theobald, D.M. 2003. Effects of human settlement on bird communities in lowland riparian areas of Colorado. Ecological Applications. 13: 1041-1059.

Miller, S.; Knight, R.; Miller, C. 1998. Influence of recreational trails on breeding bird communities. Ecological Applications. 8: 162-169.

Schaefer, J.M.; Brown, M.T. 1992. Designing and protecting river corridors for wildlife. Rivers. 3(1): 14-26.

Settergren, C.D. 1977. Impacts of river recreation use on streambank soils and vegetation – state of the knowledge. In: River recreation management and research. Gen. Tech. Rep. NC-28. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 55-60.

Steinholtz, R.T.; Vachowski, B. 2001. Wetland trail design and construction. Tech. Rep. 0123-2833-MTDC. U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. <u>http://www.fhwa.dot.gov/environment/fspubs/01232833/</u>. [Date accessed: September 24, 2007]. Stohlgren, T.J.; Bull, K.A.; Otsuki, Y. [and others]. 1998. Riparian zones as havens for exotic plant species in central grasslands. Plant Ecology. 138: 113-125.

7.4 Soil erosion and trail recreation

Brown, J.H., Jr.; Kalisz, S.P.; Wright, W.R. 1977. Effects of recreational use on forested sites. Environmental Geology. 1: 425-431.

Bryan, R. 1977. The influence of soil properties on degradation of mountain hiking trails at Grovelsjon. Geografiska Annaler. 59: 49-65.

Burde, J.H.; Renfro, J.R. 1986. Use impacts on the Appalachian Trail. In: Lucas, R., ed. Proceedings of the national wilderness research conference: current research. Gen. Tech. Rep. INT-212. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station: 138-143.

Deluca, T.H.; Patterson, W.A., IV; Freimund, W.A.; Cole, D.N. 1998. Influence of llamas, horses, and hikers on soil erosion from established recreation trails in western Montana, USA. Environmental Management. 22: 255-262.

Gabriels, D.; Moldenhauer, W.C. 1978. Size distribution of eroded material from simulated rainfall: effect over a range of texture. Soil Science Society of America Journal. 42: 954-958.

Green, D.M. 1998. Recreational impacts on erosion and runoff in a central Arizona riparian area. Journal of Soil and Water Conservation. 53: 38-42.

Hellmund, P.C.; Smith, D.S. 2006. Desiging greenways: sustainable landscapes for nature and people. Washington, DC: Island Press. 270 p.

Hesselbarth, W.; Vachowski, B. 2004. Trail construction and maintenance handbook. 0023-2839-MTDC-P. U.S. Department of Agriculture, Forest Service, Technology and Development Program. http://www.fhwa.dot.gov/environment/fspubs/00232839/. [Date accessed: September 24, 2007].

Jubenville, A.; O'Sullivan, K. 1987. Relationship of vegetation type and slope gradient to trail erosion in interior Alaska. Journal of Soil and Water Conservation. 42: 450-452.

Lehvavirta, S. 1999. Structural elements as barriers against wear in urban woodlands. Urban Ecosystems. 3: 45-56.

Leung, Y.; Marion, J.L. 1996. Trail degradation as influenced by environmental factors: a state-of-the-knowledge review. Journal of Soil and Water Conservation. 51: 130-136.

Manning, R.E. 1979. Impacts of recreation on riparian soils and vegetation. Water Resources Bulletin. 15: 30-43.

Monti, P.W.; Mackintosh, E.E. 1979. Effect of camping on surface soil properties in the boreal forest region of Northwestern Ontario, Canada. Soil Science Society of America Journal. 43: 1024-1029.

Parker, T.C. 2004. Natural surface trails by design. Boulder, CO: NatureShape. 80 p.

Parker, T.C. 1994. Trail design and management handbook. Pitkin County, CO: Open Space and Trails Program. 230 p.

Roovers, P.; Dumont, B.; Gulinck, H.; Hermy, M. 2004. Visual obstruction of herb vegetation, defining standards for natural barriers. Working papers of the Finnish Forest Research Institute 2. <u>http://www.metla.fi/julkaisut/workingpapers/2004/mwp002-60.pdf</u>. [Date accessed: September 24, 2007].

Settergren, C.D. 1977. Impacts of river recreation use on streambank soils and vegetation – state of the knowledge. In: River recreation management and research. Gen. Tech. Rep. NC-28. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 55-60.

Smith, D.S.; Hellmund, P.C., eds. 1993. Ecology of greenways. Minneapolis: University of Minnesota Press. 222 p.

State of New Hampshire. 2004. Best management practices for erosion control during trail maintenance and construction. Concord, NH: Division of Parks and Recreation, Bureau of Trails. 33 p.

Steinholtz, R.T.; Vachowski, B. 2001. Wetland trail design and construction. Tech. Rep. 0123-2833-MTDC. U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. <u>http://www.fhwa.dot.gov/environment/fspubs/01232833/</u>. [Date accessed: September 24, 2007].

Stevens, M.E. 1966. Soil surveys as applied to recreation site planning. Journal of Forestry. 64: 314-316.

Stohlgren, T.J.; Bull, K.A.; Otsuki, Y. [and others]. 1998. Riparian zones as havens for exotic plant species in central grasslands. Plant Ecology. 138: 113-125.

7.5 Trail users preferences

Bjerke, T.; Østdahl, T.; Thrane, C.; Strumse, E. 2006. Vegetation density for urban parks and perceived appropriateness for recreation. Urban Forestry and Urban Greening. 5: 35-44.

Gobster, P.H.; Westphal, L.M. 2004. The human dimensions of urban greenways: planning for recreation and related experiences. Landscape and Urban Planning. 68: 147-165.

Hammitt, W.E.; Cherem, G.J. 1980. Photographic perceptions as an on-site tool for designing forest trails. Southern Journal of Applied Forestry. 4: 94-97.

Herzog, T.R. 1985. A cognitive analysis of preference for waterscapes. Journal of Environmental Psychology. 5: 225-241.

Herzog, T.R.; Herbert, E.G.; Kaplan, R.; Crooks, C.L. 2000. Cultural and developmental comparisons of landscape perceptions and preferences. Environment and Behavior. 32: 323-346.

Herzog, T.R.; Kirk, K.M. 2005. Pathway curvature and border visibility as predictors of preference and danger in forest settings. Environment and Behavior. 37: 620-639.

Herzog, T.R.; Kropscott, L.S. 2004. Legibility, mystery, and visual access as predictors of preference and perceived danger in forest settings without pathways. Environment and Behavior. 36: 659-677.

Herzog, T.R.; Kutzli, G.E. 2002. Preference and perceived danger in field/forest settings. Environment and Behavior. 34: 819-835.

Hull, R.B.; Stewart, W.P. 1995. The landscape encountered and experienced while hiking. Environment and Behavior. 27: 404-426.

Kaplan, R.; Kaplan, S.; Ryan, R.L. 1998. With people in mind: design and management of everyday nature. Washington DC: Island Press. 244 p.

Kent, R.L.; Elliott, C.L. 1995. Scenic routes linking and protecting natural and cultural landscape features: a greenway skeleton. Landscape and Urban Planning. 33: 341-355.

Luymes, D.T.; Tamminga, K. 1995. Integrating public safety and use into planning urban greenways. Landscape and Urban Planning. 33: 391-400.

Lynn, N.A.; Brown, R.D. 2003. Effects of recreational use impacts on hiking experiences in natural areas. Landscape and Urban Planning. 64: 77-87.

Talbot, J.F. 1993. Public participation in rail-trail planning: two case studies. In: Gobster, R., ed. Managing urban and high-use recreation settings. Gen. Tech. Rep. NC-163. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 13-16.

7.6 Trail layout

Gobster, P.H. 1995. Perception and use of metropolitan greenway system for recreation. Landscape and Urban Planning. 33: 401-413.

Hellmund, P.C.; Smith, D.S. 2006. Desiging greenways: sustainable landscapes for nature and people. Washington, DC: Island Press. 270 p.

Lindsey, G.; Han, Y.; Wilson, J.; Yang, J. 2006. Neighborhood correlates of urban trail use. Journal of Physical Activity and Health. 3 Suppl 1: S139-S157.

Linehan, J.; Gross, M.; Finn, J. 1995. Greenway planning: developing a landscape ecological network approach. Landscape and Urban Planning. 33: 179-193.

Randall, T.A.; Baetz, B.W. 2001. Evaluating pedestrian connectivity for suburban sustainability. Journal of Urban Planning and Development. 127: 1-15.

Shriver, K. 1997. Influence of environmental design on pedestrian travel behavior in for Austin neighborhoods. Transportation Research Record. 1578: 64-75.

Siderelis, C.; Moore, R. 1995. Outdoor recreation net benefits of rail-trails. Journal of Leisure Research. 27: 344-359.

Smith, D.S.; Hellmund, P.C., eds. 1993. Ecology of greenways. Minneapolis: University of Minnesota Press. 222 p.

Steinholtz, R.T.; Vachowski, B. 2001. Wetland trail design and construction. Tech. Rep. 0123-2833-MTDC. U.S. Department of Agriculture, Forest Service, Missoula Technology and Development Center. http://www.fhwa.dot.gov/environment/fspubs/01232833/. [Date accessed: September 24, 2007].

Talbot, J.F. 1993. Public participation in rail-trail planning: two case studies. In: Gobster, R., ed. Managing urban and high-use recreation settings. Gen. Tech. Rep. NC-163. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 13-16.

7.7 Trail access and usage

Bjerke, T.; Østdahl, T.; Thrane, C.; Strumse, E. 2006. Vegetation density for urban parks and perceived appropriateness for recreation. Urban Forestry and Urban Greening. 5: 35-44.

Brownson, R.C.; Housemann, R.A.; Brown, D.R. [and others]. 2000. Promoting physical activity in rural communities: walking trail access, use, and effects. American Journal of Preventive Medicine. 18: 235-241.

Gobster, P.H. 1995. Perception and use of metropolitan greenway system for recreation. Landscape and Urban Planning. 33: 401-413.

Gobster, P.H.; Westphal, L.M. 2004. The human dimensions of urban greenways: planning for recreation and related experiences. Landscape and Urban Planning. 68: 147-165.

Gordon, P.M.; Zizzi, S.J.; Pauline, J. 2004. Use of a community trail among new and habitual exercisers: a preliminary assessment. Preventing Chronic Disease. 1(4): 1-11.

Krizek, K.J.; Johnson, P.J. 2006. Proximity to trails and retail: effects of urban cycling and walking. Journal of the American Planning Association. 72: 33-42.

Lindsey, G.; Han, Y.; Wilson, J.; Yang, J. 2006. Neighborhood correlates of urban trail use. Journal of Physical Activity and Health. 3 Suppl 1: S139-S157.

Owen, N.; Humpel, N.; Leslie, E. [and others]. 2004. Understanding environmental influences on walking: review and research agenda. American Journal of Preventive Medicine. 27: 67-75.

Pucher, J.; Buehler, R. 2006. Why Canadians cycle more than Americans: A comparative analysis of bicycling trends and policies. Transport Policy. 13: 265-279.

Ryan, R.L.; Fabos, J.G.; Allen, J.J. 2006. Understanding opportunities and challenges for collaborative greenway planning in New England. Landscape and Urban Planning. 76: 172-191.

Saelens, B.E.; Sallis, J.F.; Frank, L.D. 2003. Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. Annals of Behavioral Medicine. 25: 80-91.

Shriver, K. 1997. Influence of environmental design on pedestrian travel behavior in for Austin neighborhoods. Transportation Research Record. 1578: 64-75.

Talbot, J.F. 1993. Public participation in rail-trail planning: two case studies. In: Gobster, R., ed. Managing urban and high-use recreation settings. Gen. Tech. Rep. NC-163. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station: 13-16.

Troped, P.J.; Saunders, R.P.; Pate, R.R. [and others]. 2001. Associations between self-reported and objective physical environmental factors and use of a community rail-trail. Preventive Medicine. 32: 191-200.

Wendel-Vos, G.C.; Schuit, A.J.; de Niet, R. [and others]. 2004. Factors of the physical environment associated with walking and bicycling. Medicine and Science in Sports and Exercise. 36: 725-730.

Westphal, L.M.; Leber, S.R. 1986. Predicting the effect of alternative trail design on visitor satisfaction in park settings. Landscape Journal. 5: 39-44.

7.8 Greenways and public safety

Bjerke, T.; Østdahl, T.; Thrane, C.; Strumse, E. 2006. Vegetation density for urban parks and perceived appropriateness for recreation. Urban Forestry and Urban Greening. 5: 35-44.

Crewe, K. 2001. Linear parks and urban neighbourhoods: a study of the crime impact of the Boston south-west corridor. Journal of Urban Design, 6: 245-264.

Flink, C.A.; Olka, K.; Searns, R.M. 2001. Trails for the twenty-first century: planning, design, and management manual for multi-use trails. Washington, DC: Island Press. 210 p.

Gobster, P.H.; Westphal, L.M. 2004. The human dimensions of urban greenways: planning for recreation and related experiences. Landscape and Urban Planning. 68: 147-165.

Greer, D.L. 2000. Omaha recreational trails: their effect on property values and public safety. Omaha, NE: University of Nebraska, Recreation and Leisure Studies Program. 18 p. <u>http://atfiles.org/files/pdf/omahastudy.pdf</u>. [Date accessed: September 26, 2007].

Herzog, T.R.; Kirk, K.M. 2005. Pathway curvature and border visibility as predictors of preference and danger in forest settings. Environment and Behavior. 37: 620-639.

Herzog, T.R.; Kropscott, L.S. 2004. Legibility, mystery, and visual access as predictors of preference and perceived danger in forest settings without pathways. Environment and Behavior. 36: 659-677.

Herzog, T.R.; Kutzli, G.E. 2002. Preference and perceived danger in field/forest settings. Environment and Behavior. 34: 819-835.

Jorgensen, A.; Hitchmough, J.; Calvert, T. 2002. Woodland spaces and edges: their impact on perception of safety and preference. Landscape and Urban Planning. 60: 135-150.

Kuo, F. 2003. The role of arboriculture in a healthy social ecology. Journal of Arboriculture. 29: 148-155.

Kuo, F.; Sullivan, W.C. 2001. Environment and crime in the inner city: does vegetation reduce crime? Environment and Behavior. 33: 343-367.

Luymes, D.T.; Tamminga, K. 1995. Integrating public safety and use into planning urban greenways. Landscape and Urban Planning. 33: 391-400.

Nasar, J.L.; Fischer, B.; Grannis, M. 1993. Proximate physical cues to fear of crime. Landscape and Urban Planning. 26: 161-178.

Schroeder, H.W.; Anderson, L.M. 1984. Perception of personal safety in urban recreation sites. Journal of Leisure Research. 16: 178-194.

Talbot, J.F.; Kaplan, R. 1984. Needs and fears: the response to trees and nature in the inner city. Journal of Arboriculture. 10: 222-228.

Tracey, T.; Morris, H. 1998. Rail-trails and safe communities: the experience on 372 trails. Washington, DC: Rails-to-Trails Conservancy. 33 p. <u>http://www.railtrail.org/resources/documents/resource_docs/tgc_safecomm.pdf</u>. [Date accessed: September 26, 2007].

Ulrich, R.S. 1986. Human responses to vegetation and landscapes. Landscape and Urban Planning. 13: 29-44.