ECOSYSTEM MANAGEMENT:

A CURRENT AND SELECTED BIBLIOGRAPHY AND INDEX

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INTRODUCTION

The Ecosystem Management Bibliography is a survey of scientific scholarship and professional literature (English language) that focuses on ecosystem management or the ecosystem approach. The database contains approximately 1,100 basic and annotated citations. It does not contain full articles.

Much of the literature included in the bibliography specifically discusses the development, definition, philosophy, implementation, and application of ecosystem management. Articles, reports, and other papers written by academics, land managers, and other forest professionals are cited. Also, literature used by authors to develop the concept of ecosystem management are cited. Examples of this literature range from the early works of Aldo Leopold in the 1930's to newly published journal articles incorporating remote sensing into ecosystem management. A few published studies that have the potential of being applied to ecosystem management and were published close to the printing of this bibliography are cited here as well.

The bibliography is indexed by subject categories. The subject categories have been constructed to highlight general research and application issues, problems, or tasks and are neither all inclusive nor exclusive. They are also nonhierarchical and cross-disciplinary in content. These subject categories have roughly been divided into two types: social science literature and biophysical literature.

The subject categories of the Ecosystem Management Bibliography are listed below:

Uses of concept
Problems of theories and methods
Human factors; human causes
Human consequences
Sociocultural adaptation
Global issues
Policy, planning; organization studies
Various case studies
Techniques and applications
Development and philosophy
Ecological integrity, biodiversity
General ecology/ecosystems
Vegetation patterns and change/inventorying

Wildlife and range
Forest issues

The first five subject categories include social and behavioral science literature. The subject category, *policy, planning; organization studies* can also be included within this wide body of literature. The biophysical sciences predominate the last five categories. The subject categories, *global issues* and *various case studies* contain literature that equally discuss the social and behavioral sciences as well as the biophysical sciences.

It was not intended for this bibliography to be the "end-all" method used by people conducting research on ecosystem management. Literature that specifically addresses ecosystem management were the main area of focus in constructing the bibliography. As stated above, a great deal of supporting literature is also included, but certainly not all. Due to the complexity and evolving nature of the ecosystem management topic, it would be impossible to collect all literature into a single bibliography. This bibliography provides a useful "jumping off" point for researchers investigating ecosystem management related topics. Also, it will help writers discover material that supplements issues relating to ecosystem management.

The contributors would like to express their appreciation to Librarian Jean Albrecht and Dr. Tom Burk for their assistance with the creation of this bibliography. Also, we want to thank Clara M. Schreiber for doing the word processing.

ECOSYSTEM MANAGEMENT
USES OF CONCEPT

1 Baer, D.M. 1974. A note on the absence of Santa Claus in any known ecosystem: A rejoinder to Willems. Journal of Aplied Behavior Analysis 7(1):167-170.
Critiques of Willems' paper "Behavioral technology and behavioral ecology."

2 Baker, P.T. 1962. The application of ecological theory to anthropology. American Anthropologist 64:15-22.

3 Bernstein, B.B. 1981. Ecology and economics: Complex systems in changing environments. Annual Review of Ecology & Systematics 12:309-330.

4 Binnie-Dawson, J.L. 1982. A bio-social approach to environmental psychology and problems of stress. International Journal of Psychology.
Discusses adaptations to environments and social consequences.

5 Bocking, S. 1994. Visions of nature and society: A history of the ecosystem concept. Alternatives 20(3):12-18.

6 Borden, R.J. 1984. Human ecology: A gathering of perspectives. College Park, Pa.: Society for Human Ecology.

7 Bubolz, M.M., Eicher, J.B., Evers, S.J., and Sontag, S.M. 1980. A human ecological approach to quality of life: conceptual framework and results of a preliminary study. Social Indicators Research 7(1-4):103-136.

8 Caleron, M. 1981. The ecosystem approach for apprehending the extent of postharvest grain losses. Phytoparasitica 9(2):157-167.

9 Catton, W.R. and Dunlap, R.E. 1980. A new ecological paradigm for a post-exuberant sociology. American Behavioral Scientist 24(1):15-47.

10 Clark, R.N. and Stankey, G.H. 1991. New Forestry or new perspectives? The importance of asking the right questions. Forest Perspectives 1(1):9-13
Offers alternative conceptions to ecosystem management.

11 DeGolia, J. 1993. Greenspeak: Jargon in the Forest Service. History Line (Spring):52-57.

12 Dixon, J.A. and Tsechin, J. 1984. Ecosystems models for development. Honolulu: East-West Environment and Policy Institute.
Report from a workshop dealing primarily with China.

13 Dogan, M. and Rokkam, S., eds. 1969. Social ecology. Cambridge, MA: MIT Press.

14 Dorney, R.S. and Wagner McLellan, P. 1984. The urban ecosystem: Its spatial structure, its scale relationships, and its subsystem attributes. Environments 16(1):9-20.
Heirarchy of abiotic, biotic, and cultural subsystems.

15 Dow, J. 1976. Systems models of cultural ecology. Social Science Information 15(6):953-976.
Energy and information flow models in anthropology.

16 Dunlap. R.E. and Van Liere, K.D. 1978. The new environmental paradigm. Journal of Environmental Education 9:10-19.

17 Ellen, R. 1982. Environment, subsistence, and system: The ecology of small-scale social formations. Cambridge: Cambridge University Press.
Anthropological and social organizational perspectives.

18 Forde, C.D. 1934. Habitat, economy, and society: A geographical introduction to ethnology. N.Y.: Dutton.
Anthropology.

19 Fox, W. 1990. Toward a transpersonal ecology: Developing new foundations for environmentalism. Boston: Shambhala.
Philosophy and ethics.

20 Golley, F.B. 1993. A history of the ecosystem concept in ecology. New Haven, CT: Yale University Press.
Includes discussion on contemporary use of ecosystem idea as general model for management.

21 Hardesty, D.L. 1980. The ecological perspective in anthropology. American Behavioral Scientist 24(1):107-124.

22 Juda, L. and Burroughs, R.H. 1990. The prospects for comprehensive ocean management. Marine Policy 14(1):23-35.

23 Keiter, R.B. 1990. NEPA and the emerging concept of ecosystem management on the public lands. Land and Water Review 25:43-60.

24 Keiter, R.B. 1989. Taking account of the ecosystem in the public domain: Law and ecology in the Greater Yellowstone region. University of Colorado Law Review 60(4):923-1007.

25 Lang, R. 1986. Achieving integration in resource planning. In: Lang, R., ed., Integrated approaches to resource planning and management. Calgary, Alberta: The Banff Centre for Continuing Education.

26 Leiss, W. 1974. The domination of nature. New York: Beacon Press.

27 Linville, J. Jr. and Davis, R. 1976. The political environment: An ecosystems approach to urban management. Washington, D.C.: American Insitute of Planners.

28 Little, M.A. 1982. The development of ideas about human ecology and adaptation. In: Spencer, F., ed. A history of American physical anthropology. New York: Academic Press. pp. 405-433
Anthropology.

29 McCay, B.J. 1978. Systems ecology, people ecology, and the anthropology of fishing communities. Human Ecology 6(4):397-422.

30 Mitchell, B. 1986. The evolution of integrated resource management. In: Lang, R., ed. Integrated approaches to resource planning and management. Calgary, Alberta: The Banff Centre for Continuing Education. pp. 13-26.

31 Moran, E.F. 1990. The ecosystem approach in anthropology: From concept to practice. Ann Arbor: Univ. of Michigan Press.

32 Moran, E.F., ed. 1984. The ecosystem concept in anthropology. Washington, D.C.: American Association for the Advancement of Science.
Contributed essays and papers include assessment of past and present approaches, new directions in resolving the problem of time and of boundary definition in ecosystems. Resolving the problems of hierarchical level, scale, and data collection.

33 Nicholson, S. 1992. Environmental ethics. In: Sullivan, T.F.P., ed. The greening of American business. Rockville, MD: Government Institutes. pp. 269-290.

34 Orlove, B.S. 1980. Ecological anthropology. Annual Review of Anthropology 9:235-273.

35 Parsons, J.J. 1985. On bioregionalism and watershed consciousness. Professional Geographer 37(1):1-6.

36 Regier, H.A. 1986. Progress with remediation, rehabilitation, and the ecosystem approach. Alternatives 13(3):47-54, Special Issue: Saving the Great Lakes.
A review of the Canada-US treaties, history of the International Joint Commission, and socio-material trends in the region.

37 Sachs, I. 1974. Environment and styles of development. Economic and Political Weekly 9(21):828-837.
Presentation of the concept "ecodevelopment" as an integrated approach.

38 Sachs, I. Work, food, energy in urban ecodevelopment. Development 4:2-11.

Planning problems and institutional frameworks.

39 Serafin, R. and Zaleski, J. 1988. Baltic Europe, Great Lakes America, and ecosystem redevelopment. Ambio 17(2):99-105.
Comparison of Baltic Europe and Great Lakes region at ecological, economic, jurisdictional, and bureaucratic variables and constants.

40 Slocombe, D.S. 1991. Ecosystem approaches: An annotated multidisciplinary bibliography. Canadian Commission on Environmental Strategy and Planning in cooperation with the Cold Regions Research Centre, Wilfrid Laurier University; Working Paper No. 1.
Includes biophysical and social sciences.

41 Smith, E.A. 1984. Anthropology, evolutionary ecology, and the explanatory limitiations of the ecosystem concept. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 51-86.

42 Smith, R.L., ed. 1976. The ecology of Man: An ecosystem approach. N.Y.: Harper & Row.

43 U.S. GAO 1994. Ecosystem management: Additional actions needed to adequately test a promising approach. Washington, D.C.: U.S. Government Printing Office, GAO\RCED-94-111.

44 van Dyne, G.M., ed. 1969. The ecosystem concept in natural resources management. New York: Academic Press.

45 Walters, C. 1986. Adaptive management of renewable resources. New York: Macmillan.

46 Winterholder, B. 1984. Reconsidering the ecosystem concept. Reviews in Anthropology 11(4):301-313.
Review Emilio Moran's 1984 edited volume, intended to supplement and complement by dwelling on positive, not negative, aspects of volume.

PROBLEMS OF THEORIES AND METHODS

47 Alexander, D. 1990. Bioregionalism: Science or sensibility? Environmental Ethics 12:161-73.
Shaping people's consciousness and effecting human-environment change.

48 Alston, R.M. 1991. Are sustained yields and sustained forests equivalent? In: Society of American Foresters. Proceedings of the 1991 National Convention. Bethesda, MD: Society of American Foresters. pp. 310-315.

49 Atkinson, W.A. 1992. Silvicultural correctness: The politicalization of forest science. Western Wildlands 17(4):8-12.
Questions the scientific premises of new forestry as based on values and not science; likens it to a political movement.

50 Barbour, I., ed. 1973. Western man and environmental ethics. MA: Addison-Wesley Publishing Company.
Early views of holistic planning and management and movement towards systems scope.

51 Behan, R.W. 1992. The irony of the multiple use/sustained yield concept: Nothing is so powerful as an idea whose time has passed. In: Multiple use and sustained yield: Changing philosophies for federal land management?. Washington, D.C.: Congressional Research Service, Library of Congress. pp. 95-106

52 Bennett, J. 1976. The ecological transition: Cultural anthropology and human adaptation. London: Pergamon.
Critical review of theory and practice.

53 Blumm, M.C. 1994. Public choice theory and the public lands: Why "multiple use" failed. Harvard Environmental Law Review 18(2):405-432.

54 Bobertz, B.C. and Fischman, R.J. 1992. Sustaining the forests: Reinventing the Forest Service administrative appeal process. Washington, D.C.: Environmental Law Institute and University of Colorado Law Review, vol. 64.

55 Born, S.M. and Sonzogni, W.C. 1993. Integrated environmental management: Strengthening the conceptualization. Madison, WI: University of Wisconsin Urban and Regional Planning.

56 Bradley, D.P. 1993. What would an ecological economics actually do to integrate ecosystem and social system health: A spectrum of approaches. In: Adamowcz, W.L., White, W., Phillips, W.E., eds. Forestry and the environment: Economic perspectives. Wallingford, U.K.: C and B International. pp. 155-170.
Ecological concerns and social science, philosophy, knowledge, application.

57 Bradley, D.P. and Lewis, B.J. 1992. Ecological economics: Integrating natural and social dimensions. Journal of Forestry 90(2):30-33.

58 Brumfiel, E.M. 1992. Distinguished lecture in archaeology: Breaking and entering the ecosystem-gender, class, and faction steal the show. American Anthropologist 94(3):551-567.
Argues complex society is not the well-integrated adaptive system implied by the orderly flowcharts of ecosystem theorists. Ecosystem theory neglects change that arises from internal configurations. Discusses how change comes with negotiation, in turn arising from conflicts and compromises among people with different problems and possibilities by virtue of their memberships in groups.

59 Brunton, R. 1994. The precautionary principle: The greatest risk of all. Jolimont, Vic., Australia: Institute of Public Affairs Ltd, Environmentl Policy Unit.
Discussion of appropriate responses to scientific uncertainty, the relation between safety and risk, and the role of human action on the environment.

60 Burnham, P.C. and Ellen, R.F., eds. 1979. Social and ecological systems. London: Academic Press.
Anthropological case studies of relationships among culture, economy, and environment. Review of British anthropology.

61 Burns, T., Baumgartner, T., and Deville, P. 1985. Man, decisions, society: The theory of actor system dynamics for social scientists. N.Y.: Gordon & Breach.
Series of papers dealing with premises and models of concepts that handle human-environment relations.

62 Caplan, J. and Kessler, W.B. 1991. Multiple-use and ecosystem management: A comparison of two paradigms. In: Le Master, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. West Lafayette, IN: Dept. of Forestry and Natural Resources, Purdue University. pp. 3-8.
Discusses the paradigms in terms of fundamental questions about the nature of land, natural resources, and human-environment relations.

63 Cheney, J. 1989. Postmodern environmental ethics: Ethics as bioregional narrative. Environmental Ethics 11:117-134.

64 Cook, S. 1973. Production, ecology, and economic anthropology: Notes toward an integrated frame of reference. Social Science Information 12(1):25-52.
Argues approach is to be integrated and transactional in its models.

65 Costanza, R. Wainger, L., Folke, C., and Maler, K.G. 1993. Modeling complex ecological economic systems: Toward an evolutionary, dynamic understanding of people and nature. BioScience 43(8):545-555.

66 Dahlberg, K. and Bennett, J. W. 1986. Natural resources and people: Conceptual issues in interdisciplinary research. Boulder: Westview Press.
Edited volume of papers, including anthropology, sociology, economics, ecology, political science.

67 Daly, H.E. and Cobb, J.B., Jr. 1989. For the common good: Redirecting the economy toward community, the environment, and a sustainable future. Boston: Beacon Press.

68 Darling, F.F. and Dasmann, R.F. 1969. The ecosystem view of human society. Impact of Science on Society 19(2):109-121.

69 Deutsch, K.W. 1974. On the interaction of ecological and political systems: Some potential contributions of the social sciences to the study of man and his environment. Social Science Information 13(6):5-15.

70 Didge, J. 1981. Living by life: Some bioregional theory and practice. CoEvolution Quarterly 32:66-12.
Includes argument of spiritual sustenance.

71 Dryzek, J. 1990. Discursive democracy: Politics, policy, and political science. Cambridge, MA: Cambridge University Press.

72 Dryzek, J. 1987. Rational ecology. Oxford: Basil Blackwell.

73 Dubos, R. 1973. A theology of Earth. In: Barbour, R., ed. Western man and environmental ethics. MA: Addison-Wesley Publishing Company.

74 Eckersley, R. 1992. Environmentalism and political theory: Toward an ecocentric approach. Albany, NY: State University of New York Press.

75 Ehrenfeld, D.W. 1981. The arrogance of humanism. New York: Oxford Univ. Press.

76 Ehrenfeld, D.W. 1991. The management of diversity: A conservation paradox. In: Bormann, F.H. and Kellert, S.R., eds. Ecology, economics, ethics: The broken circle. New Haven, CT: Yale University Press. pp. 26-39.

77 Falkenmark, M. 1981. Integrated view of land and water: The new cornerstone in environmental planning. Geografiska Annalar 63(3-4):261-271.

78 Faludi, A. 1985. A decision-centered view of environmental planning. Landscape Planning 12(3):239-256.
Netherlands.

79 Foster, H.D., ed. 1993. Advances in resource management. London: Belhaven Press.

80 Francis, J. 1990. Natural resources, contending theoretical perspectives, and the problem of prescription. Natural Resources Journal 30(2):263-283.

81 Frodeman, R. 1992. Radical environmentalism and the political roots of postmodernism: Differences that make a difference. Environmental Ethics 14(4):307-320.

82 Fuentes, E.R. 1993. Scientific research and sustainable development. Ecological Applications 3:576-577.

83 Funtowicz, S.O. and Ravetz, J.R. 1992. The good, the true, and the post-modern. Futures 24(10):963-976.

84 Gerlach, L.P. 1991. Opportunity, liberty, ecology: Challenges of the post-cold war future. In: Textor, R.B., ed. The peace dividend as a cultural concept, Chapter 3. Human peace 9(1-3), monograph edition. pp. 13-28.
Anthropology, societal debate, governance.

85 Gobster, P.H. 1995. Aldo Leopold's ecological esthetic: Integrating esthetic and biodiversity values. Journal of Forestry 93(2):6-10.

86 Goldberg, M.A. 1985. Flexibility and adaptation: Some cues for social systems from nature. Geoforum 16(2):179-190.
Anthropology, sociology, other social science examples that address coping mechanisms with advent of environmental uncertainty. Argues for diversity, flexibility of hierarchical organization.

87 Gordon, J.C. 1994 The new face of forestry: Exploring a discontinuity and the need for a vision. Pinchot Lecture Series. Milford, PA: Grey Towers Press.
Analysis of the decline of the multiple use, sustained yield paradigm.

88 Gross, D.R. 1984. Ecosystems and methodological problems in ecological anthropology. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 253-264.

89 Haines, V.A. 1985. From organicist to relational human ecology. Sociological Theory 3(1):65-74.
Critiques premise that the whole determines the parts.

90 Hall, D.O., Myers, N., and Margaris, N.S., eds. 1985. Economics of ecosystem management. Boston: Dr. W. Junk Publishers.

91 Hardesty, D.L. 1977. Ecological anthropology New York: John Wiley.
Classic textbook; reviews 1950's-1970's uses of ecosystem as modeltaid explanation of human behavior, adaptation, and diversity. Human ecology, energetics, population, ethnoecology, archaeology.

92 Hardt, S.W. 1994. Federal land management in the 21st century: From wise use to wise stewardship. Harvard Environmental Law Review 18(2):345-404.

93 Henderson, H. 1992. Paradigms in progress: Life beyond economics. Indianapolis: Knowledge Systems.

94 Hetherington, J., Daniel, T.C., and Brown, T.C. 1994. Anything goes means everything stays: The perils of uncritical pluralism in the study of ecosystem values. Society and Natural Resources 7:535-546.
Social scientists and public land managers must address two questions: what values do people assign and what is the best research strategy. Argue, must balance public stakes and environment.

95 Hett, J.M. and O'Neill, R.V. 1974. Systems analysis of the Aleut Ecosystem. Arctic Anthropology 11(1):31-40.
Anthropology.

96 Hilborn, R. and Ludwig, D. 1993. The limits of applied ecological research. Ecological Applciations 3:550-552.

97 Hill, B. 1994. Bioregional economics: The interconnectedness of environment, economy, and human culture in each distinct natural area. International Journal of Ecoforestry 10(2):72-73.
Argues the connections of human-environment relations; offers a summary of possible incentives for acting on this knowledge.

98 Iverson, D.C. and Alston, R.M. 1993. Ecosystem-based forestry requires a broader economic focus. Journal of Sustainable Forestry 1(2):97-106.

99 Joyce, L.A. and Hof, J.G. 1994. Multiple objectives in planning economic and ecological solutions. In: Meffe, G.K., Carroll, C. R., and contributors,

Principles of conservation biology. Sunderland, MN: Sinauer Associates, Inc.: pp. 315-316.
Ecological analyses must be capable of analyzing trade-offs in order to support ecosystem management objectives.

100 Keiter, R.B. 1994. Beyond the boundary line: Constructing a law of ecosystem management. University of Colorado Law Review 65(2):293-333.

101 Kerr, A. 1990. New (age) perspectives: Glossy dogma to hide old habits. Forest Watch (Oct.):22-25.
Argues ecosystem management brings nothing fundamentally new with it to natural resource management.

102 Klaasen, G.A.J. and Opschoor, J.B. 1991. Economics of sustainability or the sustainability of economics: Different paradigms. Ecological Economics 4:93-115.

103 Kovac, M. and Golub, A. 1993. A model for ecosystem management with urban and suburban forests. In: Proceedings from the International Symposium on the Application of Remote Sensing in Forestry. Faculty of Forestry, Technical University in Zvolen, and the Department of Forest Management and Geodesy.

104 Larkin, P.A. 1977. An epitaph for the concept of maximum sustained yield. Transactions of the American Fisheries Society 106(1):1-11.

105 Lee, B.J. 1982. An ecological comparison of the McHarg method with ten other planning initiatives in the Great Lakes Basin. Landscape Planning 9(2):147-169.

106 Lee, K. 1993. Compass and gyroscope: Integrating science and the environment. Covelo, CA.: Island Press.
Analysis of ecosystem boundaries as social constructs and the problems inherent to meshing biophysical and social sciences.

107 Lee, R.G. 1994. Broken trust, broken land. Wilsonville, OR.: Bookpartners.
Argues that ecosystem management devalues individuals and freedom; finds the collective favored over the local.

108 Lewis, B. 1995. The social dimension of ecosystem management. Problem Analysis. St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station.

109 Lippke, B. and Oliver, C. 1994. An economic tradeoff system for ecosystem management. In: Jensen, M.E. and Bourgeron, P.S., tech eds. Volume II: Ecosystem management-principles and applications. Portland, OR.: USDA Forest Service, Pacific Northwest Forest Experiment Station. General Technical Report PNW-GTR-318. pp. 318-326.

110 Little, M.A. and Haas, J.D. 1989. Human population biology: A transdisciplinary science. New York: Oxford University Press.
Collection of papers from biological anthropology, highlighting methods from other disciplines. Ecosystem management as one framework for interdisciplinary approach.

111 Little, M.A., Dyson-Hudson, N., Rada, Ellis, J.E., and Swift, D.M. 1984. Human biology and the development of the ecosystem approach. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: American Association for the Advancement of Science, Selected Symposium. pp. 103-132.

112 London, B. 1987. Ending ecology's ethnocentrism: Thai replications and extensions of ecological research. Rural Sociology 52(4):483-500.
Sociology and non-western contexts.

113 Ludwig, D. 1993. Environmental sustainability: Magic, science, and religion in natural resource management. Ecological Applications 3(4):555-558.
Discusses the "misconception" of maximum sustained yield and the contradiction between increased population growth and consumpation and a finite amount of natural resources.

114 Ludwig, D., Hilborn, R., and Walters, C. 1993. Uncertainty, resource exploitation, and conservation: Lessons from history. Science 260:17.

115 Lyle, J. 1978. Ecosystemic design: the conceptual foundation. Landscape Research 3(2):6-10

116 Marx, L. 1990. Post-modernism and the environmental crisis. Philosophy and Public Policy 10(3/4):13-15.

117 McKibben, B. 1995. An explosion of green. The Atlantic Monthly 275(4):61-83.

118 Meffe, G.K. 1992. Techno-arrogance and halfway technologies: Salmon hatcheries on the Pacific coast of North America. Conservation Biology 6:350-354.

119 Meffe, G.K., Ehrlich, A.H., and Ehrenfeld, D. 1993. Human population control: The missing agenda. Conservation Biology 7:1-3.

120 Mehlahaff, S.A. 1994. Ecosystem management. The "green" age dawns. National Lamb and Wool Grower 84(6) July:12-13.
Discusses potential threats of ecosystem management to property rights from the perspective of the American Sheep Industry Association.

121 Miller, M.L., Gale, R.P., and Brown, P.J., eds. 1987 Social science in natural resource management systems. Boulder: Westview Press.

122 Moran, E.F. 1984. The problem of analytical level shifting in Amazonian ecosystem research. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 265-288.

123 Nelson, T., Hakim, B., and Cott. L. 1973. Ecological systems as models for human environments. Ekistics 35(208):168-171.

124 Nicholson, S. 1995. Classification of approaches to environmental ethics. In: Business environmental responsibility: Defining and implementing environmental ethics. Rockville, MD: Government Institutes. Forthcoming.

125 O'Keefe, T. 1990. Holistic (new) forestry: Significant difference or just another gimmick? Journal of Forestry 88(4):23-24.
Cautions that the paradigm may be but another way to continue business-as-usual.

126 Oreskes, N., Shrader-Freschette, K., and Belitz, K. 1994. Verification, validation, and confirmation of numerical models in the earth sciences. Science 263:641-646.

127 Orians, G.H. 1990. Ecological concepts of sustainability. Environment 32(9):10-15, 34-39.

128 Orr, D.W. 1992. Ecological literacy: Education and the transition to a postmodern world. New York: SUNY Press.

129 Perlin, J. 1989. A forest journey: The role of wood in the development of civilization. New York: W.W. Norton & Co.

130 Plog, F.T. 1975. Systems theory in archaeological research. Annual Review of Anthropology 4:207-224.

131 Polunin, N., ed. 1986. Ecosystem theory and application. New York: Wiley.

132 Rambo, A.T. 1983. Conceptual approaches to human ecology. Honolulu: East-West Environment and Policy Institute Research Report #14.
Anthropology.

133 Raubwer, P. 1995. Improving on nature. Sierra (March/April):44-52, 70-72.
Wary of how ecosystem management will be further developed and implemented by government agencies and the various resource industries.

134 Rolston, H., III 1994. Conserving natural value. New York: Columbia Univ. Press.

135 Roosevelt, A.C. 1989. Resource management in Amazonia before the conquest: Beyond ethnographic description. Advances in Economic Botany 7:30-62.
Anthropology; economics.

136 Sachs, I. 1974. Ecodevelopment. Ceres 42:8-12.

137 Sagoff, M. 1985. Fact and value in ecological science. Environmental Ethics 7(2):99.
Sagoff is considered by many scholars to have grounded philosophy of ecological ethics and ecosystem approach.

138 Sagoff, M. 1988. The economy of the Earth: Philosophy, law, and the environment. New York: Cambridge University Press.

Preeminent philosopher on environmental ethics.

139 Schulze, E.D. and Zwolfer, H., ed. 1987. Potentials and limitations of ecosystem analysis. Berlin: Springer Verlag.
Collection of papers illustrating pluralistic and multidisciplinary approaches to ecosystem approach.

140 Shands, W.E., Black, A., and Giltmier, J. 1993. From New Perspectives to ecosystem management: A report of an assessment of New Perspectives. Milford, PA.: Grey Towers Press.

141 Shearman, R. 1990. The meaning and ethics of sustainability. Environmental Management 14(1):1-8.
Attempts to answer "why is sustainability desirable?" through an analysis of ecologically sustainable development.

142 Slocombe, D.S. 1993. Ecosystem approaches for sustainability. Ecosystem Management 17(3):289-303.

143 Smith, M. 1993. Cheney and the myth of postmodernism. Environmental Ethics 15(1):3-18.

144 Soule, M.E. 1991. Conservation: Tactics for a constant crisis. Science 253:744-750.

145 Stanley, T.R. 1995. Ecosystem management and the arrogance of humanism. Conservation Biology 9(2): 255-262.
Analysis and argument that the assumptions of ecosystem management are beyond our ability to meet.

146 Sullivan, T.F.P., ed. 1992. The greening of American business. Rockville, MD: Government Institutes.

147 Toynbee, A. 1976. Mankind and Mother Earth. Oxford: Oxford University Press.

148 U.S. Fish and Wildlife Service 1994. Defining our future: An ecosystem approach to fish and wildlife conservation. Fish and Wildlife News, April 2-3.

149 Vayda, A.P. and McCay, B.J. 1975. New directions in ecology and ecological anthropology. Annual Review of Anthropology 4:293-306.

150 Wall, D., comp. 1994. Green history: A reader in environmental literature, philosophy, and politics. New York: Routledge.

151 Wiersum, K.F. 1995. 200 years of sustainability in forestry: Lessons from history. Environmental Management. 19(3):321-329.

152 Williams, M. 1989. Americans and their forests: An historical geography. New York: Cambridge University Press.

153 Wismer, S. and Pell, D. 1985. Living the good life: Ecodevelopment. Alternatives 12(3-4):27-31.
Examines case studies; arguments of implementation.

154 Zonneveld, I.S. and Forman, R.T.T., eds. 1990. Changing landscapes: An ecological perspective. N.Y.: Springer Verlag.

155 Zuckerman, S. 1992. New forestry? New hype... Sierra 77(2):40-45, 67.
Cautions that optimism of change hides same old business exploitation.

HUMAN FACTORS; HUMAN CAUSES

156 Bengston, D.N. 1994. Changing forest values and ecosystem management. Society and Natural Resources 7:515-533

Rapidly changing values challenges forest management. Key issues of values and changes in sociocultural problems, such as conflict, negotiation, and valuation, are discussed and research is outlined.

157 Bengston, D.N. 1994. Reply from a neighboring village. Society and Natural Resources 7:547-550.

Reply to response re: 1994 Values and ecosystem management article. Includes methodological pluralism, moral philosophy, values, maximization, Hetherington, pluralism, forests.

158 Bengston, D.N. and Xu, Z. 1995. Changing national forest values: A content analysis. St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station. Research Paper, NC-323.

Key words: Content analysis, ecosystem management, forest values, generalized logit model, national forests.

159 Bennett, J.W. 1990. Ecosystems, environmentalism, resource conservation, and anthropological research. In: Moran, E.F., ed. The ecosystem approach in anthropology. Ann Arbor: University of Michigan Press. pp. 435-457.

160 Biggins, D.R. 1978. The social context of ecology. Ecologist Quarterly Autumn:218-227.

Discusses models of nature and human-environment relations.

161 Bonnicksen, T.M. 1994. The biosocial process. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 292-296.

Describes the subsystems that compose the biosocial model and how it can be used by managers to aid in ecosystem management.

162 Boyden, S. 1987. Western civilization in biological perspective: Patterns in biohistory. Oxford: Claredon Press.

Discusses two approaches to integrating humans and ecological variable in a scientific approach.

163 Bronfenbrenner, U. 1979. The ecology of human development: Experiments by nature and design. Cambridge: Harvard Univ. Press.

164 Butler F.C. and Flora, J.L. 1993. Entrepreneurial social infrastructure: A necessary ingredient. Annals, AAPSS 529 (Sept.):48-58.

165 Butler Flora, C. 1994. Social capital and sustainability: Agriculture and communities win the Great Plains and the corn belt. Manuscript. Department of Sociology, Iowa State University

166 Cawley, R.M. and Freemuth, J. 1993. Tree farms, Mother Earth, and other dilemmas: The politics of ecosystem management in Greater Yellowstone. Society and Natural Resources 6(1):41-53.

167 Cotgrove, S.F. 1982. Catastrophe or Cornucopia? The environment, politics, and the future. New York: John Wiley & Sons.

168 Dejonge, V.N., Essink, K., and Boddeke, R. 1993. The Dutch Wadden Sea: A changed ecosystem. Hydrobiologia 265(1-3):45-71.

Fisheries, irrigation and drainage, and other anthropogenic causes have caused impaired conditions. Water management options are to focus on reduction of human impact.

169 Dwyer, J.F. and Schroeder, H.W. 1994. The human dimensions of urban forestry. Journal of Forestry 92(10):12-15.

170 Ellen, R.F. 1984. Trade, environment, and the reproduction of local systems in the Moluccas. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposia. pp. 163-204.

171 Geisler, C.C. 1993. Rethinking SIA (Social Impact Assessment): Why ex ante research isn't enough. Society and Natural Resources 6:327-338.

172 Hart, R. 1994. Monitoring for ecosystem management. International Journal of Ecoforestry 10(2):74-75.

Defines ecosystem management as socially defined process. Addresses questions of structure and function; argues that diverse and distinct areas must have cross-groups management strategies.

173 Hays, S.P. 1987. Beauty, health, and permanence: Environmental politics in the United States, 1955-1985. New York: Cambridge Univ. Press.

174 Kay, C.E. 1994. Aboriginal overkill and native burning: Implications for modern ecosystem management. Manuscript. Logan, UT: Institute of Political Economy, Utah State University.

175 Le Master, D.C. and Parker, G.R. 1991. Ecosystem management in a dynamic society. Proceedings of a conference in West Lafayette, Indiana, November 19-21, 1991. West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University.

Reviews issues, including ecosystem management as competing paradigm, examples of such management, critique of application, and challenges to such management.

176 McDonough, M. 1991. Integrating the diversity of public values into ecosystem management. In: Le Master, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. West Lafayette, IN: Dept. of Forestry and Natural Resources, Purdue University. pp. 133-138.

Ethnicity and cultural values are intrinsic to the complexity of ecosystem approach in the U.S. and elsewhere. Argues that values and traditional use of the environment are linked but changing.

177 Norcross, E.J. 1991. Ecosystem management in a dynamic society. In: Le Master, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. West Lafayette, IN: Dept. Forestry and Natural Resources, Purdue University. pp. 146-148.

Discusses definition, implementation approaches and how people fit into the ecosystem approach.

178 Norgaard, R.B. 1981. Sociosystem and ecosystem coevolution in the Amazon. Journal of Environmental Economics and Management 8:238-254.

179 O'Leary, J.T. 1991. Current Midwest attitudes toward forests and natural resources. In: Le Master, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. West Lafayette, IN: Dept. of Forestry and Natural Resources, Purdue University. pp. 41-44.

Includes an analysis of the "players" involved in ecosystem management and the non-traditional approach.

180 Pina, V.Y. and Covington, W.W. 1994. Conservation biology, restoration ecology, and a Navajo view of nature. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 122-124.

Incorporates a Navajo's cultural perspective on nature with conservation and restoration ecology.

181 Sagoff, M. 1991. Ancient astronomers and modern economists. Nature Conservancy 41(4):38.

182 Salwassar, H. 1992. The official story: New realities in the Forest Service. Inner Voice 4(4):4.

183 Sisk, T.D., Launer, A.E., Switky, K.R., and Ehrlich, P.R. 1994. Identifying extinction threats: Global analysis of the distribution of biodiversity and the expansion of the human enterprise. BioScience 44(9):592-604.

184 Smith, E.R., ed. 1994. Proceedings: Fourth Annual Southern Appalachian Man and the Biosphere Conference. Gatlinburg, TN., November 7-9, 1993. Norris, TN: Tennessee Valley Authority.

Includes issues such as landscape ecology, regional air quality, reserve activities, technology transfer, sustainable development, and ecosystem management.

185 Smith, S. and Reeves, E., ed. 1989. Human systems ecology. Boulder: Westview Press.

Collection of anthropological case studies on human-environment relations, most working to illustrate application of John Bennett's theories on human socioeconomic regional development.

186 Solecki, W.D. 1994. Putting the biosphere reserve concept into practice: Some evidence of impacts in rural communities in the United States. Environmental Conservation 21(3):242-247.

"The objective of this paper is to examine some of the impacts of Biosphere Reserve designation and management on local communities" (p. 242).

187 Steward, J.C. and Murphy, R.F., eds. 1977. Evolution and ecology: Essays on social transformation. Urbana: University of Illinois Press.

Published collection of Julian Steward's anthropological essays.

188 Super, G. and Elsner, G. 1994. The human dimension of national forest ecosystem management. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 236-245.

"This paper describes a conceptual model that helps social, natural and biological scientists and managers understand and incorporate the human dimension in forest ecosystem management"(abs.).

189 The Human Dimension Study Group. 1994. The human dimension in sustainable ecosystem management: A management philosophy. Albuquerque, N.M.: USDA Forest Service Southwestern Region and Rocky Mountain Forest and Range Experiment Station.

Why and how humans can be integrated into ecosystem management; needs, values, adaptation, survival, materials.

190 U.S. National Human Dimensions of Ecosystem Management Task Team 1994. Human dimensions in ecosystem management: A concept paper. Presented at a conference on "Integrating social sciences in ecosystem management: A national challenge." Dec. 12-13, 1994, Unicoi State park, Helen, GA. 8 pp.

191 USDA Human Dimensions Task Group 1993. The human dimensions of national forest ecosystem management. In: Lund, H.G., ed. Integrated ecological and resource inventories. Washington, D.C.: USDA Forest Service. pp. 21-38.

Proceedings of a national workshop on national forests and human-environment factors.

192 Vallentyne, J.R. and Hamilton, A.L. 1987. Managing human uses and abuses of aquatic resources in the Canadian Ecosystem. In: Healey, M.C. and Wallace, R.R., eds. Canadian Aquatic Resources. Ottawa: Rawson Academy, Department of Fisheries and Oceans. pp. 513-533.

193 Vallentyne, J. and Beeton, A. 1988. The ecosystem approach to managing human uses amd abuses of natural resources in the Great Lakes basin. Environmental Conservation 15: 58-62.

194 Vining, J. 1991. Environmental values, emotions, and public involvement. In: Le Master, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. West Lafayette, IN: Dept. of Forestry and Natural Resources, Purdue University. pp. 26-35.

Discusses gathering and interpreting public input on ecosystem management.

195 Williams, G.W. 1995. Ecosystem management and people: How to incorporate the human dimension. Miscellaneous Forest Research Paper.

"This outline emphasizes using existing information, methods, procedures, and experts in documenting and involving people in federal land management decisions" (p.1).

196 Zucchetto, J. and Jonsson, A.M., eds. 1985. Resources and society: A systems ecology study of the Island of Gotland, Sweden. Ecological Studies, Vol. 56. New York: Springer-Verlag. 246 pp.

Reviews empirical studies with mathematical models that discuss the interactions between resource use, economic activity, and the environment.

HUMAN CONSEQUENCES

197 Adams, J.W. and Kasakoff, A.B. 1984. Ecosystems over time: The study of migration in "long run" perspective. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 205-224.

198 Bellah, R., Madsen, R. Sullivan, W.M., and Swidler, A., et al. 1992. The good society. New York: Alfred A. Knopf.

199 Bengston, D.N. 1994. The nature of value and the value of nature. In: Foresters together: Meeting tomorrow's challenges. Proceedings of the Society of American Foresters National Convention, Nov. 7-10. 1993, Indianapolis. Bethesda, MD.: Society of American Foresters. SAF Pub. 94-01.

200 Bennett, J. 1969. Northern plainsmen: Adaptive strategies and agrarian life. Chicago: Aldine.
Classic anthropologicl study of Canadian prairie town.

201 Comanor, J.M. 1995. Ecosystem management and its influence on private forest landowners. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Conference. Bethesda, MD: Society of American
Foresters. pp. 408-413.

202 Daniels, S.E., Walker, G.B., and Means. J.E. 1994. Managing ecosystems and social conflict. In: Jensen, M.E. and Bourgeron, P.S., tech. coords. Volume II: Ecosystem management-principles and applications. Portland, OR.: USDA Forest Service, Pacific Northwest Forest Experiment Station. General Technical Report PNW-GTR-318. pp. 327-339.

203 Evans, G.C. 1976. A sack of uncut dimonds: The study of ecosystems and the future resources of mankind. Journal of Ecology 64:1-39.

204 Floyd, D.W. 1988. Reducing multiple-use conflicts on public lands through experimental stewardship. Environmental Management 12(4):457-462.
Discusses the "implementation of a consensus-based management and planning process on the three pilot areas" to reduce conflicts among interest groups (abs.).

205 Fox, W. 1990. Toward a transpersonal ecology: Developing new foundations for environmentalism. Boston: Shambala.

206 Grossman, L. 1977. Man-environment relationships in anthropology and geography. Annals of the Association of American Geographers 67(1):126-144.
Especially, hazards research.

207 Kennedy, J.J. and Thomas, J.W. 1992. Exit, voice, and loyalty of wildlife biologists in public natural resource/environmental agencies. In: Mangun, W.R., ed. American fish and wildlife policy: The human dimension. Carbondale, IL.: Southern Illinois University Press. pp. 221-238.

208 Kohm, K.A., ed. 1991. Balancing on the brink of extinction: The Endangered Species Act and lessons for the future. Covello, CA.: Island Press.

209 Lees, S.H. and Daniel G.B. 1984. Environmental events and the ecology of cumulative change. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 133-160.
Human ecology; economics; aspects of change and desertification, irrigation, environmental management, rural development and change. Africa, Middle East, Latin America.

210 Lisetskii, F.N. 1992. Periodization of anthropogenically determined evolution of Steppe ecosystems. [Russian] Soviet Journal of Ecology 23(5):281-287.
Argues humans have always impacted environment and in turn were impacted by environments. Today's management needs to incorporate this knowledge.

211 Norgaard, R.B. 1994. Coevolutionary revisioning of the future. St. Paul, MN.: USDA Forest Service North Central Forest Experiment Station.

212 Orr, D.W. 1995. Conservation and conservatism. Conservation Biology 9(2):242-245.
Argues that the long-term consequences for human welfare are fundamentally at risk due to the mistaken ideas held by conservative governance groups that conservation is anathema to free markets.

213 Parsons, R., Daniel, T.C., and Tassinary, L.G. 1994. Landscape aesthetics, ecology, and human health: In defense of instrumental values. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 266-280.
"This paper is an attempt to apply concepts from evolutionary biology to environmental aesthetics, human health and environmental ethics" (p. 267) and implications for ecosystem management.

214 Putnam, R.D. 1995. Bowling alone: America's declining social capital. Journal of Democracy, January.

215 Putnam, R.D. 1993. The prosperous community: Social capital and public life. The American Prospect 13:35-42.
Social systems health and integrity and ecosystem management.

216 Rogers, E.M. 1995. Diffusion of innovations. Fourth edition. New York: Free Press.
Anthropology and sociology. The classic statement on innovation within and between societies, institutions, factions, classes, etc.

217 Tainter, J.A. 1988. The collapse of complex societies. Cambridge: Cambridge University Press.
Anthropology and archaeology; human-environment relations in complex society and the future potential of ecosystem approach.

218 Willems, E.P. 1974. Behavioral technology and behavioral ecology. Journal of Applied Behavior Analysis 7:151-165.
Deals with unintended widespread effects arising from simple interventions.

219 Worster, D., ed. 1988. The ends of the Earth: Perspectives on modern environmental history. Cambridge: Cambridge University Press.

SOCIOCULTURAL ADAPTATION

220 Batchelor, M. and Brown, K. 1992. Buddhism and ecology. [World Wide Fund for Nature.] New York: Cassell Publishers, Ltd.

221 Bengston, D.N. 1994. Is environmentalism logical? The Minnesota Volunteer Jan./Feb.:48-52.

222 Bennett, J.W. 1984. Ecosystems, environmentalism, resource conservation, and anthropological research. In: Moran, E.F., ed. The ecosystem concept in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 289-310.

223 Bentley, J.W. 1987. Economic and ecological approaches to land fragmentation: In defense of a much-maligned phenomenon. Annual Review Anthropology 16. Palo Alto, Ca.: Annual Reviews Inc. pp. 31-67.

Land fragmentation as the type of land ownership pattern where a single farm consists of numerous discrete parcels, often scattered across landscape.

224 Berger, P.L. and Luckmann, T. 1966. The social construction of reality. Garden City, NY.: Doubleday & Co.

Functional work of ideologies as cognitive apparatus.

225 Bird, E.A.R. 1987. The social construction of nature: Theoretical approaches to the history of environmental problems. Environmental Review 11 (Winter):255-264.

226 Box, T.W. 1994. Sustainable ecological sytems and cultural change. In: Covington, W.W. and DeBano, L.R., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 2-9.

Discusses changing values and how they relate to changing cultural and social demands causing carrying capacity on natural systems to fluctuate through time.

227 Breuilly, E. and Palmer, M., eds. 1992. Christianity and ecology New York and London: Cassell Publishers Limited; World Wide Fund for Nature.

A Christian view of the environmental crisis and the place of ecosystem management as a part of the management of creation.

228 Brunson, M., ed. 1995. Proceedings, Workshop on defining social acceptability of forests and forestry practices. June 23-25, Kelso, WA. Seattle: USDA Forest Service Pacific Northwest Research Experiment Station. Forthcoming

229 Caldwell, L., ed. 1988. Perspectives on ecosystem management for the Great Lakes: A reader. Albany: State Univ. Press of New York.

230 Callicott, J.B. 1994. Earth's insights: A multicultural survey of ecological ethics from the Mediterranean basin to the Australian outback. Berkeley, CA: University of California Press.

Anthropology, sociology, political science, economics, religious studies.

231 Edwards, C. and Regier, H.A., eds. 1990. An ecosystem approach to the integrity of the Great Lakes in turbulent times. Ann Arbor: Great Lakes Fishery Commission. S.P. 90-4.

232 Evernden, L.L.N. 1992. The social creation of nature. Baltimore: Johns Hopkins University Press.

233 Flournoy, A.C. 1993. Beyond the "spotted owl problem:" Learning from the old growth controversy. Harvard Environmental Law Review 17(2):261-332.

234 Fox, W. 1990. The most widely recognized approaches to ecophilosophy. Toward a transpersonal ecology. pp. 149-196.

Chapter is noted for its concise analysis of "approach" and "ecophilosophy."

235 Geisler, M. Glover, P. Zieroth, E., and Payton, G. 1994. Citizen participation in natural resource

management. In: Huff, et al., eds. Expanding horizons of forest ecosystem management: Proceedings of the Third Habitat Futures Workshop. pp. 87-100.
USA and Canada. Focuses on collaborative efforts between public, private, and government groups managing resources.

236 Greider, T. and Garkovich, L. 1994. Landscapes: The social construction of nature and the environment. Rural Sociology 59(1):1-24.

237 Griffore, R.J. and Phenice, L.A. 1988. Causality and the ecology of human development. Psychological Record 38(4):515-525
Psychological approach using ecosystem to distinguish between material and ideational scales and levels of existence.

238 Holling, C.S., ed. 1978. Adaptive environmental assessment and management. New York: John Wiley & Sons.

239 Hower, J. and Zieroth, E. 1994. Eastside ecosystem management project. Women in Natural Resources 16(1):17-19.

240 Hume, N., O'Connor, W.A., and Lowery, C.R. 1977. Family, adjustment, and the psychosocial ecosystem. Psychiatric Annals 7(7):32-49.
Discusses how people approach adjustment to their problems therough an ecosystem perspective.

241 IIASA 1979. Expect the unexpected: An adaptive approach to environmental management. Luxenburg: International Institute of Applied Systems Analysis. Executive Report #1.

242 Kempton, W., Boster, J.S., and Hartley, J.A. 1995. Environmental values in American culture. Cambridge, MA.: MIT Press.
Anthropological analysis of human-environment relations. Focuses on the greenhouse effect, ozone depletion and species decline.

243 Kennedy, J.J. and Quigley, T.M. 1994. Evolution of Forest Service organizational culture and adaptation issues in embracing ecosystem management. In: Jensen, M.E. and Bourgeron, P.S., tech. coords. Volume II: Ecosystem management-principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. General Technical Report PNW-GTR-318. pp. 16-26.
Development in response to internal and external pressures is examined.

244 Khalid, F.M. and O'Brien, J. 1992. Islam and ecology. World Wide Fund for Nature. New York, NY: Cassell Publishers, Ltd.

245 Knesl, J. 1982. Town and country in development from below: The emerging paradigm for the decade. Ekistics 49(292):14-22.

246 McLain, R. 1993. Toward more effective ecological learning: Procedural guidelines for the USMAB landscape sustainability project. Seattle, WA: University of Washington, College of Forest Resources.

247 McQuillan, A.G. 1993. Cabbages and kings: The ethics and aesthetics of New Forestry. Environmental Values 2(3):191-222.

248 Prime, R. 1992. Hinduism and ecology: Seeds of truth. World Wide Fund for Nature. New York, NY: Cassell Publishers, Ltd.

249 Regier, H.A., Mason, R.V., and Berkes, F. 1989. Reforming the use of natural resources. In: Berkes, F., ed. Common property resources. Belhaven: Pinter. pp. 110-126.
Discussion of what reform means to development work.

250 Robbins, W.G. and Wolf, D.W. 1994. Landscape and the intermontane northwest: An environmental history. Portland, OR: USDA Forest Service, Pacific Northwest Research Experiment Station, General Technical Report PNW-GTR-319. 32 pp.
Key Words: Environment, modification, market system, cultural stability, fire, horse, reconnaissance, surveys, railroads, Euro-americans, Native Americans, timber, sawmills, grazing.

251 Rolston, H. 1985. Valuing wildlands. Environmental Ethics 7(1):23-28.

252 Rose, A. 1992. Judaism and ecology. World Wide Fund for Nature. New York, NY: Cassell Publishers, Ltd.

253 Sample, V. A. 1992. Building partnerships for ecosystem management on forest and range lands of mixed ownership. In: Proceedings of the Society of American Foresters Annual Convention, American forestry-An evoloving tradition. Bethesda, MD.: Society of American Foresters. pp. 334-339.

254 Shannon, M. 1992. Community governance: An eduring institution of democracy. In: Multiple use and sustained yield: Changing philosophies for federal land management? Proceedings and summary of a workshop, March 5-6, 1992. Washington, D.C.: Congressional Research Service, Library of Congress. pp. 219-246.

255 Shepard, W.B. 1990. Seeing the forest for the trees: "New Perspectives" in the Forest Service. Renewable Resources Journal 8(2):8-11.
Discusses social, cultural, and political forces and the acceptability of ecosystem management to local populations and societies.

256 Sponsel, L.E. 1986. Amazon ecology and adaptation. Annual Review Anthropology 15:67-97.
Review of ecosystem, cultural system, change, and research trends and needs. Innovation, and consequences of human interaction and interruption are discussed.

257 Statham, A. 1995. Women, politics, and environmental action: An international symposium. Report on the First International Women's Conference on Environmental Issues. Moscow, Russia, June 1-3, 1994. Natural Resources Report 6(2):6.

258 Vallentyne, J.R. 1986. The necessity of a behavioral code of practice for living in the biosphere, with special reference to an ecosystem ethic. In: Polunin, N., ed. Ecosystem theory and application. New York: Wiley. pp. 406-414.
Philosophy.

259 Walters, C.J. 1986. Adaptive management of renewable resources. New York: Macmillan.

260 Walters, C.J. and Holling, C.S. 1990. Large-scale management experiments and learning by doing. Ecology 71(6):2060-2068.

261 Winterholder, B. 1980. Environmental analysis in human evolution and adaptation research. Human Ecology 8(2):135-170.
Anthropology, behavior studies, multidisciplinary borrowing.

GLOBAL ISSUES

262 Botkin, D.B., Estes, J.E., MacDonald, R.M., and Wilson, M.W. 1984. Studying the Earth's vegetation from space. BioScience 34(8):407-514.

263 Bowyer, J.L. 1994. Raw materials, environment, and developed nations. In: Proceedings: Pacific Timber Engineering Conference, Gold Coast, Australia, July 11-15, 1994. pp. 8-15.

264 Bryner, G.C., ed. 1992. Global warming and the challenge of international cooperation: An interdisciplinary assessment. Provo, UT: Brigham Young University, David M. Kennedy Center for International Studies.

265 Cairns, J., Jr. 1990. The emergence of global environmental awareness. Journal of Environmental Science (China) 2:1-18.

266 Cairns, M.A. and Meganck, R.A. 1994. Carbon sequestration, biological diversity, and sustainable development: Integrated forest management. Environmental Management 18(1):13-22.

Key words: Integrated forest management, carbon, greenhouse gas, biodiversity, sustainable development, tropical forestry, and socioeconomic.

267 Colby, M.E. 1990. Environmental management in development: The evolution of paradigms. Washington, D.C.: World Bank. World Bank Discussion Paper #80.

268 Duda, A.M. 1993. Addressing non-point sources of water pollution must become an international priority. Water Science and Technology 28(3-5):1-11.

Ecosystem management on an internationl scale---what's needed for non-point solutions.

269 Ecological Society of America 1991. The sustainable biosphere initiative: An ecological research agenda. Ecology 72(2):371-412.

270 Fox, D.G., DeCoursey, D.G., Watts, R.D., Wallace, W.W., et al. 1993. Global change, earth system science, and sustainable development. In: Manzanilla, H., Shaw, D., Aguirre Bravo, C., Iglesias Gutierrez, L., and Humre, R.H., tech. coords. Making sustainability operational: Fourth Mexico/ U.S. Symposium; Santa Fe, NM. Ft Collins, CO: USDA Forest Service RM-GTR-240. pp. 51-60.

Details models based off a structured system analysis approach that would allow scientists to interact with stakeholders to understand and work with the conceptual components of global analysis (abs).

271 Gerlach, L.P. 1992. Problems and prospects of institutionalizing ecological interdependencein a world of local independence. In: Bryner, G.C., ed. Global warming and the challenge of international cooperation: An interdisciplinary assessment. Provo, UT: Brigham Young University, David M. Kennedy Center for International Studies.

Anthropology.

272 Gosz, J.R. 1992. Sustainable forest management: Interpretations from the sustainable biosphere initiative. Flagstaff, AZ.: School of Forestry, Northern Arizona University. William P. Thompson Memorial Lecture Series, no. 16. 28 pp.

Discusses conflicts over timber and forest lands; sustainable management and its meaning and application, the dynamics of climate and environmental systems as matched to human dynamics.

273 Holling, C.S. 1986. The resilience of terrestrial ecosystems: Local surprise and global change. In: Clark, W.C. and Munn, R.E., eds. Sustainable development of the biosphere. Cambridge, UK: Cambridge University Press. pp. 292-317.

274 Larsen, G.L. 1994. Forests at UNCED: An emerging global consensus toward sustainability. In: Huff, M.H., Norris, L.K., Nyberg, J.B. and Wilin, N.L., eds., Expanding Horizons of Forest Ecosystem Management: Proceedings of the Third Habitat Futures Workshop. Portland OR: USDA Forest Service PNW-GTR-336. pp. 1-16.

Analyzes the UN's "first global consensus on forests" in three categories:1) acceptance, 2)

adoption of principles, and 3) adoption of action plans.

275 Lippke, B.R. 1992. Meeting the need for environmental protection while satisfying the global demand for wood and other raw materials: A North American and global trade perspective. Proceedings: Wood product demand and the environment. Vancouver, BC: Forest Products Research Society. pp. 137-142.

276 Lovelock, J.P. 1979. Gaia: A new look at life on Earth. Oxford: Oxford University Press.

277 Lovelock, J.P. 1988. The ages of Gaia: A biography of our living Earth. N.Y.: W.W. Norton.

278 Lubchenco, J., et al. 1991. The sustainable biosphere initiative: An ecological research agenda. Ecology 72(2):371-412.
Key words: biological diversity, biosphere, ecological research, environmental decision-making, global change, research agenda, research funding, research priorities, sustainability.

279 MacCleery, D.W. 1995. Toward a global perspective on sustainable forests: What are the lessons of our common experience? Manuscript. Washington, D.C.: USDA Forest Service.

280 Mitchell, B., ed. 1990. Integrated water management: International experiences and perspectives. New York: Belhaven Press.

281 Musselman, R.C., Massman, W. J., and Joyce, L. A. 1994. Integrating global climate models in assessment of forest response. In: Proceedings from the 87th Annual Meeting & Exhibition. Air & Waste Management Association. pp. 2-16.
Describes efforts to link climate change predictions from general circulation models to forest ecosystem models.

282 Olsen, M.E., Lodwick, D.G., and Dunlap, R.E. 1992. Viewing the world ecologically. Boulder, CO.: Westview Press.

283 Peterson, R.C., et al. 1987. Stream management: Emerging global similarities. Ambio 16(4):166-179.

284 Raza, M.S.M., ed. 1992. Forest ecosystems of the world. New Delhi: Rawat Publications. 214 pp.
Compilation of papers.

285 Saunders, D.A., Hobbs, R.J., and Ehrlich, P.R., eds. 1993. Nature conservation 3: Reconstruction of fragmented ecosystems. Global and regional perspectives. Australia: Surrey and Beatty and Sons, PTY Limited. 326 pp.
Papers address global and regional effects due to ecosystem fragmentation. Papers also address possible solutions specifically focusing on conservation biology and restoration ecology.

286 Sedjo, R.A. 1993. Global consequences of U.S. environmental policies. Journal of Forestry 91(4):19-21.

287 Sly, P.G. 1989. Towards an ecosystem charter for the Great Lakes-St. Lawrence. Ottawa, Ontario: Rawson Academy. Occassional Paper #1.

288 Textor, R.B., ed. 1991. The peace dividend as cultural concept. Human Peace 9(1-3), Monog. Ed.
Interdisciplinary, including anthropology, political science, geography, philosophy, economics.

289 U.S. National Research Council and Royal Society of Canada 1985. The Great Lakes Water Quality Agreement: An evolving instrument for ecosystem management. Washington D.C.: National Academy Press.
Review of the legal ramifications and economic considerations of agreement between the two nations.

290 Vitousek, P.M. 1994. Beyond global warming: Ecology and global change. Ecology 75(7):1861-1876.
Discusses components of global environmental change which we are certain are occurring: increased carbon dioxide levels, alterations to the nitrogen cycle, and land use/land cover change.

POLICY, PLANNING; ORGANIZATION STUDIES

291 Alchin, E. and Decharin, P. 1979. An ecosystems approach to community development research. In: Blakely, E.J., ed., Community development research: Concepts, issues, and strategies. New York: Human Sciences Press.

Research strategy and community action.

292 Alger, D. 1982. Area-wide environmental planning and management: Another perspective on the regional approach. Environmental Professional 4(4):388-394.

293 Allen, G.M. and Gould, E.M., Jr. 1986. Complexity, wickedness, and public forests. Journal of Forestry 84(4):20-23.

An original and innovative explanation of the nature of human-environment "problems."

294 Anderson, E.W. and Baum, R.C. 1988. How to do coordinated resource management planning. Journal of Soil & Water Conservation 43(3):216-220.

295 Angermeier, P.L. and Karr, J.R. 1994. Biological integrity versus biological diversity as policy directives: Protecting biotic resources. BioScience 44(10): 690-697.

296 Ashworth, G.J. and Kivell, P.T. 1989. Land, water, and sky: European environmental planning. Geo Perspective, Groningen.

297 Beatley, T. 1989. Environmental ethics and planning theory. Journal of Planning Literature 4(1):1-32.

298 Bernardo, D.J., Mapp, H.P., Sabbagh, G.J., Geleta, S., Watkins, K.B., Elliot, R.L., and Stone, J.F. 1993. Economic and environmental impacts of water quality protection policies: Application to the Central High Plains. Water Resources Research 29(9):3081-3091.

Argues for a regional modeling framework.

299 Bidwell, C.E. and Kasarda, J.D. 1987. Structuring in organizations: Ecosystem theory evaluated. Greenwich, CT.: JAI Press.

300 Bidwell, C.E. and Kasarda, J.D. 1985. The organization and its ecosystem: A theory of structuring in organizations. Greenwich, Conn.: JAI Press.

301 Birdsell, J.B. 1953. Some environmental and cultural factors influencing the structuring of Australian aboriginal populations. American Naturalist 87:171-207.

302 Bollenbacher, B.L., Samson, F., and O'Hara, K. 1994. Continuing Education in Ecosystem Management (CEEM): An interdisciplinary approach. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp.224-228.

Describes a more integrated interdisciplinary continuing education program that is being developed to meet the challenges posed by ecosystem management in the northern Rocky Mountain area.

303 Bonnicksen, T.M. 1991. Managing biosocial systems: A framework to organize society-environment relations. Journal of Forestry 89(10):10-15.

304 Bonnicksen, T.M. and Lee, R.G. 1982. Biosocial systems analysis: An approach for assessing the consequences of resource policies. Journal of Environmental Management 15(1):47-61.

305 Born, S.M. and Sonzogni, W.C. 1995. Integrated environmental management: Strengthening the conceptualization. Environmental Management 19(2):167-187.

"Our purpose here is to sharpen the conceptual basis for IEM (Integrated Environmental Management) by elaborating a framework for the practice" (abs.).

306 Brady, R.F., Tobias, T., Eagles, R., Micak, J., and et.al. 1979. A typology for the urban ecosystem

and its relationship to larger biogeographical landscape units. Urban Ecology 4:11-28.

307 Briassoulis, H. 1989. Theoretical orientation in environmental planning: An inquiry into alternative approaches. Environmental Management 13(4):381-392.

308 Brown, G. and Harris, C.C. 1993. The implications of workforce diversity in the U.S. Forest Service. Administration and Society 25(1):85-113.

Discusses how employees influence the institution toward a particular understanding of perils and framework for ecosystem management.

309 Brown, G. and Harris, C.C. 1992. The United States Forest Service: Changing of the guard. Natural Resources Journal 3:449-466.

Addresses the ways in which the Forest Service appears to be changing under the influence of employees's and publics's evolving environmental ethics and understandings.

310 Brown, G. and Harris, C.C. 1992. The US Forest Service: Toward the new resource management paradigm? Society and Natural Resources 5(3):231-245.

Shows how alternative paradigms reveal factions within the agency.

311 Brown, T.C. and Peterson, G.L. 1994. A political-economic perspective on sustained ecosystem management. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 228-235.

312 Bullis, C.A. and Kennedy, J.J. 1991. Value conflicts and policy interpretations: Changes in the case of fisheries and wildlife managers in multiple use agencies. Policy Studies Journal 19(3-4):542-552.

313 Butzer, K.W. 1980. Civilizations: Organisms or systems? American Scientist 68:517-523.

Social science and organization theory.

314 Cairns, J., Jr. 1991. The need for integrated environmental systems management. In: Cairns, J., Jr., and Crawford, T.V., eds. Integrated environmental management. Chelsea, MI: Lewis Publishers. pp. 5-20.

315 Caldwell, L. 1991. The challenge of appropriate institutions with particular reference to the Great Lakes. In: Donahue, M.J., ed. Proceedings of the Canada-United States Inter-University Seminar on Great Lakes Governance. Amherst, N.Y.: Center for Tomorrow, Syracuse University of New York at Buffalo.

316 Caldwell, L.K. 1968. An ecosystems approach to public land policy. In: Foss, P.O., ed. Public land policy: Proceedings of the Western Resources Conference. Boulder, CO: Colorado Associated University Press. pp. 43-56.

317 Caldwell, L.K. 1970. The ecosystem as a criterion for public land policy. Natural Resource Journal 10(2):203-221.

318 California Legislature Senate Committee on Natural Resources 1993. Impact of President Clinton's Forest Plan on California's economy and environment. Sacramento: Senate Committee on Natural Resources and Wildlife.

Summary and written statement given by the public to the state on August 18, 1993 at the State Capitol.

319 Callicott, J.B. 1984. Non-anthropocentric value theory and environmental ethics. American Philosophical Quarterly 21(4):299-309.

320 Callicott. J.B. 1992. The land aesthetic. Renewable Resources Journal 10(4):12-17.

321 Carpenter, R.A. 1980. Using ecological knowledge for development planning. Environmental Management 4(1):13-20.

322 Chapman, D.G. and Swartzman, G.L. 1979. Evaluation and development of ecosystem models assessing environmental impact. Annual Report #3. Seattle: University of Washington Press.

323 Chartock, M.A. 1983. A systems framework for environment-research planning. Computers, Environment, and Urban Systems 8(2):83-92.

Case study-Puerto Rican pollution control.

324 Christie, J., Becker, M., Cowden, J., and Vallentyne, J. 1986. Managing the Great Lakes

Basin as Home. Journal of Great Lakes Research 12(1):2-17.

Summary of issues and ideas at a "Workshop on Implementing the Ecosystem Approach, held at Hiram, Ohio, March 1993.

325 Clark, T.W. 1993. Creating and using knowledge for species and ecosystem conservation: Science, organization, and policy. Perspective in Biology and Medicine 36(3) Spring:497-525.

326 Clark, T.W. and Minta, S. 1993. Greater Yellowstone's future: Prospects for ecosystem science, management, and policy. Moose, WY.: Homestead Publishing.

327 Clark, T.W. and Harvey, A.H. 1990. The Greater Yellowstone ecosystem policy arena. Society and Natural Resources 3:281-284.

328 Clark, T.W., Amato, E.D., Whittenmore, D.G., and Harvey, A.H. 1991. Policy and programs for ecosystem management in the Greater Yellowstone ecosystem: An analysis. Conservation Biology 5(3):412-422.

329 Clark, W.C. and Munn, R.E., eds. 1986. Sustainable development of the biosphere. Cambridge, UK: Cambridge University Press.

An often cited volume of essays ranging from the biophysical to social sciences.

330 Contant, C.K., Duffy, M.D., and Holub, M.A. 1993. Determining tradeoffs between water quality and profitability in agricultural production: Implications for nonpoint source pollution policy. Water Science and Technology 28(3-5):27-34.

Impacts, though differing among type of production, rely on management that takes into effect human causes, both distant and near. Argues no significant increase in cost to do such management.

331 Cornett, Z.J. 1994. GIS as a catalyst for effective public involvement in ecosystem management decision-making. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 337-345.

332 Corsentino, P., ed. 1995. Ecosystem matters: Educators resource guide. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Region. 225 pp.

Provides education materials for children in grades kindergarten through 12th that describe the bio-physical components of ecosystems, the importance of ecosystems, and the role of humans.

333 Cortner, H.J. and Shannon, M.A. 1993. Embedding public participation in its political context. Journal of Forestry 91(7):14-16.

334 Cortner, H.J. and Moote, M.A. 1992. Sustainability and ecosystem management: Forces shaping political agendas and public policy. In: Society of American Foresters. Proceedings of the Society of American Foresters Annual Convention. American forestry: An evolving tradition, Oct. 25-27, Richmond, VA. Bethesda, MD: Society of American Foresters. pp. 310-316

335 Cortner, H.J. and Moote, M.A. 1994. Trends and issues in land and water resources management: Setting the agenda for change. Environmental Management 13(2):167-173.

The authors discuss the new paradigm for decision making and policy regarding public lands management which is based on ecosystem management and collaborative decision making.

336 Cortner, H.J., Shannon, M.A., Wallace, M.G., Burke, S., and Moote, M.A. 1994. Institutional barriers and incentives for ecosystem management: A problem analysis. Water Resources Recearch Center, College of Agriculture, University of Arizona. 51.

An examination of society's institutions in order to better understand what the necessary changes may be to better incorporate ecosystem management into society.

337 Cubbage, F.W., Maguire, L.A., and Lloyd, F.T. 1994. Integrating social science and public input into ecosystem management on National Forests. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 178-185.

Discusses the importance of social science research to ecosystem management and how the use of public input can be used to better achieve ecosystem management objectives.

338 Curry-Roper, J.M. and McGuire, S. 1993. The individualistic imagination and natural resource policy. Society and Natural Resources 6:259-272.

339 Daly, H.E. 1990. Boundless bull. Gannett Center Journal 4(3):113-118.

340 Daniels, R.E. 1988. The role of ecology in planning: Some misconceptions. Landscape and Urban Planning.

341 Dean, D.J. 1994. Computerized tools for participatory national forest planning. Journal of Forestry 92(2):37-40.

342 Deknatel, C.Y. 1986. Regionalism and environment: The search for planning strategy and organization in the Great Plains. Environmental Review 10(2):107-121.
Argues for balance of environment and economic needs.

343 Devries, W. 1993. Average critical loads for nitrogen and sulfur and its use in acidification abatement policy in the Netherlands. Water, Air, and Soil Pollution 68:(3-4):399-434.
Implication for systems management and emission reductions policies.

344 Driver, B.L., Kent, B., and Hof, J.G. 1994. A planning and analysis process for including social and biophysical considerations in sustainable ecosystem management. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 281-291.

345 Duncan, O.D. 1964. Spatial organization and the ecosystem. In: Faris, R.E.L., ed. Handbook of modern sociology. Chicago: Rand McNally. pp. 36-82.

346 Duncan, O.D. and Schnore, L.F. 1959. Cultural, behavioral, and ecological perspectives in the study of social organization. American Journal of Sociology.

347 Ellefson, P.V., Krott, M. and Williams, E. 1995. Institutionalizing and program structures for sustaining forest ecosystems at the landscape level: Current status and research challenges. Paper presented at International Union of Forest Research Organization's Twentieth World Congress, August 6-12, 1995. Tampere, Finland.
Discusses landscape level integrity of forest ecosystems from a biophysical perspective, institutional and mechanistic perspective, and a research perspective.

348 Fitzsimmons, A.K. 1994. Federal ecosystem management: A "train wreck" in the making. Washington, D.C.: Cato Institute.
Criticizes ecosystem management and promotes a "wise use" agenda.

349 Flick, W.A. 1995. American law and ecosystem management: From concept to reality. Paper presented to Working Session 1 of Subject Group S 6.13-00 (Forest Law and Environmental Legislation). International Union of Forestry Research Organizations (IUFRO) XX World Congress. Tampere, Finland.
Argues that ecosystem management needs to fit into American law through the legislation process.

350 Fortmant, L. 1990. The role of professional norms and beliefs in the agency-client relations of natural resource bureaucracies. Natural Resources Journal 30(2):361-380.
Organizational and professional cultures, structures, functions, and change.

351 Garcia, M.W. 1989. Forest Service experience with interdisciplinary teams developing integrated resource management plans. Environmental Management 13(5):583-592.
Discusses a study that revealed the composition of interdisciplinary teams used in national forests and planners' attitudes toward using ID teams.

352 Gebhardt, K.A. 1994. A framework towards ecosystem management performance standards. In: Bureau of Land Management. Ecosystem management. Idaho Bureau of Land Management. Technical Bulletin No. 94-5. April 1994. Paper 3.
Principles of ecosystem management and a description of the new roles BLM personnel will take with its application.

353 Gerlach, L.P. 1991. Opportunity, liberty, ecology: Challenges of the post-cold war future. Human Peace 9(1-3):13-28.

Anthropological analysis of changes in governance and management of environment; analysis of cultural concept of ecosystem as approach.

354 Gilbert, V. 1988. Cooperation in ecosystem management. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 180-192.

355 Giliomee, J.H. 1977. Ecological planning: Method and evaluation. Landscape Planning 4:185-191.

356 Gillis, A.M. 1990. The New Forestry: An ecosystem approach to land management. BioScience 40(8):558-562.

357 Gilman, R. 1992. Design for a sustainable economics. In Context 32 (Summer):52-59.

358 Grigg, N.S. 1983. Is integrated environmental management feasible? Journal of Professional Issues in Engineering (ASCE) 109(2):71-80.
North Carolina site.

359 Grumbine, R.E. 1991. Cooperation or conflict? Interagency relationships and the future of biodiversity for U.S. parks and forests. Environmental Management 15(1):27-37.

360 Grzybowski, A. and Slocombe, D.S. 1990. Self-organization theories and environmental management: The case of South Moresby, Canada. Environmental Management 12(4):463-478.

361 Gunderson, L.H., Holling, C.S., and Light, S.S., eds. 1995. Barriers and bridges to the renewal of ecosystems and institutions. New York: Columbia University Press.
Papers review "regional examples of resource and environmental policy and management where periods of crisis and polarization seem to be replaced by a paralysis in decision making" (p.3).

362 Hardt, R.A. and Newman, D.H. 1995. Regional policies for National Forest old-growth planning. Journal of Forestry 93(6):32-35.
Reviews past old-growth planning, looks at what tasks the Forest Service must perform to successfully manage at a regional perspective, and proposes necessary components for an effective policy.

363 Hays, S. 1987. Beauty, health, permanence: Environmental policies in the United States, 1955-1985. Cambridge: Cambridge University Press.

364 Hirt, P.W. 1994. A conspiracy of optimism: Management of the National Forests since World War Two. Lincoln, NE: University of Nebraska Press.

365 Holling, C.S. 1995. What barriers? What bridges? In: Gunderson, L.H., Holling, C.S., Light, S.S., eds. Barriers and bridges to the renewel of ecosystems and institutions. New York: Columbia University Press. pp. 3-34.
Discusses why management and decision making get bogged down in crisis and conflict and explains possible solutions.

366 Hooker, A.M. 1992. Beliefs and values regarding society and nature: A framework for listening in forest and environmental policy. Ph.D dissertation, School of Forestry and Environmental Studies, Yale University.

367 Institute for Forest Analysis, Planning, and Policy 1992. The Duluth Manifesto: Principles to guide decisions on forests. Baltimore: Institute for Forest Analysis, Planning, and Policy.

368 Keiter, R.B. 1988. Natural ecosystem management in park and wilderness areas: Looking at the law. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 15-40

369 Kennedy, J.J. and Thomas, J.W. 1994. Managing natural resources as social value. In: Knight, R.L. and Bates, S.F., eds. A new century for natural resources management, Chapter 18. Washington, D.C.: Island Press. pp. 311-321.

370 Krannich, R.S., Matthew, C., Daniels, S.E., and Walker, G.B. 1994. Incorporating social assessment and public involvement processes into ecosystem- based resource management: Applications to the East Side Ecosystem Management Project. Walla Walla, WA: USDA Forest Service, Eastside Ecosystem Management Project.

371 Lee, R.G. 1992. Ecologically effective social organization as a requirement for sustaing watershed ecosystems. In: Naiman, R.J., ed., Watershed management: Balancing sustainability and environmental change. New York: Springer-Verlag. pp. 73-90.

372 Lowry, W.R. 1994. Paved with political intentions: The impact of structure on the National Park Services of Canada and the United States. Policy Studies Journal 22(1):44-58

373 Mangun, W., ed. 1992. American fish and wildlife policy: The human dimension. Carbondale, IL: Southern Illinois University.

374 Manring, N.J. 1993. Reconciling science and politics and Forest Service decision making: New tools for public administrators. American Review of Public Administrators 23(4):343-359.

375 Mansfield, M.E. 1993. A primer of public land law. Washington Law Review 68:801-857.

376 McCarthy, C., Sabatier, P., and Loomis, J. 1995. Attitude changes in the Forest Service: 1960-1990. Society and Natural Resources. Forthcoming.

377 Meganck, R.A. 1981. Planning for ecodevelopment in the Chihuahuan Desert. Parks 5(4):4-8.

378 Miller, A. 1982. Tunnel vision in environmental management. Environmentalist 2(3):223-232.
Tunnel vision as selective attention contributing to inadequate problem formulation because of lack of cross-disciplinary or more holistic perspectives and theoretical modelling.

379 Mitchell, B. 1993. Institutional innovations in resource management. In: Foster, H.D., ed. Advances in resource management. London: Belhaven Press. pp. 1-17.

380 Mitchell, M.Y., Force, J.E., Carroll, M.S., and McLaughlin, W.J. 1993. Forest places of the heart: Incorporating special places into public management. Journal of Forestry 91(4):32-37.

381 Mohai, P. 1987. Public participation and natural resource decision-making. Natural Resoruces Journal 27(1):123-155.

382 Monthey, R.W. 1995. Organizational adaptations to ecosystem management in the Pacific Northwest. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Conference. Bethesda, MD: Society of American Foresters. pp. 363-368.
The paper discusses changes already underway in land management agencies (emphasizing the Bureau of Land Management) and the need for a change-responsive, long-term systems outlook.

383 Nagel, S., ed. 1976. Environmental politics. New York: Praeger.

384 Norton. B.G. 1992. A new paradigm for environmental management. In: Costanza, R., Norton, B., and Hakell, B., eds. Ecosystem health: New goals for environmental management. Washington, D.C.: Island Press. pp. 23-41.

385 O'Donnell, E. 1993. VIPs take to the woods. American Forests 99(11-12):29-30, 60.
Description of Pennsylvania's Forest Stewardship Program which is designed to provide technical and financial assistance to forest landowners.

386 Oliver, C.D., Irwin, L.L., and Knapp, W.H. 1994. Eastside forest management practices: Historical overview, extent of their application, and their effects on sustainability of ecosystems. From Vol. III: Assessment. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Techical Report. PNW-GTR-324. 73 pp.
Key words: Management practices, historical management practices, eastern Oregon, eastern Washington, ecosystem sustainabilty.

387 Ostrom, E. 1986. An agenda for the study of institutions. Public Choice 48:3-25.

388 Petak, W.J. 1980. Environmental planning and management: The need for an integrative perspective. Environmental Management 4(4):287-296.

389 Petulla, J.M. 1983. Environmental management: Defining the profession. Environment 25(8):2-5.

390 Polunin, N., ed. 1986. Ecosystem theory and application. Chichester: Wiley.

391 Power, M.G. 1972. The ecosystem: A conceptual framework for identifying the ecological implications of planning options. Vancouver: University of British Columbia, Master's Thesis.

392 Reckhow, K.H. 1994. Importance of scientific uncertainty in decision making. Environmental Management 18(2):161-166.

Key words: uncertainty, decision-making, decision analysis, safety factors, water quality management.

393 Reich, R.B. 1985. Public administration and public deliberation: An interpretive essay. Yale Law Journal 94(1567):1617-1641.

Provides a history and critique of dominant views in U.S. society, and argues for an administrative approach that "nurtures" public participation and the sharing of diverse values.

394 Reidel, C. and Richardson, J. 1992. A public/ private cooperative paradigm for federal land management. In: Multiple use and sustained yield: Changing philosophies for federal land management. Proceedings and summary of a workshop, March 5-6, 1992. Committee Print #11. Washington, D.C.: Congressional Research Service, Library of Congress. 145-168.

Management of small units should be integrated at regional land units, all coordinated under an umbrella land agency.

395 Rhoads, S.E. 1985. The economist's view of the world: Government, markets, and public policy. New York: Cambridge University Press.

396 Risser, P.G. 1985. Toward a holistic management perspective. BioScience 35(7):414-418.

397 Roberts, R.D., and Roberts, T.M., eds. 1984. Planning and ecology. New York: Chapman and Hall.

Includes cited work on environmental audits.

398 Sale, K. 1985. Dwellers in the land: The bioregional vision. San Francisco: Sierra Club Books.

Extremely influential book on bioregional concept and future of human-environment relations.

399 Salwasser, H., Schonewald-Cox, C.M., and Baker, R. 1987. The role of interagency cooperation in managing for viable populations. In: Soule, M.E., ed. Viable populations for conservation. New York: Cambridge University Press. pp. 334-339.

400 Sample, V.A. 1994. Building partnerships for ecosystem management on mixed owner landscapes. Journal of Forestry 92(8):41-44.

401 Sample, V.A. and Enzer, M.J. 1994. Building partnerships for ecosystem management on forest lands in mixed ownerships. Great Lakes Region Workshop Summary. Washington, D.C.: American Forests. 33 pp.

402 Schmidt, R.H., Brooks, D.L., and Salmon, T.P. 1992. Social, political, legal, and ethical aspects of animal damage management in forestry. In: Silvicultural approaches to animal damage management in the Pacific Northwest Forests. Portland, OR: USDA Forest Service Pacific Northwest Research Station, General Technical Report PNW-GTR-287. pp. 395-404.

403 Schramm, G. 1980. Integrated river basin planning in a holistic universe. Natural Resources Journal 20(4):787-806.

404 Selin, S. and Chavez, D. 1995. Developing a collaborative model for environmental planning and management. Environmental Management 19(2):189-195.

"This paper examines how collaborative theory from the organizational behavior field can help environmental managers to better understand" how to use collaborative solution techniques (abs.).

405 Shands, W.E., Black, A., and Giltmier, J. 1993. From new perspectives to ecosystem management: A report of an assessment of New Perspectives. Milford, PA.: The Pinchot Institute for Conservation.

406 Shannon, M.A. 1991. Ecosocial systems in an evolving policy context. In: Le Master, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. West Lafayette, IN: Dept. of Forestry and Natural Resources, Purdue University. pp. 88-96.

Argues the separation of theories about biophysical and sociocultural world is an illusion.

Approach will require incorporating the fundamental connection between humans and environments.

407 Shepard, W.B. 1994. Ecosystem management in the Forest Service: Political implications, impediments, and imperatives. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management-principles and applications. Portland, OR.: USDA Forest Service Pacific Northwest Research Experiment Station. General Technical Report PNW-GTR-318. pp. 227-233.

More than improving the application of scientific techniques, argues we must "embrace the political responsibilities of the land manager" (p.27) so to adapt to contemporary sociocultural needs.

408 Shepard, W.B. 1994. Modern forest management: It's about opening up, not locking up. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 218-227.

Discusses problems associated with working with the broad concepts of ecosystem management and how they relate to on-the-ground decision making.

409 Sinton, J. 1984. Complex landscapes and simple visions: A socio-natural approach to land-use planning. In: Borden, R.J., ed. Human ecology: A gathering of perspectives. College Park, Pa.: Society for Human Ecology.

410 Slocombe, D. S. 1993. Implementing ecosystem-based management: Development of theory, practice, and research for planning and managing a region. BioScience 43(9):612-622.

Reviews and attempts to synthesize theory and practice that facilitate implementing ecosystem management. Also, regional-scale planning and management; multiple party policy making; assessment.

411 Slocombe, D.S. 1993. Environmental planning, ecosystem science, and ecosystem approaches for integrating environment and development. Environmental Management 17(3):289-303.

412 Smith, A.D., Jr. 1995. Ecosystem management: Is it law? In: Baumgartner, D.B. and Everett, R.L., eds. Ecosystem management in western interior forests, symposium proceedings. Washington State University, Department of Natural Resources. Forthcoming in August.

413 Soderbaum, P. 1985. Economics, evaluation, and environment. In: Hall, D.O., Myers, N., and Margaris, N.S., eds. Economics of ecosystem management, Chapter 2. Boston: Dr. W. Junk Publishers. pp. 5-17.

414 Stanley, M. 1983. The mystery of the commons: On the indispensibility of civic rhetoric. Social Research 50(4):851-883.

415 Steedman, R.J. and Regier, H.A. 1987. Ecosystem for the Great Lakes: Perspectives on degradative and rehabilitive transformations. Canadian Journal of Fisheries and Aquatic Science 44 (Supplement 2):95-103.

416 Steiner, F. and Brooks, K. 1981. Ecological planning: A review. Environmental Management 5(6):495-505.

417 Stillman, P. 1976. Ecological problems, political theory, and public policy. In: Nagel, S., ed. Environmental politics. New York: Praeger. pp. 49-60.

Discusses social and political acceptability of public involvement in natural resource management.

418 Stout, S.L., Redding, J.A., and DeMarco, L. 1994. Technology transfer at the heart of a research/management partnership. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 188-193.

Describes how annual training sessions can help to achieve a succussful partnership between land managers and scientists.

419 Thomas, J.W. 1992. Forest management approaches on the public's lands: Turmoil and transition. Berkeley, CA: University of California, College of Natural Resources, Dept. of Forestry and Resource Management. The Horace M. Albright Lectureship in Conservation, no. 31.

420 Ticknor, W.D. 1994. Ecosystem management: Two obstinate issues. Syracuse, N.Y.: SUNY College of Environmental Science and Forestry, Faculty of Forestry, Miscellaneous Publication No. 29.

Discusses 1) changing nature of property relations, 2) changing decision making mechanisms.

421 U.S. Forest Ecosystem Management Assessment Team. 1993. Forest ecosystem management: An ecological, economic, and social assessment. Washington, D.C.: U.S. Government Printing Office. pp. 794-878.

Clinton's interagency working group reports led by Forest Service Chief. Includes terrestrial, aquatic, economic, and social assessment of options, plus implementation and adaptive management issues.

422 Underwood, D.A. and King, P.G. 1989. On the ideological foundations of environmental policy. Ecological Economics 1(4):315-334.

423 USDA Forest Service 1994. Forest Service Reinvention-Executive Summary. Washington, D.C.: USDA Forest Service.

Includes emphasis on ecosystem approach as a collaborative approach.

424 USDA Forest Service 1995. Navigating the future: Rensselaerville roundtable-Integrating science and policy making. Washington, D.C.: U.S. Government Printing Office.

425 USDA Forest Service 1994. The role of the northeastern area in ecosystem management: State and private forestry. USDA Forest Service, Northeastern Area. US Government Printing Office 1994-0-507-260

Outlines the roles of planning and implementating ecosystem management in the area. Includes glossary and description of ecological units.

426 USDI Bureau of Land Management 1993. Ecosystem management fact sheet. Washington, D.C.: Government Printing Office.

427 Wight, J.R. 1994. Decision support systems for restoration management of annual rangelands. In: Mosen, S.B. and Stanley G.K., comps. Proceedings-ecology and management of annual rangelands, 1992 May, Boise, Id. Ogden, Ut.: USDA Forest Service Intermountain Research Station, General Technical Report INT-GTR-313. pp. 320-322.

Policy, organization, political and economic considerations and ecosystem management.

428 Yanekovich, D. 1991. Coming to public judgement: Making democracy work in a complex world. Syracuse, N.Y.: Syracuse University Press.

429 Youngblood, A., Everett, R., and Busse, M. 1994. Building National Forest System-research partnerships for ecosystem management of East-side Oregon and Washington forests. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 207-214.

VARIOUS CASE STUDIES

430 Admiraal, W., Vandervelde, G., Smit, H., and Cazemeir, W.G. 1993. The Rivers Rhine and Meuse in the Netherlands: Present state and signs of ecological recovery. Hydrobiologia 265:(1-3):97-128

Action programs must be included in ecosystem management planning and policies.

431 Atzet, T., Greenup, M., and White, D.E. 1990. Implementing ecosystem management with the Siskiyou National Forest Plan. In: Society of American Foresters Conference Proceedings. Are forests the answer? Washington, D.C. July 29-August 1, 1990. Bethesda, MD: Society of American Foresters: pp. 587-588.

432 Bahuguna, V.K., Luthra, V., and Rathor, B.M.S. 1994. Collective forest management in India. Ambio 23(4/5): 269-273.

433 Baldwin, S.B. and Haymond, J.L. 1994. A systems approach to communication behavior among scientists, foresters, and NIPF landowners. Southern Journal of Applied Forestry 18(4):1775-1780.

434 Bormann, B.T., Cunningham, P.G., Brookes, M.H., Manning, V.W. and Collopy, M.W. 1994. Adaptive ecosystem management in the Pacific Northwest. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-341.

Authors work to explain the philosophy of adaptive management as applied to the area. They emphasize the need for interagency and cross-group coordination for analysis, implementation, and follow-up.

435 Burroughs, R.H. 1995. Ecosystem management: A comparison of Greater Yellowstone and Georges Bank. Environmental Management 19(5) Sept./Oct.:649-663.

Key words: Ecosystems, policy, management, Greater Yellowstone, Georges Bank, administration, organizational learning.

436 Caldwell, L. 1994. Disharmony in the Great Lakes Basin: Institutional jurisdictions frustrate the ecosystem approach. Alternatives 20(3):26-31.

437 California Dept. of Forestry and Fire Protection and California Dept. Fish and Game. 1993. An evaluation of Option 9 of the Federal Forest Plan as it relates to Northwestern California. Sacramento: The Resources Agency, State of California.

An analysis of the process of ecosystem management as put forth by Clinton's Forest Ecosystem Management Assessment Team, used as the backbone of an ecosystem approach.

438 California Legislature, Senate Committe on Natural Resources 1993. Impact of President Clinton's Forest Plan on local communities, the environment, and the economy of the north coast region, and related issues. Sacramento and Eureka: Senate Committee on Natural Resources and Wildlife.

Transcript and written statements presented by the public to the state on October 5, 1993 at Eureka City Hall.

439 Carlson, C.E., Floch, R., and Fiedler, C. 1994. Research and demonstration of ecosystem management principles in Ponderosa pine/Douglas fir forests: Lick Creek, Bitterroot National Forest. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 201-206.

440 Cawley, R.M. and Freemuth, J. 1993. Tree farms, Mother Earth, and other dilemmas: The politics of ecosystem management in Greater Yellowstone. Society and Natural Resources 6:41-53.

441 Cawrse, D.C., Johns, R.M., II, and Jones, D.H. 1994. Ecosystem management in the Upper Chattooga. Journal of Forestry 92(8):25-27.

Describes the process of implementing ecosystem management including the use of public

participation integration of resources with management, sustainability, and collaboration.

442 Clark, T.W. and Minta, S.C. 1994. Greater Yellowstone's future: Prospects for ecosystem science, management, and policy. Moose, WY: Homestead Publishing.

Provides overview of human-environment relations in area. Discusses barriers to ecosystem approach in the area and offers arguments for combining science, management and public policy together.

443 Clark, T.W. and Zaunbrecher, D. 1987. The Greater Yellowstone ecosystem: The ecosystem concept in natural resource policy and management. Renewable Resources Journal 5(3):8-16.

444 Clark, T.W., Amato, E.D., Whittenmore, D.G., and Harvey, A.H. 1991. Policy and programs for ecosystem management in the Greater Yellowstone Ecosystem: An analysis. Conservation Biology 5:412-422.

445 Corvallis Research Update 1995. PNW [Pacific Northwest] ecosystem management plan set for peer review. Corvallis Research Update Winter, p.7.

Draft document.

446 Crombie, D., comp. 1990. [Toronto] Watershed. Ottawa: Royal Commission on the Future of the Toronto Waterfront.

447 Dahms, C. 1993. Ecosystem management in the Southwestern Region. In: Aldon, E.F. and Shaw, D.W., tech. coords. Managing pinyon-juniper ecosystems for sustainability and social needs, proceedings of the symposium 1993. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-236. pp. 9-11.

448 Dahms, C. 1993. The Southwestern Region's strategy for ecology based multiple use management. In: Manzanilla, H., Shaw, D., Aguirre Bravo, C., Iglesias Gutierrez, L., and Hamre, R.H., tech. coords. Making sustainability operational: Fourth Mexico/ U.S. Symposium; Santa Fe, NM. Ft Collins, CO: USDA Forest Service RM-GTR-240. pp. 147-149.

"Discusses the processes we used to develop our basic framework for action as well as what specifically needed to be done to implement ecosystem management over the next five years" (abs.).

449 Davis, D.D. 1974. The strategy of early Spanish ecosystem management on Cuba. Journal of Anthropological Research.

450 Dolan, R. and Hayden, B.P. 1978. Environmental dynamics and resource management in the U.S. National Parks. Environmental Management 2(3):249-258.

Management as site-specific and yet holsitic in perspective.

451 Dorm-Adzobu, C., Ampadu-Agyei, O., and Veit, P. 1991. Religious beliefs and environmental protection: The Malshegu sacred grove in northern Ghana. Washington, D.C.: World Resources Institute, and Nairobi, Kenya: ACTS (African Centre for Technology Studies) Press.

Analysis of effective community-level efforts in natural resource management.

452 Dworsky, L.R. 1993. Ecosystem management: Great Lakes perspective. Natural Resources Journal 33(2) part 2:347-362.

"An examination of the pragmatic application of the concept to a precisely defined Great Lakes Basin ecosystem (p. 348)." Keywords: Upper Midwest, definition, application.

453 Ellis, J.E. and Swift, D.M. 1988. Stability of African pastoral ecosystems: Alternate paradigms and implications for development. Journal of Range Management 41:450-459.

454 Ericksen, N.J. 1990. New Zealand water planning and management: Evolution or revolution. In: Mitchell, B., ed. Integrated water management: International experiences and perspectives. New York: Belhaven Press. pp. 45-87.

Rapid change of institutional arrangements for allocating and using resources reveals that New Zealand and others are in the grips of policy revolution.

455 Fernholm, B. and Rudback, G.T. 1989. Marine resource management for the Antarctic. Ambio 18(1):68-70.

456 Fleckseder, H., Hausperger, M., and Kadrnoska, H. 1993. Liesing Creek: Sewerage and Wastewater

treatment in the context of River Restoration in southern Vienna, Austria. Water Science and Technology 27(12):237-240.

Citizens movements and ecosystem management together.

457 Francis, G. 1986. Great Lakes governance and the ecosystem approach: Where next? Alternatives 13(3):61-70.

Institutions and structures for control of the Great Lakes are having to consider ecosystem-level problems combined with the variability introduced by human social and cultural factors.

458 Francis, G., Magnison, J.J., Regier, H.A., and Talhelm, D.R. 1979. Rehabilitating Great Lakes ecosystems. Ann Arbor: Great Lakes Fishery Commission. Technical Report #37.

459 Francis, G.R. 1988. Institutions and ecosystem redevelopment in Great Lakes America with reference to Baltic Europe. Ambio 17(2):106-111.

Governance and collective action across interjurisdiction and international boundaries.

460 Francis, G.R., Lino Grima, A.P., Regier, H.A., and Whillans, T.H. 1985. A prospectus for the management of the Long Point ecosystem. Ann Arbor: Great Lakes Fishery Commission. Technical Report #43.

461 Gerlach, L.P. 1993. Cooperating for ecosystem management: North American Waterfowl Management Plan. Minneapolis, MN.: University of Minnesota, Strategic Management Research Center. Discussion Paper #193. (Revised Feb 1994).

Anthropology.

462 Gilbert, S. and Olsen, L. 1994. Ecosystem management approach of the Helena National Forest. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 216-223.

Describes "a midscale analysis process to integrate ecosystem management principles into forest plan implementation" (abs.).

463 Goldstein, B. 1992. The struggle over ecosystem management at Yellowstone. BioScience 42(3):183-187.

464 Good, R. and Good, N.F. 1984. The Pinelands National Reserve: An ecosystem approach to management. BioScience 34(3):169-173.

First national reserve in the U.S; its history and place in today's turbulent times.

465 Grossman, L. 1984. Peasants, subsistence ecology, and development in the highlands of Papua New Guinea. Princeton: Princeton University Press.

466 Gustafson, E.J. and Crow, T.R. 1994. Forest management alternatives in the Hoosier National Forest. Journal of Forestry 92(8):28-29.

Describes the process of using models in assessing ecosystem processes. "It explicitly relates proposed management activities to the creation of ecological patterns" (p. 29).

467 Hartig, J.H. and Vallentyne, J.R. 1989. Use of an ecosystem approach to restore degraded areas of the Great Lakes. Ambio 18(8):423-428.

468 Hicks, L.L. 1991. Plum Creek Timber Company's new forestry experiments: Lessons learned and future directions. Forest Perspectives 1(3):9-10.

An example of a private forest harvesting company's use of new forestry techniques.

469 International Joint Commission 1988. The ecosystem approach: Scope and implications of an ecosystem approach to transboundary problems in the Great Lakes Basin. A report from the Science Advisory Board, IJC. Windsor, Ont.: International Joint Commission.

470 Jordan, C.F., ed. 1987. Amazon rain forests: Ecosystem disturbance and recovery. Berlin: Springer Verlag.

Case studies of development in Brazil, Venezuela, Peru, and Surinam.

471 Katz, E. and Oeschsli, L. 1993. Moving beyond anthropocentrism: Environmental ethics, development, and the Amazon. Environmental Ethics 15:49-73

472 Keiter, R.B. and Boyce, M.S. 1991. Greater Yellowstone's future: Ecosystem management in a wilderness environment. In: Keiter, R.B. and

Boyce, M.S., eds. The greater Yellowstone ecosystem: Redefining America's wilderness heritage. New Haven, CT: Yale University Press.

473 Knight, K.D. 1982. An ecosystem approach to shore zone planning in the Long Point area. In: Ricketts, P.J., ed. Studies in marine and coastal geography. Halifax, Nova Scotia: St. Mary's University Press. pp. 1-11.

474 Lee, B.J., Regier, H.A., and Rapport, D.J. 1982. Ten ecosystem approaches to the planning and management of the Great Lakes. Journal of Great Lakes Research 8(3):505-519.

475 Lewis, K., MacKinnon, A., and Hamilton, D. 1994. Protected areas planning in British Columbia In: Huff, M.H., Norris, L.K., Nyberg, J.B., and Wilkin, N.L., coords. Expanding horizons of forest ecosystem management: Proceedings of the third habitat futures workshop, October, 1992. Vernon, BC: Portland, OR: PNW-GTR-336. pp. 17-54.

An analysis of British Columbia's Protected Areas Strategy and "reviews the existing protected area designations in British Columbia and evaluates the resulting system" (abs.).

476 Little, J.B. 1995. The Quincy Library Group. American Forests 101(1-2) January/February: 22-24, 56.

Description of a five-year experiment proposed for three national forests in Northeastern California that uses local stakeholders to design forest management.

477 MacKenzie, M.D. 1994. GIS applications perspective: Remote sensing and GIS as a bridge between ecologists and resource managers in the Northern Lake states. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 265-282.

478 McLean, H.E. 1994. Come back, cool stream. American Forests 100(3-4) March/April:17-21, 53.

Description of an application of ecosystem management project, Clarks 2000, on the Plumas National Forest in an attempt to regain forest health in a watershed heavily used by ranchers.

479 Muckenfuss, E. 1994. Cooperative ecosystem management in the ACE Basin. Journal of Forestry 92(8):35-36.

Discusses putting ecosystem management into practice in a large ecosystem along the Atlantic Coast in South Carolina.

480 Nelson, L.R., Wingate, P.J., Skrpek, J.C., and Holmes, R.M. 1993. Building natural resource management plans in Minnesota through public involvement. Transactions of the 58th North American Wildlife and Natural Resource Conference:211-215.

Discusses two case studies where public involvement was heavily used in the planning process.

481 Netting, R.M. 1981. Balancing on an Alp: Ecological change and continuity in a Swiss mountain community. Cambridge: Cambridge University Press.

482 Netting, R.M. 1984. Reflections on an alpine village as ecosystem. In: Moran, E.F., ed. The ecosystem approach in anthropology. Washington, D.C.: AAAS Selected Symposium. pp. 225-237.

483 O'Hara, K.L., Jensen, M.E., Olson, L.J., and Joy, J.W. 1994. Applying landscape ecology theory to integrated resource planning: Two case studies. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 208-224.

Examination of three preserved sites, Gray Ranch preserve in New Mexico, the Yampa River basin in Colorado, and the Greater Yellowstone ecosystem in Wyoming, Montana, and Idaho are discussed.

484 Peterson, D.L., Silsbee, D.G., and Schmoldt, D.L. 1994. A case study of resources management planning with multiple objectives and projects. Environmental Management 18(5):729-742.

Key words: Analytic hierarchy process, resource allocation, linear programming, Olympic National Park.

485 Power, T.M. 1991. Ecosystem preservation and the economy in the Greater Yellowstone area. Conservation Biology 5(3):395-404.

486 Rappaport, R. 1984. Pigs for the ancestors: Ritual in the ecology of a New Guinea people. New Haven: Yale Univ. Press.
An extensively updated second edition of his earlier work.

487 Sagoff, M. 1986. Process or product?: Ethical priorities in environmental management. Environmental Ethics 8(2):121-139.
Case study of Cheasapeake Bay fisheries.

488 Shearer, R.C., Stickney, P.F., VanDenburg, J.H., and Wirt, R.S. 1994. A long-term management and research partnership facilitates ecosystem management opportunities in a Montana western larch forest. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 194-200.

489 Sheridan, T. 1988. Where the dove calls: The political ecology of a peasant corporate community in northwestern Mexico. Tucson: University of Arizona Press.
Anthropology, economics, political science. Juxtaposes concept of political economy with political ecology for the ecosystem approach.

490 Shlisky, A.J. 1994. Multi-scale ecosystem analysis and design in the Pacific Northwest region: The Umatilla National Forest restoration project. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 254-262.
"Illustrates an application of the ecosystem structure-function model to understand and set objectives for landscape patterns" (abs.).

491 Swanson, A.P. 1994. Watershed restoration on the Chesapeake Bay. Journal of Forestry 92(8):37-38.
Discusses the application of ecosystem management to the restoration and cleanup of the Chesapeake Bay.

492 Thomas, R.L., Vallentyne, J.R., Ogilvie, K., and Kingham, J.D. 1988. The ecosystems approach: A strategy for the management of renewable resources in the Great Lakes Basin. In: Caldwell, L.K., ed. Perspectives on ecosystem management for the Great Lakes: A Reader. Albany: State University of New York Press. pp. 31-57.

493 Ticknor, W.D. 1993. The TEMS approach. American Forests 99(7-8) July/August:34-36.
Provides a description of a program called Total Ecosystem Management Strategies (TEMS) in Michigan's Upper Peninsula conducted by a paper manufacturing company and an ecology consulting firm.

494 U.S. House Committee on Interior and Insular Affairs. 1987. Greater Yellowstone ecosystem: An analysis of data submitted by federal and state agencies. Washington, D.C.: 99th Congress, Second Session. Committee Print #6.

495 U.S. National Research Council and the Royal Society of Canada 1985. The Great Lakes water quality agreement: An evoloving instrument for ecosystem management. Ottawa and Washington, D.C.

496 University of Minnesota-Duluth Continuing Education and Extension 1994. Proceedings: Ecosystem management strategies for the Lake Superior Region, A conference applicable to the Great Lakes Region. May 16-18, Duluth, Minnesota. University of Minnesota-Duluth Continuing Education and Extension.
Contains abstracts and addresses. Papers include subjects such as Great Lakes, social and cultural issues, diversity, sustainability, process and components, integrated management, mitigation.

497 USDA Forest Service 1994. Forest plan, five year review. Bitterroot National Forest. Ecosystem management. USDA Forest Service, Northern Region. Miscellaneous. 43 pp.
A review of the Bitterroot National Forest Plan focusing on the forests application of ecosystem management techniques.

498 USDA Forest Service N.E and N.C. Forest Experiment Stations. 1992. Ecosystem management strategies for northeastern and midwestern national forests: A report to the Chief

of the Forest Service. Washington D.C.: USDA Forest Service.

"A dynamic document." Discusses key action to be taken and key issues, including silviculture clearcutting, training, and demonstration projects. Includes glossary of terms.

499 Vallentyne, J. and Beeton, A. 1988. The "ecosystem" approach to managing human uses and abuses of natural resources in the Great Lakes basin. Environmental Conservation 15:58-62.

500 Van der Ploeg, S.W.F. and Vlijm, L. 1978. Ecological evaluation, nature conservation, and land use planning with particular reference to methods used in the Netherlands. Biologcial Conservation 14(3):197-222

501 Van Sickle, C.C. 1994. Ecosystem management in Southern Appalachian hardwood forests: Minimizing fragmentation. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 175-177.

502 Varley, J.D. 1988. Managing Yellowstone National Park into the twenty-first century: The park as an aquarium. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 216-225.

503 Verner, M. 1994. Connecticut's two-pocket woodland. American Forests 100(1-2) January/February:42-45.

Forest management in the Great Mountain Forests over the last eight decades that concentrated on low-impact logging, natural species sucession, and habitat diversity.

504 Voytas, F.J. and Landes, R.K. 1993. Ecosystem management in the Hoosier National Forest. In: LeMaster, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. Proceedings of a conference in West Lafayette, IN: West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University. pp. 41-44.

Incorporating ecosystem management in the Hoosier N.F. Forest Plan discussing goals, management area zones, and availability and suitability of lands for resource management.

505 Watras, C.J. and Frost, T.M. 1989. Little Rock Lake, Wisconsin: Perspectives on an experimental ecosystem approach to seepage lake acidification. Archives of Environmental Contamination and Toxicology 18(1/2):157-165.

506 White, J.D., DeBell, D., Amaranthus, M., and Woodard, B. 1994. Demonstration of Ecosystem Management Options (D.E.M.O.): A cooperative effort between NFS and research in the Pacific Northwest. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 124-137.

Describes a project that "is a demonstration and administrative study of silvicultural options for maintaining, enhancing, or re-creating late-successional characteristics in managed forests" (abs.).

507 Wood, D.C. 1994. Applying ecosystem guidelines on the Ochoco National Forest. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 28-33.

Describes the application of ecosystem management techniques to forest management on the Ochoco National Forest.

508 Woodley, S. and Freedman, B. 1995. The Greater Fundy Ecosystem Project: Toward ecosystem management. The George Wright Forum 12(1):7-14.

A description of the Greater Fundy Ecosystem (GFE) Project in New Brunswick, Canada which is an attempt to manage a landscape on an ecologically sustainable basis.

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509 Aber, J.D. 1987. Restored forests and the identification of critical factors in species-site interactions. In: Jordan, W.R., III, Gilpin, M.E., and Aber, J.D., eds. Restoration ecology: A synthetic approach to ecological research. Cambridge: Cambridge University Press. pp. 241-250.

"The purpose of this chapter is to discuss the kinds of information which might be required to restore systems in different stages of degradation" (p. 241).

510 Agee, J.K. and Johnson, D.R., eds. 1988. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press.

511 Aldon, E.F. and Shaw, D.W., tech. coords. 1993. Managing pinon-juniper ecosystems for sustainability and social needs; proceedings of the symposium 1993 April 26-30; Santa Fe, NM. Ft. Collins, CO: USDA Forest Service Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-GTR-236. 169 pp.

"Authors assessed the current state of knowledge about the pinon-juniper resource and helped develop future research and management goals" (abs.). Bio-physical and social issues are addressed.

512 Allen, C.D. 1994. Ecological perspective: Linking ecology, GIS, and remote sensing to ecosystem management. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 111-139.

"This chapter provides an ecological perspective on these issues as applied to ecosystem management in a southwestern U.S. landscape" (p. 111).

513 Aplet, G.H. 1994. Beyond even- vs. uneven-aged management: Toward a cohort-based silviculture. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 423-433.

Argues that a new basis for forest management is needed that accommodates "the full range of patterns, intensities, and frequencies of the natural disturbance regime." (abs.).

514 Armitage, D. 1995. An integrative methodological framework for sustainable environmental planning and management. Environmental Management 19(4):469-479.

Illustrates "a methodological framework that integrates biophysical, sociocultural, and institutional elements, recognized as important for sustainable land-and resource-use planning and management."

515 Artis, D.R., Jr. 1994. Adaptation of military space-based remote sensing technology to ecological information needs. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 314-323.

"Describes the potential for space-based remote sensing technology to support other government agencies and private organizations in environmental protection and natural resource conservation" (p. 314)

516 Bailey, R.G., Jensen, M.E., Cleland, D.T., and Bourgeron, P.S. 1994. Design and use of ecological mapping units. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 95-106.

Mapping units that delineate similar biophysical environments for land evaluation and planning are discussed in terms of their contribution to ecosystem management (abs.).

517 Bartlett, E.T. and Jones, J.R., comps. 1992. Rocky Mountain new perspectives proceedings of a regional workshop. Fort Collins, CO, July 8-10, 1991. Ft. Collins, CO: USDA Forest Service Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-GTR-220. 51 pp.

A workshop composed of Forest Service managers and researchers with university faculty to "develop strategies for management, research, education, and extension for natural resources" (abs.).

518 Bates, S. 1993. Managing for ecosystems on the public lands. Denver: University of Colorado School of Law, Natural Resources Law Center. Discussion Paper, Western Lands Report #4.

519 Beanlands, G.E. and Duinker, P.N. 1983. An ecological framework for environmental impact assessment in Canada. Ottawa: Institute for Resource and Environmental Studies, FEARO.

520 Begalle, D.A. 1993. Ecosystem management: Is it possible on state lands? In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 workshop in Washington, D.C. Washington, D.C.: American Forests. pp. 106-109.

State foresters can use ecosystem management to help reach a variety of goals such as biodiversity and management of nongame species given the guidelines, training, tools, and change in attitudes.

521 Beier, C. and Rasmussen, L. 1994. Effects of whole-ecosystem manipulations on ecosystem internal processes. Trends in Ecology and Evolution, 9(6): 218-223.

"This review of the whole-ecosystem manipulation research gives an overview of the recent and ongoing research within this field and synthesizes the results obtained so far" (abs.).

522 Bihan, Y. and Jones, S.B. 1993. Loggers' LEAP of faith. American Forests 99(9-10):46-47, 60.

A description of LEAP - Logger Education to Advance Professionalism-a national pilot program to provide loggers with a better understanding of forest ecosystems.

523 Bormann, B.T., Brooks, M.H., Ford, E.D., Kiester, A.R., et al. 1993. A broad strategic framework for sustainable-ecosystem management. Corvalis, OR.: Forestry Sciences Lab.

Prepared for the Chief of the Forest Service by the Eastside Forest Health Panel (May).

524 Bormann, B.T., Brooks, M.H., Ford, E.D., Kiester, A.R., et al. 1994. Volume V: A framework for sustainable-ecosystem management. Portland, OR: USDA Forest Service Pacific Northwest Research Station, General Technical Report PNW-GTR-287, 66 pp.

Proposals and descriptions of a management model that "laces together societal values and ecological capacity (abs.)." Keywords: Ecosystem management, sustainability, Pacific Northwest.

525 Bourgeron, P.S., Humphries, H.C., and Jensen, M.E. 1994. General sampling design considerations for landscape evaluation. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 109-120.

"Presents sampling design procedures applicable to evaluating landscapes and characterizing ecosystems at regional scales" (abs.).

526 Brody, W.W., Aldon, E.F., and Cook, J.W. 1994. Monitoring forest and rangeland ecosystems to make sustainability operational. In: Manzanilla, H., Shaw, D., Aguirre Bravo, C., Iglesias Gutierrez, L., and Humre, R.H., tech. coords. Making sustainability operational: Fourth Mexico/U.S. Symposium; 1993 April 19-23; Santa Fe, NM. Ft Collins, CO: USDA Forest Service RM-GTR-240.

Focuses on what constitutes a good monitoring design and describes the SUPERB decision support system which can act as a tool in monitoring ecosystem change.

527 Brunson, M. and Shelby, B. 1992. Assessing recreational and scenic quality: How does New Forestry rate? Journal of Forestry 90(7):37-41.

Discusses the social and political acceptability of resource management in general and forest ecosystem management in particular.

528 Caldwell, L.K. 1988. Implementing an ecosystems approach. In: Caldwell, L.K., ed., Perspectives on ecosystem management for the Great Lakes: A reader. Albany: State University New York Press. pp. 1-29.

529 Caldwell, L.K. 1970. The ecosystem as criterion for public land policy. Natural Resources Journal 10:203-221.

530 Carter, J. and Lamarra, V. 1983. Environmental management: a data based ecosystem approach from the oil shale industry. Journal of Environmental Management 17(1):17-34.

531 Cawrse, D. 1994. Resource management perspective: Managing to minimize fragmentation of native hardwood forests. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 192-200.

Discusses how remote sensing and GIS can be used by forest managers to minimize forest fragmentation in southern Appalachian forests.

532 Christie, W.J., Becker, M., Cowden, J.W., and Vallentyne, J.R. 1986. Managing the Great Lakes Basin as a home. Journal of Great Lakes Research 12(1):2-17.

Identifies obstacles to applied ecosystem approach.

533 Cissell, J.H., Swanson, F.J., McKee, W.A., and Burditt, A.L. 1994. Using the past to plan the future in the Pacific Northwest. Journal of Forestry 92(8):30-31, 46.

Describes the Augusta Project, an example of an ecosystem management design at the landscape/ watershed scale, that uses historical evidence of plant adaptation to disturbances for planning.

534 Clark, E. 1994. How to cut your forest and save it too. American Forests 100(9-10):40, 54-55.

Follows a forest land owner on Vancouver Island and describes what he feels is a better way to harvest timber than clearcutting which is also more profitable.

535 Cleland, D.T., Crow, T.R., Hart, J.B., and Padley, E.A. 1994. Resource management perspective: Remote sensing and GIS support for defining, mapping, and managing forest ecosystems. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 243-264.

536 Cohen, W.B. 1994. GIS applications perspective: Current research on remote sensing of forest structure. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 91-107.

537 Connell, J.H. and Sousa, W.P. 1983. On the evidence needed to judge ecological stability or persistence. American Naturalist 121(6):789-824.

Argues for evidence needed from "natural populations or communities in order to decide whether they are stable or persistent" (p.789).

538 Constanza, R. 1993. Developing ecological research that is relevant for achieving sustainability. Ecological Applications 3(4):579-581.

Discusses a different way to view science in general and the linkages between science and environmental policy to develop research that is relevant to attaining sustainability.

539 Cooper, C.F. 1969. Ecosystem models in watershed management. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 309-324.

540 Cooper, D.J. 1994. Sustaining and restoring western wetland and riparian ecosystems threatened by or affected by water development projects. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 27-33.

Focusing on Colorado's San Luis Valley, the author discusses ecological bio-physical affects of water development projects.

541 Covington, W.W. 1994. Implications for ponderosa pine/bunchgrass ecological systems. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 92-97.

The author discusses the negative consequences of change in ponderosa pine ecosystems and how conservation biology can help in ecological restoration.

542 Covington, W.W. and DeBano, L.F., tech. coords 1994. Sustainable ecological systems: Implementing an ecological approach to land management. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Experiment Station, Gen. Tech. Report. RM-GTR-247. 363 pp.

Contains papers that "examine key concepts involving sustainable ecological systems and ways in which to apply their concepts to ecosystem management" (abs.).

543 Covington, W.W., Wood, D.B., Young, D.L., Dykstra, D.P., and Garrett, L.D. 1988. TEAMS: A decision support system for multiresource management. Journal of Forestry 86(8):25-33.

Describes a "tactical planning system to aid forest managers in developing site-specific treatment schedules" (p. 25).

544 Curran, M. 1994. Evolution of ecosystem management and research on the Ouachita and Ozark-St. Francis National Forests. In: Baker, J.B., comp. Proceedings of the symposium on ecosystem management research on the Ouachita Mountains: Pretreatment conditions and preliminary findings: New Orleans, LA: USDA Forest Service, Southern Research Station, SO-GTR-112: pp. 1-4.

545 Diaz, N.M. and Apostol, D. 1994. Incorporating landscape ecology concepts in forest management: Forest landscape analysis and design. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 162-168.

546 Dippold, R.M. and Webb, B.D. 1994. Information from the past is a resource for the present and future. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings, National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Experiment Station SE-GTR-88. pp. 70-79.

Describes R10-DataLib a bibliographic software package that can help to manage information in a more efficient manner to allow managers to work in broader spatial and temporal aspects.

547 Everett, R., Oliver, C., Saveland, J., Hessburg, P., et al. 1994. Adaptive ecosystem management. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 340-354.

Treats management as an experiment that is focused and flexible (abs).

548 Everett, R., Hessburg, P., Jensen, M., and Bormann, B. 1994. Vol. 1: Executive summary. In: Portland, OR: USDA Forest Service Pacific Northwest Research Station, General Technical Report PNW-GTR-317.

Evaluation of management practices on the sustainability of eastern Oregon and Washington ecosystems and recommends analysis methods on management to aid in the restoration of stressed ecosystems.

549 Everett, R.L., Hessburg, P.F., and Lillybridge, T.R. 1994. Emphasis areas as an alternative to buffer zones and reserved areas in the conservation of biodiversity and ecosystem processes. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID: Binghamton, NY: Forest Products Press. pp. 283-292.

550 Everett, R.L., comp. 1994. Vol. 4: Restoration of stressed sites, and processes. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-330. 123 pp.

Key Words: Restoration, forest health ecosystem processes, disturbance effects, ecosystem management, insects, disease, and fire hazard.

551 Flamm, R.O. and Turner, M.G. 1994. GIS applications perspective: Multidisciplinary modeling and GIS for landscape management. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 201-212.

Discusses the Land Use Change Analysis System (LUCAS) which facilitates the evaluation of land-use decisions and management. Focuses on the southern Appalachian landscape.

552 Foley, L.H., comp. 1993. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop, Hendersonville, NC. November 1-4, 1993. Asheville, NC: USDA Forest Service

Southeastern Forest Experiment Station, General Technical Report SE-GTR-88. 258 pp.

Includes issues of application, cost-benefit analysis, and building partnerships among diverse groups.

553 Forest Ecosystem Management Assessment Team 1993. Forest ecosystem management: An ecological, economic, and social assessment. Report of the FEMA; Env. Prot. Agency; USDA Forest Service; USDC National Oceanic and Atmospheric Admin.; National Marine Fisheries Service; USDI Bureau of Land Management; USDI Fish and Wildlife Service; USDI National Park Service. Washington, DC.

Discusses options for implementing ecosystem management in the Pacific Northwest and assesses terrestrial and aquatic ecosystems current and potential status in regard to management options.

554 Franklin, J.F. 1994. A conceptual basis for FEMAT. Journal of Forestry 92(4):21-23.

"Identifies some of the major ecological concepts used" in developing the Forest Ecosystem Management Assessment Team (FEMAT) Options (p.21).

555 Franklin, J.F. 1994. Developing information essential to policy, planning, and management decision-making: The promise of GIS. In: Sample, A.V., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 18-24.

556 Franklin, J.F. 1993. The fundamentals of ecosystem management with applications in the Pacific Northwest. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 127-144.

Defines sustainability as a human construct and lists the elements of a sustainable forest and how these concepts are applied in the Pacific Northwest under and ecosystem management approach.

557 Franklin, J.F. 1989. Toward a new forestry. American Forests 95(Nov./Dec.):37-44.

558 Frissell, C.A., Nawa, R.K., and Noss, R. 1992. Is there any conservation biology in "New Perspectives?": A response to Salwasser. Conservation Biology 6(3): 461-464.

Critically analyzes Salwasser's interpretation of New Perspectives.

559 Gillespie, A.J.R. 1995. Long term forest ecosystem health monitoring in the Northeastern United States. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 129-133.

Describes the Northern Forest Health Monitoring Program (NFHM) used in the Northeastern and Upper Midwestern U.S.

560 Glenn, S.M. and Collins, S.L. 1994. Species richness and scale: The application of distribution and abundance models. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 135-142.

A review of existing "theoretical models of community structure discussing testing of these models, and re-examining current wildlife habitat models" (p. 135).

561 Gobster, P.H. 1994. Forest aesthetics, biodiversity, and the perceived appropriateness of ecosystem management practices. Proceedings, Workshop on defining social acceptability of forests and forestry practices, June 23-25, 1992, Kelso, Washington. Seattle: USDA Forest Service Pacific Northwest Research Station. Forthcoming.

562 Gobster, P.H. 1994. The aesthetic experience of sustainable forest ecosystems. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 246-255.

563 Gonzales, J. 1994. GIS applications perspective: Using remote sensing and GIS for modeling old-growth forests. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press: pp. 157-174.

Discusses a demonstration project in the Southwest to use digital satellite data and existing ecological information in a GIS to model probable old-growth forests.

564 Gosz, J.R. 1992. Gradient analysis of ecological change in time and space: Implications for forest management. Ecological Applications 2(3):248-261.

Key words: climate change, ecotones, gradient analysis landscape mosaics, Rocky Mountain forests, threshold dynamics, watershed dynamics.

565 Green, K. 1994. The potential and limitations of remote sensing and GIS in providing ecological information. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 327-336.

Reviews how remote sensing and GIS technology can contribute to providing ecological information to assist in ecosystem management.

566 Gregg, W.P., Jr. 1994. Developing landscape-scale information to meet ecological, economic, and social needs. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 13-17.

Discusses how remote sensing and GIS fit into the ecosystem management concept.

567 Grogan, S. 1993. Holistic resource management: A model for building sustainable landscapes. In: Manzanilla, H., Shaw, D., Aguirre Bravo, C., Iglesias Gutierrez, L., and Humre, R.H., tech. coords. Making sustainability operational: Fourth Mexico/U.S. Symposium; Santa Fe, NM. Ft Collins, CO: USDA Forest Service RM-GTR-240. pp. 21-27.

The author describes an approach to the incorporation of human values, as well as economic and ecological factors in land use decision-making.

568 Grossarth, O. and Nygren, I. 1994. Implementing ecosystem management through the forest planning process. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 276-284.

Describes the way in which the USDA Forest Service land and resource management planning and environmental analysis process fit the agency's new ecosystem management approach (abs.).

569 Grumbine, R.E. 1990. Viable populations, reserve size, and federal lands management: a critique. Conservation Biology 4(2):127-134.

570 Hall, F.G. 1994. Adaptation of NASA remote sensing technology for regional-level analysis of forested ecosystems. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 287-313.

571 Halpin, P.N. 1994. GIS analysis of the potential impacts of climate change on mountain ecosytems and protected areas. In: Price, M.F. and Heywood, D.I., eds. Mountain environments and geographical information systems. London: Taylor and Francis Ltd. pp. 281-301.

Outlines a GIS pilot study which asseses potential impacts of climate change on the global distribution of mountain vegetation regions, impacts on mountain reserves, and impacts on tropical mountains.

572 Hann, W., Keane, R.E., NcNicoll, C., and Menakis, J. 1994. Assessment techniques for evaluating ecosystems, landscape, and community conditions. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 237-253.

Studying the Beaverhead National Forest in Montana, this paper provides an overview of a systematic process for characterizing and assessing ecosystem and landscape characteristics.

573 Hann, W., Jensen, M.E., Bourgeron, P.S., and Prather, M. 1994. Land management assessment using hierarchical principles of landscape ecology. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, Gen. Technical Report PNW-GTR-318. pp. 285-297.

"This paper provides examples of incorporating concepts of landscape ecology and conservation biology in ecosystem management guidelines" (abs.).

574 Heywood, D.I., Price, M.F., and Petch, J.R. 1994. Mountain regions and geographical information systems: An overview. In: Price, M.F. and

Heywood, D.I., eds. Mountain environments and geographical information systems. London: Taylor and Francis Ltd. pp. 1-23.

"The purpose of this chapter is to provide an overview of the current applications, issues, and challenges that are receiving attention by mountain scientists using GIS" (p. 1).

575 Hoffer, R.M. 1994. Challenges in developing and applying remote sensing to ecosystem management. In: Sample, A.V., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 25-40.

"This chapter examines some of the critical issues that need to be addressed as we continue to devlop and use remote sensing technology to meet some of the information needs" (p. 25).

576 Holdgate, M.W. and Woodman, M.J., eds. 1978. The breakdown and restoration of ecosystems. New York: Plenum Press. 496 pp.

Included papers bring together information about the "vulnerability, degradation, and restoration of temporate ecosystems" (pref.).

577 Hornbeck, J.W. and Swank, W.T. 1992. Watershed ecosystem analysis as a basis for multiple-use management of eastern forests. Ecological Applications 2(3):238-247.

Describes how watershed ecosystem analysis can be used to study the effects of timber harvesting practices, acidic deposition, and past land use.

578 Hurni, H. 1985. An ecosystem approach to soil conservation. In: El-Swaify, S.A., et al., eds. Soil erosion and conservation. Ankeny, Iowa: Soil Conservation Society of America.

Ethiopia, Thailand, Nepal.

579 Irland, L.C. 1994. Getting from here to there: Implementing ecosystem management on the ground. Journal of Forestry 92(8):12-17.

The author discusses specific forest management practices and policies and how they are needed to implement ecosystem management. He also addresses the concerns of land managers and forest industry.

580 Jensen, M.E., Hann, W., Keane, R.E., Caratti, J., et al. 1994. ECODATA -- A multiresource database and analysis system for ecosystem description and evaluation. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 192-205.

A description of ECODATA, "a term used to describe a set of relational databases and analysis program developed for environmental assessment and evaluation" (abs.).

581 Jensen, M.E.; and Bourgeron, P.S., tech. eds. 1994. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. 376 pp.

"This document provides land managers with practical suggestions for implementing ecosystem management. It contains 28 paper organized into five sections" (abs.).

582 Jones, S.M. and Lloyd, F.T. 1993. Landscape ecosystem classification: The first step toward ecosystem management in the United States. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 184-201.

Understanding that ecosystem management includes a multitude of values and resources, the authors outline the Landscape Ecosystem Classification (LEC) approach to managing forest ecosystems.

583 Jurgensen, M., Hessburg, P., Lehmkuhl, J., Megahum, W., et al. 1994. Risk assessment methodologies in the interior west. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, Gen. Technical Report PNW-GTR-318. pp. 168-191.

Methodologies for assessing four important ecosystem risk factors: insects and disease, fire, soil erosion, and wildlife populations, are discussed (abs.).

584 Keith, J.K. 1994. The role of the Bureau of Land Management's public land survey program in ecosystem management and sustainable development of the nation's public lands. In: 1994 ASPRS/ACSM Annual Convention and Exposition. ASPRS Technical Papers. Reno, NV. Vol. 2. pp. 27-34.

585 Kempf, M. and Hopps, M. 1993. A new way to oversee the public's forests. American Forests 99(7-8) July/August:28-31.

A description by the U.S. Forest Service as to how it is working with the new philosophy of ecosystem management.

586 Knight, K.D., Dufoumaid, C., and Mulamoottil, G. 1984. Conceptual ecological modelling and interaction matrices as environmental assessment tools in coastal planning. Water, Science, & Technology 16:559-567.

587 Lachowski, H.M., Wirth, T., Maus, P., and Avers, P. 1994. Remote sensing and GIS: Their role in ecosystem management. Journal of Forestry 92(8):39-40.

588 Lackey, R.T. 1994 Ecological risk assessment. Fisheries 19(9):14-18.

Summarizes the issues and options related to ecological risk assessment.

589 Lackey, R.T. 1995 Ecosystem health, biological diversity, and sustainable development: Research that makes a difference. Renewable Resources Journal 13(2):8-13.

First, examines the three concepts, ecosystem health, biological diversity, and sustainable diversity and then focuses on specific research needs in regards to these concepts.

590 Lackey, R.T. 1995 Is ecological risk assessment useful for resolving complex ecological problems? In: Stouder, D.J., Bisson, P.A., and Naiman, R.J., eds. Pacific salmon and their ecosystems: Status and future options. New York: Chapman and Hall, Inc.

Key words: ecological risk assessment, risk assessment, environmnental protection, decision analysis, salmon.

591 Lackey, R.T. 1995 Seven pillars of ecosystem management. The Environmental Professional 17(4):In Press.

Discusses seven core principles of ecosystem management that "define and bound the concept and provide operational meaning" (abs.).

592 Lajeunesse, D., Domon, G., Drapeau, P., Cogliastro, A., and Bouchard, A. 1995. Development and application of an ecosystem management approach for protected natural areas. Environmental Management 19(4):481-495.

Proposes an ecosystem management approach for small, protected natural areas with intense user pressure.

593 Lakshman, G. 1979. An ecosystem approach to the treatment of waste waters. Journal of Environmental Quality 8(3):353-361.

Experimental studies.

594 Lang, R., ed. 1986. Integrated approaches to resource planning and management. Calgary: University of Calgary Press.

IRM projects in Canada.

595 Lavigne, D.M. 1977. Remote sensing and ecosystem management. Oslo: Norsk Polarinstitutt.

Early argument for combining technological advances with public pressure for diverse management.

596 Lawrence, N. and Murphy, D. 1992. New Perspectives or old priorities. Conservation Biology 6(3): 465-468.

Cricital argument of Salwassers' interpretation of New Perspectives.

597 LeMaster, D.C. and Sedjo, R.A., eds. 1993. Modeling sustainable forest ecosystems. Proceedings of a 1992 workshop in Washington, D.C. Washington, D.C.: American Forests. 181pp.

Compilation of papers that discuss "state-of-the-art aproaches for modelling sustainable forest ecosystems at the landscape level" (p. v).

598 Lund, H.G., ed. 1993. Proceedings National Workshop: Integrated ecological and resource inventories. Washington, D.C.: USDA Forest Service. 177 pp.

The text contains papers that discuss a variety of forest resource inventory methods essential to ecosystem management.

599 Maser, C. 1994. Sustainable forestry. Delray Beach, FL: St. Lucie Press. 400 pp.

Discusses the characterization of a forest as a dynamic, living organism, issues concerning biological sustainability, and management's role in the forest. Keywords: ecological capacity

600 McComb, W., Tappeiner, J., Kellogg, L., Chambers, C., and Johnson, R. 1994. Stand management alternatives for multiple resources: Integrated management experiments. In: Huff, M.H., Norris, L.K., Nyberg, J.B., and Wilin, N.L., coords. Expanding horizons of forest ecosystem management: Proceedings of the third habitat futures workshop, October, 1992. Portland, OR: USDA Forest Service PNW-GTR-336. pp. 71-100.

Describes a conceptual approach, logistics, and preliminary results of an experiment designed to compare costs and biological and human responses among three stand management strategies in Oregon.

601 McNeel, J.F. and Copstead, R.L. 1994. Operational factors affecting the implementation of ecosystem management objectives. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 167-177.

Authors particularly focus on how ecosystem management will affect timber harvesting techniques.

602 Mersmann, T.J., Baker, J.B., Guldin, J.M., and Pell, W.M. 1994. Implementing ecosystem management research: Bringing researchers, managers, and citizens together. In: Proceedings, symposium on ecosystem management research in the Ouachita Mountains: Pretreatment conditions and preliminary findings. New Orleans, LA: USDA Forest Service SO-GTR-112. pp. 10-17.

Discusses an early example of implementing ecosystem management research through interaction of researchers, managers, and citizens (abs.).

603 Meslow, E.C., Holthausen, R.S., and Cleaves, D.A. 1994. Assessment of terrestrial species and ecosystems. Journal of Forestry 92(4):24-27.

Evaluation of the 10 options examined by the Forest Ecosystem Management Team (FEMAT) in terms of maintaining sufficient habitat for the nothern spotted owl and marbled murrelet.

604 Milne, B.T. 1994. Pattern analysis for landscape evaluation and characterization. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 121-134.

Discusses "recent ecological perspectives that incorporate spatial and temporal scales as surrogates for processes that affect systems" (abs.). Examples are provided.

605 Minshall, G.W. 1994. Stream-riparian ecosystems: Rationale and methods for basin-level assessments of management effects. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 143-167.

"Addresses the sampling and analysis of stream-riparian ecosystems in a hierarchical framework of spatial and temporal scales (abs.)."

606 Mladenoff, D.J. and Host, G.E. 1994. Ecological perspective: Current and potential applications of remote sensing and GIS to ecosystem analysis. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 218-242.

"In this chapter we will concentrate on ecological information needs that may be met with remote sensing and GIS technologies" within the northern Great Lake states (p. 219).

607 Mladenoff, D.J. and Pastor, J. 1993. Sustainable forest ecosystems in the northern hardwood and conifer forest region: Concepts and management. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 145-180.

608 Moir, W.H. and Mowrer, H.T. 1994. Unsustainability: The shadow of our future. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 143-149.

Acknowledging the fact that people really do not know what ecosystem conditions will exist in the future, the authors suggest five management guidelines to resource managers.

609 Morrison, J. 1994. Integrating ecosystem management and the forest planning process. In: Jensen, M.E. and Bourgeron, P.S. tech. eds., Vol. 2: Ecosystem management: Principles and

applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 266-275.

610 Morrison, P.H. 1994. GIS applications perspective: Development and analysis of a chronosequence of late-successional forest ecosystem data layers. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 77-90.

611 Morrissey, W.A., Zinn, J.A., and Corn, M.L., eds. 1994. Ecosystem management: Federal agency activities. Washington, D.C.: Congressional Research Service, Library of Congress.

Reports on the activities of 18 federal agencies each involved in some aspect or type of "ecosystem management."

612 Murhpy, D., comp. 1992. Getting to the future through silviculture - workshop proceedings. Cedar City, UT. May 6-9, 1991. Odgen, UT: USDA Forest Service Intermountain Research Station, Gen. Tech. Report INT-GTR-291. 97 pp.

Includes 19 papers discussing the role of silviculture in New Perspectives (ecosystem management), new approaches to the practice of silviculture, and examples of silviculture in multi-resource mngt.

613 Naiman, R.J., ed. 1992. Watershed management: Balancing sustainability and environmental change. New York: Springer-Verlag.

614 Naumann, J.R. 1994. The role of silviculturists in ecosystem management. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 22-25.

615 Nicol, S. and de le Mar, W. 1993. Ecosystem management and the Anarctic Krill. American Scientist 81:36-47.

The "superb" krill are at the "center of a huge ecosystem that is dependent on them;" therefore, the authors provide a description of the important role and the need for ecosystem management (p. 36).

616 Oliver, C.D., Knapp, W.H., and Everett, R. 1994. A system for implementing ecosystem management. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 355-367.

"This paper presents such a support system, which uses both intuitive and analytical procedures that may be constantly refined through adaptive management" (abs.).

617 Parker, G.R. 1993. Limitations on ecosystem management in the central hardwood region. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 202-216.

The author points out that the central hardwood region is both socially and biologically unique than other forest regions, so unique management techniques would need to be applied in this area.

618 Pastor, J. and Mladenoff, D.J. 1993. Modeling the effects of timber management on population dynamics, diversity, and ecosystem processes. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, DC. American Forests. pp. 16-29.

Reviews "models designed to simulate the dynamics of ecological succession and on the application of these models to problems in sustainable forestry (p. 47)."

619 Pell, W.F. 1994. Roles of science and research in implementing ecosystem management in the Ouachita National Forest. In: Baker, J.B., comp. Proceedings of the symposium on ecosystem management research in the Ouachita Mountains: Pretreatment conditions and preliminary findings. New Orleans, LA: USDA Forest Service SO-GTR-112: pp. 5-9.

620 Pfister, R.D. 1993. The need and potential for ecosystem management in forests of the Inland West. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 217-239.

Describes the concept of ecosystem, needs for an ecosystem approach, forest ecosystems of the

Inland West, the potential of an ecosystem approach, and how it relates to sustainable forestry.

621 Pilarsky, M., ed. 1994. Restoration forestry. Durango, CO: Kavaki Press. 525 pp.
The book contains papers that cover "ecologically-sound" practices to restoration forestry and covers forest practices in all regions of the United States and many areas around the world (p. 10).

622 Powers, R.F., Alban, D.H., Miller, R.E., Tiarks, A.E., Wells, C.G., et al. 1990. Sustaining site productivity in North American forests: Problems and prospects. In: Gessel, S.P., Lacate, D.S., Weetman, G.F., and Powers, R.F. Sustained productivity of forest soils. Proceedings of the 7th North American Forest Soils Conference, Univ. of British Columbia, Faculty of Forestry Pub., Vancouver, B.C.: pp. 49-79.

623 Price, M.F. and Heywood, D.I., eds. 1994. Mountain environments and geographical information systems. London: Taylor and Francis Ltd. 309 pp.
Chapters discuss: regional resource inventory and planning, evaluation of natural hazards, research and resource management of protected areas, and simulation and prediction.

624 Prisley, S.P. and Kodama, H.E. 1995. GIS supports ecosystem multiple-use planning for forest industry. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 140-145.
Describes an Ecosystem Multiple-Use Planning Process to help define a plan to maintain a sustained flow of forest products as well as non-timber ecosystem values.

625 Quigley, T.M. and McDonald, S.E. 1993. Ecosystem management in the Forest Service: Linkage to endangered species management. Endangered Species Update 10(3-4):30-33.
Provides an overview of ecosystem management and how it relates to endangered species management in the Pacific Northwest. Uses the Blue Mountains restoration project as an example.

626 Raphael, M.G. and Marcot, B.G. 1994. Key questions and issues: Species and ecosystem viability. Journal of Forestry 92(4):45-47.
As part of the Forest Ecosystem Management Assessment Team (FEMAT), the authors evaluated guidelines imposed in the National Forest Management Act (NFMA) and the Endangered Species Act (ESA).

627 Roberts, D.W. 1993. Management of ecosystem structure and function: Problems and progress in understanding. In: LeMaster, D.C. and Parker, G.R., eds. Ecosystem management in a dynamic society. Proceedings of a conference in West Lafayette, IN: West Lafayette, IN: Department of Forestry and Natural Resources, Purdue University: pp. 73-80.
Discusses some of the major biophysical aspects of ecosystems that should be considered in ecosystem management. They include: the physical, compositional, and conceptual structures of ecosystems.

628 Rochelle, J.A. 1994. Maintenance of late-successional ecosystem values in the Pacific Northwest: Evolving methodologies to guide habitat planning and policymaking. In: Sample, A.V., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 43-47.

629 Rosenberg, A.A., Fogarty, M.J., Sissenwine, M.P., Beddington, J.R., and Sheperd, J.G. 1993. Achieving sustainable use of renewable resources. Science 262:828-829.
Despite arguements to the contrary, the authors argue that it is possible to manage for sustainability; examining the theoretical and empirical basis for sustainable yield problems and remedies.

630 Rowe, J.S. 1992. The ecosystem approach to forestland management. The Forestry Chronicle 68(2):222-224.

631 Rudis, V.A. 1991. Wildlife habitat, range, recreation, hydrology, and related research using forest inventory and analysis surveys: A 12-year compendium. New Orleans, LA: USDA Forest Service Southern Research Station, General Technical Report SO-GTR-84: 61 pp.
"A compendium of more than 400 citations of literature published between 1979 and 1990 on

wildlife habitat, range, recreation, hydrology, and related research is presented (summary)."

632 Running, S.W. and Minor, K.S. 1993 Extrapolating forest ecosystem processes from tree to landscape scales. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, D.C. American Forests. pp. 1-15.

"A family of terrestrial carbon cycle models that can be implemented at varying spatial of resolutions is described" (abs.).

633 Sackett, S., Haase, S., and Harrington, M.G. 1994. Restoration of southwestern ponderosa pine ecosystems with fire. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 115-121.

Addresses the problems associated with fire exclusion in the southwest ponderosa pine ecosystem and the benefits of prescribed fire to the ecosystem.

634 Salwassar, H. 1991. In search of an ecosystem approach to endangered species conservation. In: Kohm, K.A., ed. Balancing on the brink of extinction: The endangered species act and lessons for the future. Covelo, CA.: Island Press. pp. 247-265.

635 Salwasser, H. 1992. From New Perspectives to ecosystem management: Response to Frissel et al. and Lawrence and Murphy. Conservation Biology 6(3): 469-472.

636 Salwasser, H. 1991. New Perspectives for sustaining diversity in U.S. national forest ecosystems. Conservation Biology 5:567-569.

Discusses the framework of New Perspectives and challenges to its implementation.

637 Salwasser, H. 1993. Perspectives on modeling sustainable forest ecosystems. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, DC. American Forests. pp. 176-181.

Discusses the author's view on how modeling fits into ecosystem management and what scientists will need to provide managers to make ecosystem modeling a reality.

638 Sample, V.A. 1994. Potential use of military and space remote sensing technologies to address ecological information needs. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 283-285.

639 Sample, V.A. 1994. Realizing the potential of remote sensing and GIS in ecosystem management planning, analysis, and policymaking. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 346-352.

640 Sample, V.A., ed. 1994. Remote Sensing and GIS in ecosystem management. Washington, D.C.: Island Press. 369 pp.

Papers identify and articulate needed ecological and resource information and how GIS can help get that information which then can be used by legislative and judicial policymakers.

641 Savory, A. 1988. Holistic resource management. Covelo, CA: Island Press. 558 pp.

The author discusses what he believes holistic resource management is, why it is needed, and tools and guidelines necessary to adequately manage ecosystems holistically.

642 Schaller, J. 1994. Geographical information systems and ecosystem models as tools for watershed management and ecological balancing in high mountain areas: The example of ecosystem research in Berchtesgaden area, Germany. In: Price, M.F. and Heywood, D.I., eds. Mountain environments and geographical information systems. London: Taylor and Francis Ltd. pp. 43-75.

643 Schleusner, D.P. 1994. Resource management perspective: Practical considerations for using GIS and remote sensing at the field level. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 140-156.

Focuses on using GIS and remote sensing to help incorporate ecosystem management concepts into field-level organizations of the USDA Forest Service.

644 Schmoldt, D.L., Peterson, D.L., and Silsbee, D.G. 1994. Developing inventory and monitoring

programs based on multiple objectives. Environmental Management 18(5):707-727.

Key words: Analytic hierarchy process, capital budgeting, integer programming, multiple objective planning, national parks, resource allocation.

645 Sedell, J.R., Reeves, G.H., and Burnett, K.M. 1994. Development and evaluation of aquatic conservation strategies. Journal of Forestry 92(4):28-31.

Aquatic conservation strategy that the Forest Ecosystem Management Assessment Team (FEMAT) suggest to implement in the Pacific Northwest.

646 Sessions, J., Crim, S., and Johnson, K.N. 1994. Resource management perspective: Geographic information systems and decision models in forest management planning. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 63-76.

647 Sharitz, R.R., Boring, L.R., Van Lear, D.H., and Pinder, J.E., III 1992. Integrating ecological concepts with natural resource management of southern forests. Ecological Applications 2(3):226-237.

Key words: biological diversity, ecological values, forest management, forest sustainability, fragmentation, functional diversity, landscape diversity, landscape ecology, riparian forests.

648 Shaw, D.W., Aldon, E.F., LoSapio, C., tech. coords. 1995. Desired future conditions for pinon-juniper ecosystems, Proceedings of the symposium, 1994 August 8-12. Flagstaff, AZ. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-GTR-258. 226 pp.

"Authors assessed the current state of knowledge about the pinon-juniper resource and helped develop desired future conditions" (abs.).

649 Shepperd, W.D. 1994. Visualizing management objectives: Turning the numbers into trees using GRAFGYM, a graphic projction system for growth and yield output. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 229-233.

650 Shlisky, A.J. 1994. Multiscale analysis in the Pacific Northwest. Journal of Forestry 92(8):32-39.

Example of ecosystem management in practice on the Umatilla National Forest.

651 Silviculture Instructors Sub-Group (SAF) 1994. Silviculture terminology. Society of American Foresters. 14 pp.

Lists terms and definitions used in silviculture and ecosystem management.

652 Slocombe, D.S. 1993. Implementing ecosystem-based management: Development of theory, practice, and research for planning and managing a region. BioScience 4(9):612-622

653 Slocombe. D.S. 1993. Implementing ecosystem-based management. BioScience 43(9):612-622.

Canadian perspective (geography).

654 Society of American Foresters 1995. Managing forests to meet peoples' needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Anchorage, Alaska, Sep. 18-22. Bethesda, MD: Society of American Foresters. pp. 543 pp.

Included papers focus on new technologies and tools to manage the biophysical forest resource.

655 Spies, T.A., Tappeiner, J., Pojar, J., and Coates, D. 1991. Trends in ecosystem management at the stand level. North American Wildlife and Natural Resources Conference Transactions 56:628-639.

Discusses the concept of ecosystem management at the forest stand level and identifies major trends, specifically looking at the coniferous forests of Northwestern North America.

656 Steffenson, J. and Dippon, D. 1994. Building a GIS for the President's Forest Ecosystem Management Assessment Team. In: 1994 ASPRS/ ACSM Annual Convention and Exposition. ASPRS Technical Papers. Reno. NV. Vol. 1. pp. 617-623.

"This paper will discuss some of the successes and problems associated with the creation of an interagency spatial database and its use by the team of scientists" involved with FEMAT (abs.).

657 Stocks, A.M. and Heywood, D.I. 1994. Terrain modelling for mountains. In: Price, M.F. and Heywood, D.I., eds. Mountain environments and geographical information systems. London: Taylor and Francis Ltd. pp. 25-40.

"The purpose of this chapter is to introduce DTMs (digitial terrain models) to those seeking to apply GIS to mountain ecosystem management and research" (p. 25).

658 Swanson, D.K. 1995. The soil-landscape paradigm in ecological land classification and mapping. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 259-264.

Describes the use of soils as an indicator of environmental factors, so mapping of ecologic land types can be accomplished.

659 Swanson, F.J. and Franklin, J.F. 1992. New Forestry principles from ecosystem analysis of Pacific Northwest forests. Ecological Applications 2(3):262-274.

Examines the management of forest stands, patchwork of forest stands and streams and riparian networks. Discusses this management, related ecosystem research findings and changes in forest management.

660 Takeuchi, K. and Lee, D-K. 1989. A framework for environmental management planning: A landscape- ecological approach. Landscape Ecology 3(1):53-63.

661 Teclaff, L.A. and Teclaff, E. 1987. International control of cross-media pollution: An ecosystem approach. Natural Resources Journal 27(1):21-53

Argues for the expansion of international river basin management.

662 Thomas, D.F. and Ratty, M. 1994. Fourth report: National Steering Committee for Management of Vegetation on Forest and Range Ecosystems. Washington, D.C.: USDA Forest Service, Forest Pest Management, Washington, D.C. Office.

Compiliation of notes, ideas, and papers generated from the 1994 National Steering Committee for Vegetation Management which met in Phoenix, AZ on June 15-16, 1994.

663 Thomas, J.W. 1994. Forest Ecosystem Management Assessment Team: Objectives, processes, and options. Journal of Forestry 92(4): 12-17.

The author discusses the Forest Ecosystem Management Assessment Team's recommendations of shifting to an ecosystem management approach in the Pacific Northwest.

664 Thompson, J.E., comp. 1995. Analysis in support of ecosystem management; Analysis Workship III, April 10-13, 1995, Ft. Collins, CO. Washington, D.C.: USDA Forest Service, Ecosystem Management Analysis Center. 360 pp.

"Analysis specific to managing ecosystems was reported in 29 papers from Forest Service employees, university faculty, and others. Recomendations were made to improve future analyses" (abs.).

665 Turpin, T.C. and Karnes, D.B. 1994. Managing young Douglas-fir stands to foster the development of diverse stand structure and species composition. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings, National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 42-45.

666 Unger, D.G. 1993. Ecosystem management on national forests. In: Baumgartner, D.M., Lotan, J.E., and Tonn, J.R., eds. Interior cedar-hemlock-white pine forests: Ecology and management. Symposium proceedings, March 2-4, 1993. Pullman, WA: Washington State University. pp. 3-5.

Discusses some of the basic concepts and methods to apply ecosystem management in the national forests.

667 United States Congress. Committee on Natural Resources 1994. Ecosystem management: Sustaining the nations natural resource trust. Majority staff report of the Committee on Natural Resources of the U.S. House of Representatives, One Hundred and Third Congress, second session. Washington, D.C.: U.S. G.P.O.

668 United States Congress. Committee on Energy and Natural Resources 1993. Forest ecosystem health and recovery act Hearing before the subcommittee on public lands, national parks, and forest of the

Committee on Energy and Natural Resources, U.S. Senate, One Hundred and Second Congress, second session on S. 1156, July 28, 1992. Washington, D.C.: U.S. G.P.O.

669 United States Congress. House Committee on Agriculture. Subcomm. 1994 Forest ecosystem management in Idaho Hearing before the subcommittee on specialty crops and natural resources of the Committee of Agriculture, House of Representatives, One Hundred and Third Congress, first session, August 20, 1993, Boise, ID: Washington, D.C.: U.S. G.P.O.

670 United States. Congress. Committee on Agriculture. Subcommittee 1993. Forest biodiversity and clearcutting prohibition act of 1993. Hearing before the subcommittee on specialty crops and natural resources of the Committee of Agriculture, House of Representatives, One-Hundred and Third Congress, first session, on H.R. 1164, Oct. 28. 1993: Washington, D.C.: U.S. G.P.O.

671 University of Wisconsin College of Natural Resources 1994. Ecosystem management: Applications for sustainable forest and wildlife resources. Proceedings of conference March 3-4, 1994, Stevens Point, WI. Stevens Point: College of Natural Resources, University of Wisconsin.

Includes discussion of the public acceptance of ecosystem management.

672 Urban, D.L. 1994. Landscape ecology and ecosystem management. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 127-136.

Discusses landscape ecology concepts such as the distribution of patch types, agents of pattern formation on landscapes, and the use of models in the context of ecosystem management.

673 USDA Forest Service 1994. A national framework: Ecosystem management United States Department of Agriculture, Program Aid 1502.

Broad overview of ecosystem management with illustrations.

674 USDA Forest Service 1993. Eastside forest ecosystem health assessment. Vol. 4: Restoration of stressed sites, and processes. Washington, D.C.: USDA Forest Service. National Forest System, Forest Service Research. 114 pp.

Papers address several aspects of restoring ecosystem components: reducing hazards and preventing catastrophic loss, restoration of ecosystem processes, conserving biodiversity, etc.

675 USDA Forest Service 1994. Ecosystem management: 1993 annual report of the Forest Service. USDA Forest Service, Washington, D.C. 191 pp.

The report summarizes the performance of the Forest Service in implementing ecosystem management.

676 USDA Forest Service 1993. Forest Service, fish habitat, and acquatic ecosystem research: Understanding and managing acquatic ecosystems. USDA Forest Service, Washinton D.C.

The document explores the importance of aquatic ecosystems, why more research is necessary, what current research has found, and the future for aquatic ecosystems.

677 USDA Forest Service 1992. Proceedings of the national workshop: Taking an ecological approach to management. 1992 April 27-30. Salt Lake City, UT. Washington, D.C.: USDA Forest Service, Washington Office WO-WSA-3. Miscellaneous. 376 pp.

Contains formal presentations, abstracts of poster sessions, work group reports, and the Summary of Action Plan of a workshop that attempted to determine the role of ecosystem management.

678 USDA Forest Service 1994. Remote Sensing and Ecosystem Management. Proceedings of the 5th Forest Service Remote Sensing Applications Conference, April 11-15, 1994, Portland, OR. Washington, D.C.: USDA Forest Service.

Includes research issues, integration of techniques, and analysis of exploitation questions.

679 USDA Forest Service 1994. The role of the northeastern area in ecosystem management: State and private forestry. Northeastern Area Miscellaneous, Washington D.C. 10 pp.

Outlines the role of the Northeastern Area "in planning and implementing ecosystem management through cooperative efforts in 20 states and the District of Columbia (p. 1)."

680 USDA Forest Service 1992. Proceedings national workshop: Taking an ecological approach to management. Miscellaneous Publication. Washington, D.C.: USDA Forest Service. 241 pp.

Contains papers from the First National Workshop on ecosystem management in the Forest Service and concentrates on subjects dealing with integrating resource maps and inventories into management.

681 Van Dyne, G.M. 1969. Implementing the ecosystem concept in training in the natural resource sciences. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 327-367.

682 Van Dyne, G.M., ed. 1969. The ecosystem concept in natural resource management. New York: Academy Press. 383 pp.

Papers address grasslands and range, watershed, tundra, fish and game, and forest management.

683 Van Sickle, C. and Martin, G. 1994. Harmonizing the effects of multiple landowner decisions - The SAMAB experience. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 238-241.

"The paper briefly describes SAMAB and gives an illustration of how the management context can be used to define management objectives" (abs.).

684 Vanwirdum, G. 1993. An ecosystem approach to base-rich freshwater wetlands, with special reference to fenlands. Hydrobiologia 265(1-3):129-153.

Argue that human control could become the most important factor in future development of wetlands.

685 Vogt, K. 1993. Several considerations pertaining to ecosystem-level modeling. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, D.C. American Forests. pp. 173-175.

Discusses specific issues and concerns that should be included in ecosystem-level models.

686 Walker, J.L. and Boyer, W.D. 1994. An ecological model and information needs assessment for longleaf pine ecosystem restoration. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 138-147.

"Selected ecological principles are presented as a basis for a simple model for ecosystem restoration" and information needs are identified (abs.).

687 Walters, C.J. and Holling, C.S. 1990. Large-scale management experiments and learning by doing. Ecology 71(6):2060-2068.

"This paper discuss some challenges for justifying and designing experimental management programs" (p. 2060). Addresses constant uncertainty and adaptive management.

688 Walters, C. 1986. Adaptive management of renewable resources. New York: MacMillan Pulishing Co. 374 pp.

Provides a basic overview of the ideas behind adaptive management and possible application of the concept.

689 Waring, R.H., Savage, T., Cromack, K., Jr., and Rose, C. 1992. Thinning and nitrogen fertilization in a grand fir stand infested with western spruce budworm. Part IV: An ecosystem management perspective. Forest Science 38(2):275-286.

Describes an experiment "to investigate the effects of thinning and fertilization on forest productivity of a stand severely invested by western spruce budworm" (p. 275).

690 Watt, K.E.F. 1968. Ecology and resource management: A quantitative approach. New York: McGraw Hill. 450 pp.

Basic text discussing using ecolgical principles in natural resource management.

691 Wear, D.N. and Swallow, S.K. 1993. The economics of location and forest management for multiple benefits: A review, discussion, and speculation. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, DC. American Forests. pp. 106-121.

Reviews economic theory of multiple benefit forestry concentrating on how the spatial

configuration of forests affect the joint production of market and nonmarket resources (p. 106).

692 White, E.H. 1995. Information needs for applying soils to forest ecosystem management. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters: pp. 265-269.

693 Wissmar, R.C. 1993. The need for long-term stream monitoring programs in forest ecosystems of the Pacific Northwest. Environmental Monitoring and Assessment 26:(2-3):219-234.

Procedural and planning requirements and processes are discussed, with an emphasis on variability and flexibility.

694 Xu, Z., Bradley, D.P, and Jakes, P.J. 1995. Measuring forest ecosystem sustainability: A resource accounting approach. Environmental Management 19(5) Sept./Oct.: 685-692.

Authors outline an accounting system that integrates multidimensional information requirements "in measuring the health of both forest ecosystems and economic systems" (abs.).

695 Yarie, J. and Winterberger, K. 1995. Incorporating stand-level models into landscape-scale management in interior Alaska. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 134-139.

"Ideas for utilizing stand-level or ecosystem level models to develop predictions for the landscape, the importance of including disturbance patterns in the landscape" are discussed (abs.).

DEVELOPMENT AND PHILOSOPHY

696 Bakuzis, E.V. 1969. Forestry viewed in an ecosystem perspective. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 189-258.

Addresses such concepts as: history of forestry, population dynamics, wood production, and systems analysis and how they fit into an ecosystem framework.

697 Bartuska, A.M. 1994. Ecosystem management in the Forest Service. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 12-15.

Defines ecosystem management in terms of how the Forest Service operates and how adopting ecosystem management techniques will change existing forest management.

698 Bartuska, A.M. 1993. Status of ecosystem management: A national perspective. In: Proceedings of the USDA Interagency Gypsy Moth Research Forum 1993. Radnor, PA.: Northeastern Forest Experiment Station. General Technical Report NE-GTR-179. pp. 11-12.

699 Botkin, D.B. 1990. Discordant harmonies: A new ecology for the twenty-first century. Oxford: Oxford University Press. 241 pp.

700 Brooks, D.J. and Grant, G.E. 1992. New perspectives in forest management: Background, science issues, and research agenda. In: Portland, OR: USDA Forest Service Pacific Northwest Research Station, Research Paper PNW-456. 17 pp.

"Principles underlying new approaches are developed and implications are considered at various spatial and temporal scales. A general framework for a research program is outlined" (abs).

701 Burgess, R.L. 1993. Ecosystems in space and time. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 workshop in Washington, D.C. Washington, D.C.: American Forests. pp. 81-87.

The author discusses the enormous complexity of ecosystems when viewed in temporal and spatial scales and that managers possess limited knowledge to adequately work with ecosystems on those scales.

702 Carpenter, R.A. and Dixon, J.A. 1985. Ecology meets economics: A guide. Environment 27:6-11, 27-32.

Attempts to unite economic development and environmental protection --- two concepts which are usually in confrontation.

703 Colby, M.E. 1990. Environmental management in development: The evolution of paradigms. Washington, D.C.: The World Bank. 39 pp.

Different philosphies toward environmental management and sustainable developement are explored.

704 DeGraef, R.M. and Healy, W.M. 1993. The myth of nature's consistency: Preservation, protection, and ecosystem management. North American Wildlife and Natural Resources Conference Transactions, 58: 17-28.

Argues that "the set of relevant ecosystem processes rather than a given stage of development" must be preserved to protect ecosystems." (p. 18).

705 Devine, R. 1995. Management and the uncertainty principle: Is "ecosystem management" a working idea or just another bureaucratic buzzward? Wilderness 58(207):10-23.

Looks at the history and development of ecosystem management and what it means in future management in the Pacific Northwest from an environmental perspective. Focuses on FEMAT.

706 Flader, S. 1994. Aldo Leopold and the evolution of ecosystem management In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological

systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 15-19.

707 Francis, G. 1993. Ecosystem management. Natural Resources Journal 33(part 2):315-345.
Philosophy behind ecosystem management in terms of how it applies to the Canada-U.S. transboundary region-focusing on the Great Lakes.

708 Franklin, J.F. 1992. Forest stewardship in an ecological age. Syracuse, NY: State University of New York College of Environmental Science and Forestry, Misc. Pub. # 27.

709 Franklin, J.F. 1986. Structural and functional diversity in temperate forests. In: Wilson, E.O., ed. Biodiversity. Washington, DC: National Academy Press. pp. 166-175.
Reasons and possible management practices in managing temperate forests for maintaining biodiversity (p.166).

710 Gerlach, L.P. and Bengston, D.N. 1994. If ecosystem management is the solution, what's the problem?: Eleven challenges for ecosystem management. Journal of Forestry 92(8):18-21.
Anthropological perspective.

711 Gordon, J.C. 1993. Ecosystem management: An idiosyncratic overview. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 240-244.
Describes five concepts of ecosystem management: manage where you are, manage with people in mind, manage across boundaries, manage based on mechanisms, and manage without externalities.

712 Grumbine, R.E. 1994. What is ecosystem management? Conservation Biology 8(1):27-38.
To clarify discussion of ecosystem management, the author discusses the development, definition, and dominant themes of ecosystem management.

713 Gutierrez, R.J. 1994. Conservation planning: Lessons from the spotted owl. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-PNW-247. pp. 51-58.
The author discusses how the spotted owl controversy made differences in operational and philosophical paradigms among land managers evident.

714 Hart, R. 1994. Monitoring for ecosystem management. International Journal of Ecoforestry 10(2):74-72.
Ecosystems are composted of "natural flows, structures, and cycles and must be monitored in terms of systems and interrelationships.

715 Holling, C.S. 1982. Science for public policy: Highlights of adaptive environmental assessment and management. Research of Fish and Wildlife Habitat 2:78-91.
Discusses the study of the resource sciences in an evolutionary context and looks at future problems and challenges.

716 Hughes, S.P. 1994. Let's apply geology to ecosystem management. Geotimes 39(3) March:4.
Argues that physical geology is an important part of ecosystem processes but is ignored in ecosystem management. Provides examples as to how geology can be used in ecosystem management.

717 Iverson, D. 1993. An ecosystems approach to management: Moving from old standards to new standards. Ecowatch 4/8/93:1.

718 Jensen, M.E. and Everett, R. 1994. An overview of ecosystem management principles. In: Jensen, M.E. and Bourgeron, P.S., eds. Vol. 2: Ecosystem Management-Principles and Applications. pp. 6-15.

719 Johnson, D.R. and Agee, J.K. 1988. Introduction to ecosystem management. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 3-14.
The concept, definition, and goals of ecosystem management in terms of its application in parks and wilderness.

720 Kaufmann, M.R. and Graham, R.T., Boyce, D.A., Jr., Moir, W.H., and others 1994. An ecological basis for ecosystem management. Fort Collins, CO: USDA Forest Service, Rocky Mountain

Forest and Range Experiment Station, General Technical Report PNW-GTR-246: 246 pp.

Argues that "guiding principles based on conservation biology" are needed to assess ecosystem needs. Ecosystem, economic, and social needs must be integrated into decision making (abs.).

721 Kessler, W.B., Salwasser, H., Cartwright, C.W., Jr., and Caplan, J.A. 1992. New perspectives for sustainable natural resources management. Ecological Applications 2(3):221-225.

Discusses the changing philosophy in forest management; specifically addressing: adaptive management, biological diversity, ecosystem sustainability, and multiple-use management.

722 Kimmins, J.P. 1995. Sustainable development in Canadian forestry in the face of changing paradigms. The Forestry Chronicle 71(1):33-40.

Discusses the public's perception of forests from strictly areas that provide wood to areas that provide a variety of resources and what the implications are of this changing paradigm.

723 Lee, R.G. 1991. Biological legacies are only part of the answer. Forest Perspectives 1(3):13-14.

The author argues that by simply providing for biological legacies, managers will still ignore many other forest values.

724 Leopold, A. 1966. Conservation esthetic, pp. 280-295 in A Sand County Almanac (with essays on conservation from Round River). New York: Ballantine Books.

Considered by many to be one of the founders of what has become known as ecosystem management.

725 Lugo, A.E. and Snedaker, S.C. 1972. The ecosystem approach to management. In: Readings on ecological systems: Their function and relation to man. New York: MSS Educational Publications Co. pp. 339-353.

726 Major, J. 1969. Historical development of the ecosystem concept. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 9-22.

727 McEvoy, T.J., ed. 1994. Ecosystem management: What does it mean?, Who is doing what?, Where are we going? Proceeding of a ecosystem management symposium hosted by the Northeast Forest Alliance, July. Burlington, VT.: University of Vermont, School of Natural Resources and Extension System.

Forests, public lands, fish and wildlife, paper and pulp industries, property rights, values, change.

728 McQuillan, A.G. 1992. New Perspectives: Forestry for a post-modern age. Western Wildlands 17(4):13-20.

729 McQuillan, A.G. 1992. New perspectives: Forestry for a post-modern age. Western Wildlands 17(4):13-20.

730 Milbraith, L. 1986. Environmentalists: Vanguard for a new society. Albany, NY: State University of New York Press. 180 pp.

731 Montegomery, D.R. 1995. Input- and output-oriented approaches to implementing ecosystem management. Environmental Management 19(2):183-188.

Describes ecosystem management as input- and output-oriented and stresses that input management, where management focuses on tailoring land use to the landscape needs to be applied more often.

732 Moote, M.A., Burke, S., Cortner, H.J., and Wallace, M.G. 1994. Principles of ecosystem management. Water Resources Research Center, College of Agriculture, University of Arizona. 14 pp.

Summarizes the institutional obstacles and incentives to ecosystem management. A literature search includes adapted management, conservation biology, and integrated environmental management.

733 O'Sullivan, P.E. 1987. Environmental science and environmental philosophy -Part 2: Environmental science and the coming social paradigm. International Journal of Environmental Studies 28: 257-267.

Discusses the role environmental science would take with the redefinition of many social concepts such as, growth, wealth, work, and power.

734 O'Sullivan, P.E. 1986. Environmental science and environmental philosophy -Part 1: Environmental science and environmentalism. International Journal of Environmental Studies 28: 97-107.

Assesses the development of environmental science in becoming a holistic science.

735 Odum, E.P. 1969. The strategy of ecosystem development. Science 164:262-269.

736 Ossenbruggen, H.S. 1995. Issues for an ecosystem management approach to urban forestry. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 357-362.

The paper sets a historical context, lists some important issues affecting urban and urbanizing areas and presents some examples of what is being done to address these issues in communities (p. 357).

737 Overbay, J.C. 1992. Ecosystem management. In: Proceedings of the national workshop: Taking an ecological approach to management. 1992 April 27-30. Salt Lake City, UT. Washington, D.C.: USDA Forest Service, Washington Office WO-WSA-3. pp. 3-15.

Discusses principles for an ecosystem approach to multiple-use, sustained-yield management.

738 Pastor, J. 1995. Ecosystem management, ecological risk, and public policy. BioScience 45(4):286-288.

Based on the Symposium on Ecosystem Management and reviews the potential of ecosystem management and ecological risk assessment to build a better world.

739 Petak, W.J. 1981. Environmental management: A system approach. Environmental Management 5(3):213-224.

740 Robertson, F.D. 1992. Ecosystem management of the national forests and grasslands. Memo to Regional Foresters and Stations Directors. June 4. Washington, D.C.: USDA Forest Service.

741 Rowe, J.S. 1994. A new paradigm for forestry. The Forestry Chronicle 70(5):565-568.

742 Rowe, J.S. 1992. The ecosystem approach to forestland management. The Forestry Chronicle 68(1):222-224.

The author describes his feelings of what an "ecosystem approach" is and means of undertaking an ecosystem approach.

743 Salwasser, H. 1994. Ecosystem management: Can it sustain diversity and productivity? Journal of Forestry 92(8):6-7, 9-10.

The author describes the development and requirements needed to implement ecosystem management. He also discusses the outcomes of forest ecosystem management in the context of human values.

744 Salwasser, H. and Pfister, R.D. 1994. Ecosystem management: From theory to practice. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 150-161.

"The purpose of this paper is to describe some principles and practices that we believe are crucial to the success of an ecosystem approach to land and resource stewardship" (abs.).

745 Sample, V.A. 1991. Land stewardship in the next era of conservation. Breaking new ground series. Milford, PA: Grey Towers Press. 43 pp.

Addresses scientific land management and the need for more research, and the emotional component of humans' relationship with forests.

746 Sample, V.A. 1994. Why ecosystem management? American Forests 100(7-8) July/August:6, 60.

Editorial concerning the justification of ecosystem management.

747 Sampson, N. 1993. New ecology, global change, and forest politics. American Forests 99(5-6) May/June:6, 53.

748 Sharitz, R.R., Boring, L.R., Van Lear, D.H., and Pinder, J.E., III. 1992. Integrating ecological concepts with natural resource management of southern forests. Ecological Applications 2(3):226-237

749 Steedman, R.J. 1994. Ecosystem health as a management goal. Journal of the North American Benthological Society 13(4):605-610.

"This essay outlines a number of principles that may contribute to the practical pursuit of ecosystem health as a goal in science-based management of natural resources" (p. 605).

750 Stomp, A.M. 1994. Genetic information and ecosystem health: Arguments for the application of chaos theory to identify boundary conditions for ecosystem management. Environmental Health Perspectives 102 (Suppl. 12):71-74.

Key words: ecosystem management, ecotoxicology, environmental health, genetic information, nonlinear modeling.

751 Swanson, F. and Berg, D. 1991. The ecological roots of new approaches to forestry. Forest Perspectives 1(3):6-8.

752 Swanson, F.J. and Franklin, J.F. 1992. New Forestry principles from ecosystem analysis of Pacific Northwest forests. Ecological Applications 2(3):262-274.

753 Tarver, C.M. 1995. Ecosystem management: Giving it meaning. Journal of Forestry 93(1):60.

Stresses that ecosystem management is "simply a label for an attitude about resource management" not a dramatic shift in management.

754 Taylor, S. 1993. Practical ecosystem management for plants and animals. Endangered Species Update 10(3-4):26-29.

Discusses the questions: 1) Is an ecosystem approach new to species conservation? 2) Is the approach different for plants vs. animals? 3) Are all species equal? 4) What is sensible eco. management?

755 Thomas, A.E. 1994. Ecosystem management: What is it? In: Bureau of Land Management. Ecosystem management. Idaho Burau of Land Management. Technical Bulletin no. 94-5. April 1994. Paper 1.

The author presents his personal views of what ecosystem management is and how it can be used in the BLM. Specifically focusing on Idaho.

756 USDA Forest Service 1995. A national framework: Ecosystem management. Washington, D.C.: USDA Forest Service.

Four fundamental principles guide the implementation of ecosystem management: Ecological approach, partnerships, participation, scientific knowledge.

757 USDA Forest Service 1993. Eastside forest ecosystem health assessment. Vol. 1 Executive Summary. U.S. Department of Agriculture. National Forest System. Forest Service Research (misc) April 1993. 57 pp.

The report examines the definition and philosophy of ecosystem management in the context of existing and desired conditions of the eastern Oregon and Washington forests.

758 Walsh, B.W. 1994. The ecosystem thinking of Mollie Hanna Beattie. American Forests 100(5-6):13-16.

Director of the Fish and Wildlife Service, Mollie Beattie discusses her view of ecosystem management with an interdisciplinary perspective.

759 Williams, B. 1994. Is it really ecosystem management? Inner Voice Nov./Dec.

760 Wood, C.A. 1994. Ecosystem management. Achieving the new land ethic. In: Bureau of Land Management. Ecosystem management. Idaho Bureau of Land Management. Technical Bulletin no. 94-5. April 1994. Paper 2.

This paper differentiates ecosystem management from traditional agency land management and examines the challenges and opportunities presented by ecosystem management.

761 Wood, C.A. 1994. Ecosystem management: Achieving the new land ethic. Renewable Resources Journal. Spring:6-12.

A reprint of the BLM report. This paper differentiates ecosystem management from traditional agency land management and examines the challenges and opportunities presented by ecosystem management.

762 Zasada, J. 1994. Understanding ecosystem management. Journal of Forestry 92(7):60.

Based on the author's experiences as a forester, he describes his view of how forest management has evolved to what is now considered ecosystem management.

763 Zasada, J., Lieffers, V., and Gordon, A.G. 1995. Management considerations for northern forests. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 14-21.

Discusses a departure from management's focus on regeneration of conifers and protection from disturbance to a concentrating on a wider concept of forest values (e.g., wildlife, fish, and recreation).

ECOLOGICAL INTEGRITY, BIODIVERSITY

764 Berendse, F. 1993. Ecosystem stability, competition, and nutrient cycling. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 409-431.

765 Bonan, G.B. 1993. Do biophysics and physiology matter in ecosystem models? Climatic Change 24(4):281-285.

766 Bond, W.J. 1993. Keystone species. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 237-253.

"In this paper, I suggest that some species should also be conserved because they have a disproportionate effect on the persistence of all other species."

767 Burdon, J.J. 1993. The role of parasites in plant populations and communities. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 165-179.

Addresses the diversity and impact and roles parasites have on plants in ecosystems.

768 Burley, F.W. 1986. Monitoring biological diversity for setting priorities in conservation. In: Wilson, E.O., ed. Biodiversity. Washington, D.C.: National Academy Press. pp. 227-230.

Focuses on use of the gap analysis concept which is used to determine conservation strategies in a particular region or country.

769 Cairns, J., Jr. 1986. Increasing diversity by restoring damaged ecosystems. In: Wilson, E.O., ed. Biodiversity. Washington, D.C.: National Academy Press. pp. 333-343.

770 Cooper, D. 1991. Genes for sustainable development: Overcoming the obstacles to a global agreement on conservation and sustainable use of biodiversity. In: Shiva, V., ed. Biodiversity. Atlantic Highlands, NJ: Zed Books Ltd. pp. 105-123.

771 Cutler, M.R. 1993. A land exchange program to protect biodiversity. Journal of Forestry 91(2):25-29.

The author suggests using wilderness protection to help preserve plant and animal species with no net gain of public land.

772 Daniels, J.D. 1994. Conserving biodiversity: Forest genetics perspective. In: Everett, R.L., comp. Vol. 4: Restoration of stressed sites, and processes. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-330. pp. 31-36.

The report clarifies "the genetic dimensions of eastside forest health problems relative to the various possibilities for genotype-environment mismatching" (p. 31).

773 Ehrlich, P.R. 1986. The loss of diversity: Causes and consequences. In: Wilson, E.O., ed. Biodiversity. Washington, D.C.: National Academy Press. pp. 21-27.

Focuses on the "more obscure and unpleasant truths" of the causes and consequences associated with the loss of biological diversity (p. 21).

774 Ehrlich, P.R. and Wilson, E.O. 1991. Biodiversity studies: Science and policy. Science 253:758-762.

Discusses the status of biodiversity research focusing on species formation, current levels of biodiversity, hyperdiversity, natural extinction, and human-caused extinction.

775 Franklin, J.F. 1993. Providing biodiversity: Species, ecosystems, or landscapes? Ecological Applications 3(2):202-205

Reasons that an ecosystem approach to preserving biodiversity is superior to a single-species approach and possible management frameworks.

776 Fuentes, E.R. 1993. Scientific research and sustainable development. Ecological Application 3(4):576-577.

Addresses the question "of whether scientific knowledge can help make development durable" in terms of landscapes in developing countries (p. 576).

777 Gray, A. 1991. The impact of biodiversity conservation on indigenous people. In: Shiva, V., ed. Biodiversity. Atlantic Highlands, NJ: Zed Books Ltd. pp. 59-76.

The author argues that the conservation of biodiversity risks major violations of indigenous peoples' human rights.

778 Grumbine, R.E. 1990. Protecting biological diversity through the greater ecosystem concept. Natural Areas Journal 10(3):114-120.

779 Hartig, J.H., Rathke, D.E., and Williams, D.J. 1990. How clean is clean in the Great Lakes Areas of Concern? Journal of Great Lakes Research 16(1):169-179.

780 Hobbie, S.E., Jensen, D.B., and Chapin, F.S., III 1993. Resource supply and disturbance as controls over present and future plant diversity. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 385-408.

781 Horsley, P. 1989. Maintaining and restoring the integrity of ecosystems, part 1: Evaluation of the ecological approach. Planning Quarterly 94:5-8.

782 Hunter, M.L. Jr. 1990. Wildlife, forests, and forestry: Principles of managing forests for biological diversity. Englewood Cliffs, NJ: Prentice Hill. 370 pp.

783 Iwasa, Y., Sato, K., Kakita, M., and Kubo, T. 1993. Modelling biodiversity: Latitudinal gradient of forest species diversity. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 433-451.

784 Jenkins, R.E., Jr. 1986. Information management for the conservation of biodivesity. In: Wilson, E.O., ed. Biodiversity. Washington, D.C.: National Academy Press. pp. 231-239.

785 Jordan, W.R., III 1986. Ecological restoration: Reflections on a half-century of experience at the University of Wisconsin-Madison arboretum. In: Wilson, E.O., ed. Biodiversity. Washington, D.C.: National Academy Press. pp. 311-316.

786 Karr, J.R. 1993. Measuring biological integrity: Lessons from streams. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 83-104.

Discusses the role of biology in environmental protection/regulation, the constituents of biological integrity, assessing biological integrity, and principles of biological monitoring.

787 Kay, J.J. 1993. On the nature of ecological integrity: Some closing comments. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 201-212.

Presents a brief overview of ecological integrity and provides a discussion of the papers presented in the text "Ecological Integrity and the Management of Ecosystems."

788 Keddy, P.A., Lee, H.T., and Wisheu, I.C. 1993. Choosing indicators of ecosystem integrity: Wetlands as a model system. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 61-79.

789 King, A.W. 1993. Considerations of scale and hierarchy. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 19-45.

Addresses the questions of scale and hierarchy in the management of ecosystems and what are scale and hierarchical organization in ecosystems.

790 Korner, C. 1993. Scaling from species to vegetation: The usefulness of functional groups. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 117-140.

791 Lawton, J.H. and Brown, V.K. 1993. Redundancy in ecosystems. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 255-270.

Reviews evidence of the rivet hypothesis (i.e., every species plays some role in the integrity of ecosystems) and redundant species hypothesis (i.e., not all species are necessary).

792 Lohmann, L. 1991. Who defends biological diversity? Conservation strategies and the case of Thailand. In: Shiva, V., ed. Biodiversity. Atlantic Highlands, NJ: Zed Books. pp. 77-104.

793 Ludwig, D, Hilborn, R., and Walters, C. 1993. Uncertainty resource exploitation, and conservation: Lessons from history. Science 260:17, 36.

Argues that historic uses of science have not aided in limiting resource exploitation; therefore, the authors propose new principles of effective management.

794 Marshall, I.B., Hirvonen, H., and Wiken, E. 1993. National and regional scale measures of Canada's ecosystem health. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 117-129.

"This chapter outlines initiatives of State of the Environment Reporting to identify national and regional scale indicators of ecosystem health" (p. 117).

795 Mathes, K. and Weidemann, G. 1990. A base-line ecosystem approach to the analysis of ecotoxicological effects. Ecotoxicology and Environmental Safety 20(2):197-202

796 McMinn, J.W. 1994. Silvicultural implications of the biological diversity issue. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 148-153.

797 McNaughton, S.J. 1993. Biodiversity and function of grazing ecosystems. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 362-383.

"In this chapter, I examine evidence that biodiversity affects both the productivity and stability of ecosystems where the producers are principally herbaceous perennials" (p. 362).

798 Meyer, O. 1993. Functional groups of microorganisms. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 67-96.

Discusses the functional roles microorganisms play in ecosystems -- focusing on why biological diversity is important.

799 Mitchell, R.S., Sheviak, C.J., and Leopold, D.J., eds. 1994. Ecosystem management: Rare species and significant habitats. Proceedings of the 15th annual Natural Areas Conference. Albany, NY: New York State Museum. 314 pp.

The collection of papers discuss habitat and descriptions of rare and endangered species. Articles also discuss policy and management actions in regards to rare species.

800 Munn, R.E. 1993. Monitoring for ecosystem integrity. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 105-115.

Addresses ways to develop systems for monitoring ecosystem integrity, ecosystem integrity in the context of the UNESCO World Heritage Convention, and monitoring of regional ecosystem integrity.

801 National Wildlife Federation 1994. Seeing the forest through the trees: A model biodiversity collaboration strategy for the Lake Superior Basin. Ann Arbor, MI: National Wildlife Federation, Great Lakes Natural Resource Center.

Phase Two of the Lake Superior Biodiversity Project detailing a multi-stakeholder approach to set ecological objectives to perpetuate biological diversity and practical means to reach objectives.

802 Oberwinkler, F. 1993. Evolution of functional groups in basidiomycetes (fungi). In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 143-163.

Takes a biological diversity approach in discussing basidiomycetes' changing role in ecosystems.

803 Partridge, C. and Malmstrom, C. 1993. Biodiversity issues in computing: A study of networked computer viruses. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and

ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 469-479.

804 Pate, J.S. and Hopper, S.D. 1993. Rare and common plants in ecosystems, with special reference to the south-west Australian flora. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 293-325.

805 Pickett, S.T.A. and Parker, V.T. 1994. Avoiding the old pitfalls: Opportunities in a new discipline. Restoration Ecology 2(2):75-79.

Argues that a good framework for the field of restoration ecology can be built if ecologists recognize that there is not the ecosystems of the world are diverse and dynamic.

806 Pimm, S.L. 1993. Biodiversity and the balance of nature. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 347-359.

Addresses biodiversity's role in the stability of ecosystems, populations, and communities.

807 Pitelka, L.F. 1993. Biodiversity and policy decisions. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 482-493.

Discusses the importance of understanding biodiversity when making policy decisions, barriers and challenges of linking the two concepts, and types of information that are most relevant to make policy

808 Pojar, J., Diaz, N., Steventon, D., Apostol, D., and Mellen, K. 1994. Biodiversity planning and forest management at the landscape scale. In: Huff, M.H., Norris, L.K., Nyberg, J.B., and Wilin, N.L., coords. Expanding horizons of forest ecosystem management: Proceedings of the third habitat futures workshop, October, 1992. Vernon, BC. Portland, OR: PNW-GTR-336. pp. 55-70.

"A management strategy for biodiversity in the Prince Rupert Forest Region is described; it encompasses six recommendations for incorporating biodiversity at the landscape scale" (abs.).

809 Probst, J.R. and Crow, T.R. 1991. Integrating biological diversity and resource management. Journal of Forestry 89(2):12-17.

Discusses the concept of biodiversity, why managing for biodiversity is important, how biodiversity fits into ecosystem management, and general recommendatins to enhance biodiversity.

810 Read, D.J. 1993. Plant-microbe muturalisms and community structure. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 181-209.

Discusses plant-microbe muturalisms in grasslands, savanna and tropical forests, boreal and temperate forests, heathland and related wetlands, and the role of muturalisms in successional processes.

811 Regier, H.A. 1993. The notion of natural and cultural integrity. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 3-18.

Discusses different perspectives of ecological integrity adopted by ecological experts and attempts to include the set of human values associated with managing ecosystems.

812 Reynoldson, T.B. and Zarull, M.A. 1993. An approach to the development of biological sediment guidelines. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 177-200.

Addresses how to set guidelines in regards to sediment contamination in freshwater and marine systems. Focuses on the Detroit River as an example.

813 Routledge, R.D. 1984. Estimating ecological components of diversity. Oikos 42:23-29.

Focuses on two factors that are critical in estimating diversity, average diversity at fixed levels of the gradient and the amount of species turnover along the gradient (abs.).

814 Salwasser, H. 1988. Managing ecosystems for viable populations of vertebrates: A focus for biodiversity. In: Agee, J.D. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 87-104.

Discusses population viability, where coordinated management of large regional ecosystems can sustain viable populations of native species, and the use of indicator species (abs.).

815 Schucking, H. and Andersen, P. 1991. Voices unheard and unheeded. In: Shiva, V., ed. Biodiversity. Atlantic Highlands, NJ: Zed Books Ltd. pp. 14-41.

Authors discuss the local and global causes and implications of the crisis of biodiversity and addresses how decreased biodiversity relates to both human communities and ecosystems.

816 Schulze, E.-D. and Mooney, H.A., eds. 1993. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer Verlag. 525 pp.

Papers discuss biodiversity's role in ecosystem functions.

817 Schulze, E.-D. and Mooney, H.A. 1993. Ecosystem function of biodiversity: A summary. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 497-510.

Attempts to bring together concepts associated with the study of populations and the study of ecosystem processes. Final chapter of the text.

818 Schulze, E.-D. and Gerstberger, P. 1993. Functional aspects of landscape diversity: A Bavarian example. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 454-466.

The chapter "attempts to explain some causes and effects of diversity at the landscape level taking northeast Bavaria as an example" (p. 454).

819 Shackell, N.L., Freedman, B., and Staicer, C. 1993. National environmental monitoring: A case study of the Atlantic Maritime Region. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 131-153.

820 Shiva, V. 1991. Biodiversity, biotechnology and profits. In: Shiva, V., ed. Biodiversity. Atlantic Highlands, NJ: Zed Books Ltd. pp. 43-58.

The author discusses how increased production from the land has traditionally led to uniformity which is the primary threat to biodiversity.

821 Shiva, V., ed. 1991. Biodiversity. Atlantic Highlands, NJ: Zed Books Ltd. 123 pp.

Papers "attempt to articulate issues of conservation from the viewpoint of those who practice and preserve diversity" (p. 11).

822 Society of American Foresters 1992. Biological diversity in forest ecosystems: A position of the Society of American Foresters. Journal of Forestry 90(2):42-43.

Provides a definition, discussion and recommendations to achieve biodiversity in forest ecosystems.

823 Solbrig, O.T. 1993. Plant traits and adaptive strategies: Their role in ecosystem function. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 97-116.

Stresses the importance of biological diversity with a discussion of the wide variety of funtions plants play in ecosystems.

824 Soule, M.E. 1991. Conservation: Tactics for a constant crisis. Science 253:744-750.

Acknowledges that biological diversity is decreasing at enormously quicker rates, the author argues for a "deeper appreciation of the biological and social contexts" (p. 744).

825 Steedman, R. and Haider, W. 1993. Applying notions of ecological integrity. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 47-60.

"The objective of this essay ... is to outline some strengths and limitations of ecological integrity as a concpet to assist monitoring and management of aquatic and terrestrial systems" (p. 48).

826 Stottlemeyer, R. 1991. An ecosystem approach to long-term inventory and monitoring. George Wright Forum 7(3):31-37

827 Tilman, D. 1993. Community diversity and succession: The roles of competition, dispersal,

and habitat modification. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 327-344.

828 U.S. Council on Environmental Quality. 1993. Incorporating biological diversity considerations into environmental impact analysis under the National Environmental Policy Act. Washington, D.C.: Council on Environmental Quality.

829 Vitousek, P.M. and Hooper, D.U. 1993. Biological diversity and terrestrial ecosystem biogeochemistry. In: Schulze, E.-D. and Moone, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 3-14.

830 Wallace, A. 1994. Endangered species, endangered soil, ecosystem approaches. Communications in Soil Scince and Plant Analysis 25(1 & 2):149-152.

Argues for a more holisic approach to managing ecosystems and states that managing for a single species will not result in quality management of ecosystems.

831 West, N.E. 1994. Biodiversity and land use. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service. General Technical Report RM-GTR-247. pp. 21-26

Discusses the importance humans place on biodiversity and uses the Calfornia Council of Biological Diversity as an example of how management with sensitivity to biodiversity is practiced.

832 Wilson, E.O. 1986. The current state of biological diversity. In: Wilson, E.O., ed. Biodiversity. Washington, D.C.: National Academy Press. 521 pp.

World wide perspective at the loss of biodivesity.

833 Wilson, E.O., ed. 1986. Biodiversity. Washington, D.C.: National Academy Press. 521 pp.

The book contains a variety of articles that cover the philosophical, social, economic and biological aspects of biodiversity.

834 Woodley, S. 1993. Monitoring and measuring ecosystem integrity in Canadian National Parks. In: Woodley, S., Kay, J., and Francis, G., eds. Ecological Integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. pp. 155-176.

Discusses the rationale and application of monitoring ecological integrity.

835 Woodley, S., Kay, J., and George, F., eds. 1993. Ecological integrity and the management of ecosystems. Delray Beach, FL: St. Lucie Press. 220 pp.

The book concentrates on ecological science's role in ecosystem management along with how value judgments may be incorporated within measurable ecological variables (p. viii).

836 Woodward, F.I. 1993. How many species are required for a functional ecosystem? In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 271-291.

Discusses species diversity in regards to ecosystem properties and stability.

837 Zwolfer, H. and Rinehart, J.A. 1993. The evolution of interactions and diversity in plant-insect systems: The Urophora-Eurytoma food web in galls on palearctic cardueae. In: Schulze, E.-D. and Mooney, H.A., eds. Biodiversity and ecosystem function. Ecological studies, Vol. 99. New York: Springer-Verlag. pp. 212-233.

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838 Alexander, S.K. 1982. Food web analysis: An ecosystem approach. American Biology Teacher 44(3):186.

839 Allen, T.F.H. and Starr, T.B. 1982. Hierarchy: Perspectives for ecological complexity. Chicago: The University of Chicago Press. 310 pp.

A hierarchial approach to the many "middle-number systems" within the subject of ecology (intro.). Keywords: ecology, hierarchy, systems.

840 Allen, T.F.H. and Hoekstra, T.W. 1992. Toward a unified ecology. New York: Columbia University Press: 384 pp.

Takes a systems approach to understanding ecological complexity. Key words: community analysis, landscape ecology, ecosystem processes, and environmental management.

841 Ashby, W. C. 1987. Forests. In: Jordan, W.R., III, Gilpin, M.E., and Aber, J.D., eds. Restoration ecology: A synthetic approach to ecological research. Cambridge: Cambridge University Press. pp. 89-108.

Discusses the application of restoration ecology to forest ecosystems.

842 Barrett, G. and Rosenburg, R. 1981. Stress effects on natural ecosystems. New York: Wiley.

843 Beasley, V. 1993. Ecotoxicology and ecosystem health: Roles for veterinarians-goals of the Envirovet Program. Journal of the American Veterinary Medical Association 203(5):617-628.

Argues for a "robust" approach that includes a management approach that depends on evaluation of conditions from individual, population, assemblage, and landscape perspectives.

844 Bormann, F.H. and Likens, G.E. 1979. Patterns and process in a forested ecosystem. New York: Springer-Verlag. 253 pp.

The biophysical processes forest ecosystems undergo, specifically focusing on the Hubbard Brook Ecosystem Study (p. v-viii). Keywords: forest ecosystems, Hubbard Brook, biophysical processes.

845 Bormann, F.H. and Likens, G.E. 1969. The watershed-ecosystem concept and studies of nutrient cycles. In: Van Dyne, G.M. ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 49-76.

846 Bormann, F.H., Likens, G.E., and Eaton, J.S. 1969. Biotic regulation of particulate and solution losses from a forest ecosystem. BioScience 19(7):600-610.

The study, conducted in the Hubbard Brook Experimental Forest, examined solution and particulate matter losses in the nutrient economy of a small undisturbed forested watershed ecosystem.

847 Bormann, F.H., Likens, G.E., Siccama, T.G., Pierce, R.S., and Eaton, J.S. 1974. The export of nutrients and recovery of stable conditions following deforestation at Hubbard Brook. Ecological Monographs 44:255-277.

Key words: deforestation, disturbance, ecosystem, erosion, homeostasis, hydrology, nutrient-cycling, recovery, sediment-transport, stability, succession.

848 Botkin, D.B. 1993. Forest dynamics: An ecological model. Oxford: Oxford University Press. 309 pp.

A discussion of how forests grow and change over time focusing on computer simulation modeling. Keywords: modeling, forest dynamics.

849 Bourgeron, P.S. and Jensen, M.E. 1994. An overview of ecological principles for ecosystem management. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 45-57.

A discussion of the hierarchical structure of ecological systems and to sustain these ecological systems, management and monitoring must work with this hierarchy and across spatial and temporal scales.

850 Bourgeron, P.S., Humphries, H.C., DeVelice, R.L., and Jensen, M.E. 1994. Ecological theory in relation to landscape and ecosystem characterization. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 58-72.

Through characterizations of four ecosystem components: the biotic, abiotic, biotic-abiotic interrelations, and ecosytem properties, allows managers to understand ecosystem responses to management.

851 Brown, J.P.C., Miller, P.C., Tieszen, L.L., and Bunnell, F.L. 1980. An arctic ecosystem: The coastal tundra at Barrow, Alaska. Stroudsburg, PA.: Hutchinson and Ross.

852 Brown, S. and Lago, A.E. 1982. The storage and production of organic matter in tropical forests and their role in the global carbon cycle. Biotropica 14(3):161-187.

Relationships between the production of organic matter in tropical forests and climate. Keywords: soil, carbon cycle, global system, organic matter, tropical forests.

853 Brussock, P.P., Brown, A.V., and Dixon, J.C. 1985. Channel form and stream ecosystem models. Water Resources Bulletin 21(5):859-866.

Key words: alluvial, channel form, fluvial, geomorphology, stream ecosystems.

854 Bryant, J.P., Chapin, F.S., and Klein, D.R. 1983. Carbon/nutrient balance of boreal plants in relation to vertebrate herbivory. Oikos 40:357-368.

The authors examine both woody and herbaceous plants' resistance to herbivory in terms of the carbon/nutrient balance of those plants (abs.).

855 Burgess, R.L. and Sharpe, D.M., eds. 1981. Forest island dynamics in man-dominated landscapes. Ecological studies, Vol. 41. New York: Springer-Verlag. 304 pp.

Presents "research on aspects of forest dynamics in several man-dominated landscapes in the eastern United States" (p. 2).

856 Cartledge, T.R. and Propper, J.G. 1993. Pinon-juniper ecosystems through time: Information and insights from the past. In: Aldon, E.F. and Shaw, D.W., tech. coords. Managing pinyon-juniper ecosystems for sustainability and social needs, proceedings of the symposium 1993. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-236. pp. 63-71.

Using data gathered from archaelogical sites, including faunal, floral, and climatological data, researchers gained insight into pre-European settlement pinyon-juniper ecosystems.

857 Clayton, J.L. 1976. Nutrient gains to adjacent ecosystems during a forest fire: An evaluation. Forest Science 22:162-166.

The study looked at nutrient concentrations in precipitation that falls through smoke from adjacent forest fires in central Idaho (abs.).

858 Cole, C.V., Elliot, E.T., Hunt, H.W., and Coleman, D.C. 1978. Trophic interactions in soils as they affect energy and nutrient dynamics. V. Phosphorous transformations. Microbial Ecology 4:381-387.

A report of a laboratory experiment in which phosphorous immobilization and mineralization in soil processes due to microbial organisms was investigated (abs.).

859 Coleman, D.C., Reid, C.P.P, and Cole, C.V. 1983. Biological strategies of nutrient cycling in soil systems. Advances in Ecological Research 13:1-55.

A review of soil science and an in-depth discussion of soil and biological interactions specifically focusing on nutrient cycling (p. 1-2).

860 Coupland, R.T., Zacharuk, R.Y., and Paul, E.A. 1969. Procedures for study of grassland ecosystems. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 25-47.

861 Cummins, K.W. 1974. Structure and function of stream ecosystems. BioScience 24:631-641.

Examines the many functions and processes that exist in a stream ecosystem, and the implications these functions and processes have on ecological, theoretical and practical questions (p. 631-632).

862 Dick-Peddie, W.A. 1993. Ecology and diversity of pinon-juniper woodland in New Mexico. In:

Aldon, E.F. and Shaw, D.W., tech. coords. Managing pinon-juniper ecosystems for sustainability and social needs, proceedings of the symposium 1993. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-236. pp. 72-73.

Addresses the occurrence, charateristics and diversity, and changed and changing patterns of pinon-juniper savanna vegetation in New Mexico.

863 Ehrlich, P.R. and Roughgarden, J. 1987. The science of ecology. New York: Macmillan Publishing Company. 710 pp.

A basic textbook that is written to introduce readers to ecological concepts and approaches.

864 Ellenberg, H., ed. 1971. Integrated experimental ecology. Ecological studies, Vol. 2. New York: Springer-Verlag. 214 pp.

Chapters focus on specific ecologic research of primary and secondary producers, environmental conditions, and validity of ecological research results.

865 Forman, R.T.T. and Godron, M. 1986. Landscape ecology. New York: John Wiley and Sons. 619 pp.

The text provides an overview of landscape ecology principles and beliefs and also discusses landscape structure and dynamics and heterogeneity and management.

866 Forman, R.T.T., ed. 1979. Pine barrens: Ecosystem and landscape. N.Y.: Academic Press.

An interdisciplinary collection.

867 Franklin, J.F., Shugart, H.H. and Harmon, M.E. 1987. Tree death as an ecological process: The causes, consequences, and variability of tree mortality. BioScience 37(8):550-556.

868 Gabric, A.J. and Bell, P.R.F. 1993. Review of the effects of non-point nutrient loading on coastal ecosystems. Australian Journal of Marine and Freshwater Research 44(2):261-283.

Argues that collective management of hinterland and coastal-zones resources shall help initiate remediation of a growing problem with serious consequences.

869 Gardner, R.H., King, A.W., and Dale, V.H. 1993. Interactions between forest harvesting, landscape heterogeneity, and species persistence. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, DC. American Forests. pp. 65-75.

A study which provided a "practical basis for considering the complex interactions affecting species survival and for developing management objectives with the need to preserve biodiversity (abs.)"

870 Gates, D.M. and Schmerl, R.B. 1975. Perspectives of biophysical ecology. Ecological studies, Vol. 12. New York: Springer-Verlag. 609 pp.

Chapters attempt to integrate the biological and physical sciences through discussions of research that examine plant, animal, climate, and hydrologic issues.

871 Glass, L. and Mackey, M.C. 1988. From clocks to chaos: The rhythmes of life. Princeton, NJ: Princeton University Press. 248 pp.

"This book deals with the applications of mathematics to the study of normal and pathological physiological rhythms" (preface).

872 Godron, M. 1994. The natural hierarchy of ecological systems. In: Klijn, F., ed. Ecosystem classification for environmental management. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp. 69-83.

873 Goldsmith, E. 1988. Gaia: Some implications for theoretical ecology. Ecologist 18(2):64-74.

Holistic systems theories and models.

874 Hagen, J.B. 1992. An entangled bank: The origins of ecosystem ecology. New Brunswick, NJ: Rutgers University Press. 245 pp.

Examines the history, present, and future of ecological thinning in regards to the vast complexity of ecosystem proceses.

875 Harvey, A.E. 1995. Interactions between forest health and the carbon cycle: Inland northwest American and global issues. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 86-91.

Describes a concept of measuring carbon within an ecosystem to asses forest health.

876 Harvey, A.E., Geist, J.M., McDonald, G.I., Jurgensen, M.F., et al. 1994. Biotic and abiotic processes in eastside ecosystems: The effects of management on soil properties, processes, and productivity. From Vol. III: Assessment. Eastside forest ecossytem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-323. 71 pp.

Discusses how a combination of diverse physical, chemical, and biological properties effect the productivity of forest and range land soils in the eastside regions of Oregon and Washington.

877 Hessburg, P.J., Mitchell, R.G., and Filip, G.M. 1994. Historical and current roles of insects and pathogens in eastern Oregon and Washington forested landscapes. From Vol. III: Assessment. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-327. 72 pp.

Key words: Forest succession, forest health, insects and diseases, pathogens, landscape patterns, disturbance processes, ecosystem processes, fire regimes.

878 Hilborn, R. and Ludwig, D. 1993. The limits of ecological research. Ecological Applications 3(4):550-552.

Addresses the uncertainties of ecological research and expands on the limits of applied ecological research.

879 Holland, E.A. and Detling, J.K. 1990. Plant response to herbivory and below ground nitrogen cycling. Ecology 71(3):1040-1049.

Researchers looked at net nitrogen mineralization in areas altered and heavily grazed by prarie dogs to areas uncolonized by prarie dogs. Root biomass and other plant characteristics were analyzed.

880 Howell, F.G., Gentry, J.B., and Smith, M.H., eds. 1975. Mineral cycling in southeastern ecosystems. Springfield, VA: U.S. Department of Energy, Technical Information Center. 898 pp.

The book contains papers that reflect "state of the art mineral-cycling research" (p. vii).

881 Hunter, A.F. and Aarssen, L.W. 1988. Plants helping plants: New evidence indicates that beneficence is important in vegetation. BioScience 38:34-40

Several examples of plants improving the physical and biotic environment thereby benefiting other plants. Keywords: Mutualism, commensualism, interrelationships.

882 Huryn, A.D. and Wallace, J.B. 1987. Local geomorphology as a determinant of macrofaunal production in a mountain stream. Ecology 68(6):1932-1942.

Key words: Appalachian Mountains, detritus, functional group composition, geomorphology, marcrofauana, North Carolina, river continuoum, secondary production, streams.

883 Johnson, C.G., Clausnitzer, R.R., Mehringer, P.J., and Oliver, C.D. 1994. Biotic and abiotic processes of eastside ecosystems: The effects of management on plant and community ecology, and on stand and landscape vegetation dynamics. Vol. III, Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-322. 66 pp.

Key words: Pliestocene vegetation, pollen analysis, disturbance, stand development, succession, steepe ecosystem, forest ecosystem, shrublands, scablands, landscape.

884 Jordan, W.R., III, Gilpin, M.E., and Aber, J.D., eds. 1987. Restoration ecology: A synthetic approach to ecological research. Cambridge: Cambridge University Press. 342 pp.

Chapters address the basic concepts behind restoration ecology and practical applications in the context of different types of ecosystems.

885 Kaufmann, M.R. and Landsberg, J.J., eds. 1991. Advancing toward closed models of forest ecosystems. Victoria, Canada: Heron Publishing. 324 pp.

Papers presented at a workshop that examined carbon, water, and nutrient cycles in forest ecosystems and attempted to determine the feasibility of parameterizing closed-system models.

886 Knapp, A.K., Fannestock, J.T., Hamburg, S.P., Statland, L.B., et al. 1993. Landscape paterns in soil-plant water relations and primary production in tallgrass prarie. Ecology 74(2):549-560.

Researchers looked at the relationship between variations of soil-water relations, leaf xylem pressure potential and leaf-level net photosynthesis at a landscape level.

887 Kolasa, J. and Pickett, S.T.A., eds. 1991. Ecological heterogeneity. Ecological studies, Vol. 86. New York: Springer-Verlag. 332 pp.
Chapters address the conceptual foundations of ecological heterogeneity, modeling population and interspecific interactions in heterogeneous environments, and sampling methodology.

888 Lassoi, J.P. and Hinckley, T.M., eds. 1991. Techniques and approaches in forest tree ecophysiology. Bova Raton: CRC Press. 599 pp.
Compilation of papers.

889 Lawton, J.H. and Jones, C.G. 1993. Linking species and ecosystem perspectives. Trends in Ecology and Evolution 8(9): 311-313.
Discusses the reasons to link ecosystem and population ecology and the challenges to join these perspectives.

890 Leopold, A. 1939. A biotic view of land. Journal of Forestry 37(9):727-730.
The concept of a biotic pyramid with energy flowing from the bottom layer (soil) to the top (carnivores) and urges managers to think ecologically about the land.

891 Levin, S.A. 1992. The problems of pattern and scale in ecology. Ecology 73(6):1943-1967.
Key words: heterogeneity, patchiniess, pattern scale, variability.

892 Likens, G.E., ed. 1985. An ecosystem approach to aquatic ecology: Mirror Lake and its environment. N.Y.: Springer Verlag.

893 Likens, G.E., ed. 1989. Long-term studies in ecology: Approaches and alternatives. New York: Springer-Verlag. 214 pp.
Chapters provide justification and reasoning for long-term ecological studies and methods in which these types of studies can be carried out.

894 Loehle, C. 1983. Evaluation of theories and calculation tools in ecology. Ecological Modelling 19:239-247.
Argues that the concept of validation "is inappropriate for the evaluation of ecological models", and basing choices of models on logical, theoretical, and calculation types is better (abs.).

895 Major, J. 1969. Historical development of the ecosystem concept. In: van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press.

896 Matson, P.A. and Vitousek, P.M. 1990. Ecosystem approach to a global nitrous oxide budget. BioScience 40(9):667-671.

897 McIntosh, R.P. 1985. The background of ecology: Concept and theory. Cambridge: Cambridge University Press.

898 McLachlan, A., et al. 1981. Sand beach energetics: An ecosystem approach towards a high-energy interface. Esturaine, Coastal, and Shelf Science 13(1):11-25.

899 Melack, J.M. 1986. The Hubbard Brook Ecosystem: review of Likens 1985. Science 232(4753):1031-1032.
Notes how simulation models are not always appropriate, and more experimental studies are needed.

900 Naiman, R.J. 1983. The annual pattern and spatial distribution of aquatic oxygen metabolism in boreal forest watersheds. Ecological Monographs 53(1): 73-94.
Key words: Detritus, ecosystem, geomorphology, macrophytes, metabolism, mosses, periphyton, stream order, watershed.

901 Naveh, Z. and Lieberman, A. 1994. Landscape ecology: Theory and application. New York: Springer-Verlag. 360 pp.
Provides "some conceptual and practical tools for synthesis and for systems thinking and acting, necessary to deal with " landscapes (p. xii).

902 O'Neill, R.V. and Gardner, R.H., Barnthouse, L.W., Suter, G.W., Hildebrand, S.G., and Gehrs, C.W. 1982. Ecosystem risk analysis: A new methodology. Environmental Toxicology and Chemistry 1:167-177.
"A method is presented for extrapolating laboratory toxicity data to aquatic ecosystem effects such as decreased productivity or reduction in game fish biomass" (abs.).

903 O'Neill, R.V., DeAngelis, D.L., Waide, R.B., and Allen, T.F.H. 1986. A hierarchical concept of ecosystems. Monographs in Population Biology, Volume 23. Princeton, NJ: Princeton University Press. 253 pp.

The authors discuss what ecosystems are in terms of a hierarchical structure.

904 O'Neill, R.V., Bartell, S.M., and Gardner, R.H. 1983. Patterns of toxicological effects in ecosystems: A modeling study. Environmental Toxicology and Chemistry 2:451-461.

"Differences in patterns of response in a pelagic ecosystem due to seasonal exposure and differential sensitivities of populations and trophic levels to chemical stress were examined" through models.

905 Odum, E. 1993. Ecology and our endagered life-support systems. Sunderland, MA: Sinauer Associates, Inc. 301 pp.

Discusses basic ecological concepts in terms of their role in life-support.

906 Odum, E.P. 1977. The emergence of ecology as a new integrative discipline. Science 195:1289-1293.

907 Odum, H.T. 1983. Systems ecology: An introduction. N.Y.: Wiley.

908 Packham, J.R. Harding, D.J.L. 1982. Ecology of woodland processes. London: Edward Arnold. 261 pp.

Discusses woodland ecosystem processes particularly plant-animal interrlationships and the flow of energy and nutrients (pg. v).

909 Palmer, T. 1994. Lifelines: The case for river conservation. Washington, D.C.: Island Press. 254 pp.

The author states issues regarding rivers' roles in ecosystems and their importance in ecosystems (p. xiii).

910 Patman, R.J. 1994. Community ecology. London: Chapman and Hall. 178 pp.

Provides an overview and synthesis of the major issues and developments in community ecology.

911 Pearson, S.M. 1994. Ecological perspectives: Understanding the impacts of forest fragmentation. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 178-191.

Discusses how remote sensing and GIS can help to understand the impacts of forest fragmentation in Southern Appalachian forests; concentrates on effects to biological diversity.

912 Perry, D.A. 1994. Forest ecosystems Baltimore, MD: The Johns Hopkins Univesity Press. 649 pp.

Provides a general overview of forest ecosystems and covers basic terms and concepts along with other major issues of ecosystems such as disturbance, succession, and biodiversity.

913 Pomeroy, L.R. and Alberts, J.J., eds. 1988. Concepts of ecosystem ecology: A comparative view. Ecological studies, Vol. 67. New York: Springer-Verlag.384 pp.

Chapters address two basic questions: 1)What is the proper study of ecology, and are we doing it? 2) What have we learned about ecosystem function? Chapters are based off of many ecosystem types.

914 Rapport, D.J., Regier, H.A., and Hutchinson, T.C. 1985. Ecosystem behavior under stress. American Naturalist 125(5):617-640.

915 Reichle, D.E., ed. 1970. Analysis of temperate forest ecosystems. Ecological studies, Vol. 1. New York: Springer-Verlag. 304 pp.

Chapters discuss ecological issues such as: analysis of ecosystems, primary producers, consumer organisms, decomposer populations, nutrient cycling, and hydrolgic cycles.

916 Rissler, P.G. and Parton, W.J. 1982. Ecosystem analysis of the tallgrass prarie: Nitrogen cicle. Ecology 63(5):1342-1351.

"Nitrogen cycling in tallgrass prarie was studied by using content and concentration data for various ecosystem components on grazed and ungrazed tallgrass prarie in north-east Oklahoma" (abs.).

917 Schultz, A.M. 1969. A study of an ecosystem: The Arctic Tundra. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 77-93.

918 Shafi, M. and Raza, M., eds. 1992. Forest ecosystems of the world. Jaipur: Rawat Publications. 214 pp.
The book contains papers that describe the crisis and management of forest ecosystems in developed and developing countries.

919 Smith, R.L. 1992. Elements of ecology. New York: Harper Collins Publishers Inc. 617 pp.
Provides a basic overview to many ecological concepts.

920 Spies, T.A. 1994. Ecological perspective: The nature of mature and old-growth forest ecosystems. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 48-62.
Reviews what is known about the ecological characteristics of old-growth forests, major gaps in knowledge, and the role of remote sensing and GIS in bridging those gaps.

921 Spurr, S.H. 1969. The natural resource ecosystem. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 3-7.
Discusses human's role in the ecosystem and developments in natural resource sciences up to 1969.

922 Stern, K. and Rouche, L., eds. 1974. Genetics of forest ecosystems. Ecological studies, Vol. 6. New York: Springer-Verlag. 330 pp.
Takes an interdisciplinary approach to ecosystems adaptive systems and genetic systems.

923 Strong, T.F. and Niese, J.N. 1994. Tree quality in hardwood ecosystem management --- What are the biological and economic tradeoffs? In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 156-166.
"In this paper, we discuss the tradeoffs between tree quality and value after managing a hardwood ecosystem under different cutting methods for 40 years" (p. 156).

924 Swank, W.T. and Crossley, D.A., Jr. 1988. Forest hydrology and ecology at Coweeta. Ecological studies, Vol. 66. New York: Springer-Verlag. 469 pp.
Chapters describe results of research efforts conducted within the Coweeta Hydrologic Laboratory forested catchments as the common basis of ecosystem interpretation.

925 Tamm, C.O. 1991. Nitrogen in terrestrial ecosystems: Questions of productivity, vegetational changes, and ecosystem stability. New York: Springer-Verlag. 115 pp.

926 Tansley, A.G. 1935. The use and abuse of vegetational concepts and terms. Ecology 16:284-307.
This paper is often cited as the origination of the concept "ecosystem."

927 Urban, D.L., O'Neill, R.V., and Shugart, H.H., Jr. 1987. Landscape ecology: A hierarchical perspective can help scientists understand spatial paterns. BioScience 37(2):119-127.

928 Waring, R.H. and Schlesinger, W.H. 1985. Forest ecosystems: Concepts and management San Diego: Academic Press, INC. 340 pp.
The authors "discuss an emerging insight that there are key linkages between the process that operate in forests." (p. xi)

929 Waring, R.H., ed. 1982. Carbon uptake and allocation in subalpine ecosystems as a key to management. Proceedings of an IUFRO workshop. Corvallis, OR. Aug. 2-3, 1982. Corvallis, OR: Forest Research Laboratory, Oregon State University. 88 pp.

930 West, D.C., Shugart, H.H., and Botkin, D.B., eds. 1981. Forest succession. New York: Springer-Verlag. 517 pp.
This book was designed to "provide a forum for ecologists to present their current research and present day interpretation of data" (p. v).

931 Woodmansee, R.G. 1978. Additions and losses of nitrogen in grassland ecosystems. BioScience 28(7):448-453.
The author estimates annual addition and losses of nitrogen in seven grassland ecosystems of the U.S., and what implications this has for the role of the hydrologic cycle, consumers, and succession.

932 Woodmansee, R.G. 1992. An ecological perspective of new perspectives. In: Bartlett, E.T.

and Jones, J.R., comps. Rocky Mountain new perspectives proceedings of a regional workshop. Fort Collins, CO, July 8-10, 1991. Fort Collins, CO: USDA Forest Service Rocky Mountan Station RM-GTR-220. pp. 8-19.

"The purpose of this paper is to present an argument for a concept of sustainability which I believe is essential for the prudent use and management of the earth's ecosystems" (p. 8-9).

933 Woolcott, D. 1974. Ecological impact of thermal loading on a piedmont river: An ecosystem approach. NTIS Report PB-241 035 and 036.

VEGETATION PATTERNS AND CHANGE/INVENTORYING

934 Agee, J.K. 1994. Fire and weather disturbances in terrestrial ecosystems of the eastern Cascades. From Vol. III: Assessment. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-320. 52 pp.

Key words: Forest fire, fire history, Juniperus occidentalis, Pinus ponderosa, Pseudotsuga menziesii, Abies grandis, Abies lasiocarpa, Pinus contorta.

935 Albert, D.A. 1993. Use of landscape ecosystems for species inventory and conservation. Endangered Species Update 10(3-4):20-25.

Examines the usefulness of the Landscape Ecosystem Classification and map for evaluating the inventory of plant communities and argues for an ecosystem approach to species inventorying and management.

936 Auclair, A.N.D. and Bedford, J.A. 1994. Conceptual origins of catastrophic forest mortality in the Western United States. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 249-265.

The authors discuss historic antecedents leading to the "extraordinary levels of tree mortality and wildfire in the western U.S." and estimates how prescribed burning can save wood.

937 Avers, P.E., Cleland, D.T., and McNab, W.H. 1994. National Hierarchical Framework of Ecological Units. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 48-61.

Describes a "regionalization, classification, and mapping system for stratifying the Earth into progressively smaller areas of increasingly uniform and ecological potentials" (abs.).

938 Ball, G.L. 1994. Ecosystem modeling with GIS. Environmental Management 18(3):345-349.

"This paper examines several grid-based models and addresses the use of GIS programs to construct spatial dynamic models" (abs.).

939 Barney, M.A. and Frischknecht, N.C. 1974. Vegetation changes following fire in the pinyon-juniper type of west-central Utah. Journal of Range Management 27(2):91-96.

Researchers discuss what specific species and the general trend pinyon-juniper woodlands undergo when disturbed by fire.

940 Botkin, D.B., Januk, J.F., and Wallis, J.R. 1972. Some ecological consequences of a computer model of forest growth. Journal of Ecology 60:849-872.

A computer simulation of forest growth that "successfully reproduces the population dynamics of the trees in a mixed-species, mixed age forest from a conceptual bias" (pg. 849). Keywords: modelling

941 Bourgeron, P.S., Humphries, H.C., and Jensen, M.E. 1994. Landscape characterization: A framework for ecological assessment at regional and local scales. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 267-281.

942 Brenner, R.N. and Jordan, J.K. 1993. An ecosystem classification and planning model applied at multiple scales. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 Workshop in Washington, DC. American Forests. pp. 155-164.

Discussion of the ecological classification and inventory (EC & I) model used on the Ottawa

National Forest and how it can aid in ecosystem management.

943 Brown, J.K. 1995. Fire regimes and their relevance to ecosystem management. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Conference. Bethesda, MD: Society of American Foresters.
pp. 171-178.
"A fire regime classification that recognizes stand-replacement, nonlethal understory, mixed and variable fire severities is discussed" to be used in meeting the goals of ecosystem management (abs.).

944 Brubaker, L.S. 1988. Vegetation history and anticipating future vegetation change. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 41-61.
Evolutionary history of vegetation change in areas of low human impact in North America (abs.).

945 Christensen, N.L. 1988. Succession and natural disturbance: Paradigms, problems, and preservation of natural ecosystems. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 62-86.
"The consequences of natural disturbance and successional processes are discussed" in relation to major questions managers of natural ecosystems face (abs).

946 Covington, W.W. and Moore, M.M. 1994. Postsettlement changes in natural fire regimes and forest structure: Ecological restoration of old-growth ponderosa pine forests. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID: Binghamton, NY: Forest Products Press. pp. 153-181.
Presents changes in natural fire regimes focusing on southwestern ponderosa pine forests and offers possible methods for remedying some problems associated with these postsettlement changes.

947 Covington, W.W., Everett, R.L., Steele, R., Irwin, L.L., et al. 1994. Historical and anticipated changes in forest ecosystems of the Inland West of the United States. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 13-63.

948 Crow, T.R. 1994. Northern lake states late-successional forests: Ecological classification and change detection as guides in ecosystem protection and restoration. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 213-217.

949 Csanyi, S. 1994. Moving toward coordinated management of timber and other resource uses in Hungarian forests. The Forestry Chronicle 70(5):555-561.

950 Daubenmire, R. 1968. Plant communities: A textbook of plant synecology. New York: Harper and Row. 300 pp.
The text covers the reasons and methods of analyzing and classifying plant communities and ecosystems (preface).

951 Davis, N.D. 1994. Following the mapmaker. American Forests 100(5-6) May/June:23-25, 58-59.
Discusses the work that geographer Bob Bailey is doing for the U.S. Forest Service to map ecoregions of the United States.

952 Fiddler, G.O. and McDonald, P.M. 1994. Vegetation management: A key part of ecosystem management. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. SE-GTR-88. pp. 234-237.
Describes a study that details the importance of understanding vegetation manipulation in ecosystem management.

953 Forman, R.T.T. 1990. Ecologically sustainable landscapes: The role of spatial configuration. In: Zonneveld, I.S. and Forman, R.T.T., eds. Changing landscapes: An ecological perspective. New York: Springer Verlag.

954 Graham, R.T. 1994. Silviculture, fire, and ecosystem management. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 339-351.

955 Holling, C.S. 1981. Forest insects, forest fires, and resilience. In: Fire regimes and ecosystem processes. Washington, DC: USDA Forest Service, Washington Office, WO-GTR-26. pp. 445-464.

Focuses on spruce budworm/forest interactions and fire/forest interactions to gain a better understanding of system resiliencey.

956 Jameson, D.A. 1994. Continuous and discontinuous change in a southwestern woodland. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 137-142.

The author discusses models that address continuous and discontinuous changes in plant communities. He uses the fold catastrophe and cusp catastrophe models of disturbance as examples.

957 Jimmerson, T.M. and Jones, D.W. 1994. Combining ecological classification and silviculture prescriptions to achieve desired future forest conditions. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station. pp. 99-112.

958 Klijn, F. 1994. Spatially nested ecosystems: Guidelines for classification from a hierarchical perspective. In: Klijn, F., ed. Ecosystem classification for environmental management. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp. 85-116.

959 Klijn, F., ed. 1994. Ecosystem classification for environmental management. Dordrecht, The Netherlands: Kluwer Academic Publishers. 293 pp.

"(D)iscusses a wealth of theories, concepts, and methods from plant ecology, vegetation science, physical geography, and other environmental sciences" (p. vi).

960 Kucher, A.W. 1988. Ecological vegetation maps and their interpretation In: Kucher, A.W. and Zonneveld, I.S. 1988. Vegetation mapping. Dordrecht, Netherlands: Kluwer Academic Publishers. pp. 469-479.

Discusses mapping site characteristics, different types of ecological maps, and the interpretation of ecological vegetation maps.

961 Kuchler, A.W. and Zonneveld, I.S., eds. 1988. Vegetation mapping. Dordrecht, Netherlands: Kluwer Academic Publishers. 635 pp.

Chapters address basic considerations of vegetation mapping along with more technical aspects of vegetation maps and their preparation.

962 Lehmkuhl, J.F., Hessburg, P.F., Everett, R.L., Huff, M.H., and Ottmar, R.D. 1994. Historical and current forest landscapes of eastern Oregon and Washington. Part I: Vegetation pattern and insect and disease hazard. From Vol. 3: Assessment. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GNR-328. 88 pp.

Key words: Historical vegetation, landscape pattern, insect and disease hazard, range of variation, scale, forest health, disturbance, fire suppression, Oregon, Washington, Cascades, Blue Mountains.

963 Lenz, R.J.M. 1994. Ecosystem classification by budgets of material; the example of forest ecosystem classified as proton budget types. In: Klijn, F., ed. Ecosystem classification for environmental management. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp. 117-137.

"A conceptual framework for a highly flexible approach to classification is proposed, based on a hierarchy of different levels of organization of matter and on the necessity of integration" (abs.).

964 McMahon, C.K., Miller, J.H., and Thomas, D.F. 1994. The role of low impact herbicide treatments in ecosystem management. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 242-251.

965 McNab, W.H. and Avers, P.E., comps. 1994. Ecological subregions of the United States: Section descriptions. Washington, D.C.: USDA Forest Service, Ecosystem Management.
Compilation of papers.

966 McNab, W.H. and McCorquodale, S. 1994. Ecological classification, mapping, and inventory in the Southern Region and its potential application using Geographic Information Systems. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 63-67.

967 Miles, J. and Walton, D.W.H., eds. 1993. Primary succession on land: Special publication number 12 of the British Ecological Society. Oxford: Blackwell Scientific Publications. 309 pp.
Chapters discuss concepts and processes of primary succession on a variety of different ecosystems.

968 Mooney, H.A. and Gorton, M., eds. 1983. Disturbance and ecosystems: Components of response. Ecological studies, Vol. 44. New York: Springer-Verlag. 292 pp.
Chapters address the components of the biosphere, landscape, ecosystem, species physiology, and population and their role in ecosystem disturbance.

969 Mooney, H.A., Bonnicksen, T.M., Christensen, N.L., Lotan, J.E., and Reiners, W.A., eds 1981. Proceedings of the conference: Fire regimes and ecosystem properties. Honolulu, Hawaii, December 11-15, 1978. Washington, D.C.: USDA Forest Service Washington Office, General Technical Report GTR-WO-26.
Papers discuss fire's role in forest ecosystems, its impact on plants and fire policy and ecosystem management.

970 Moore, M.M. 1994. Analysis and mapping of late-successional forests in the American Southwest. In: Sample, V.A., ed. Remote sensing and GIS in ecosystem management. Covelo, CA: Island Press. pp. 108-110.

971 Morgan, P., Aplet, G. H., Haufler, J.B., Humphries, H.C., et al., 1994. Historical range of variability: A useful tool for evaluating ecosystem change. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers form the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 87-111.
Keywords: Natural range of variability, hierarchy, presettlement, scale, sustainability, forest health, ecosystem management.

972 Noss, R.F., LaRoe, E.G., III, and Scott, J.M. 1995. Endangered ecosystems of the United States: A preliminary assessment of loss and degradation. Biological Report 28. February, 1995. Washington, D.C.: USDI National Biological Service. 58 pp.

973 Oliver, C.D., Harrington, C., Bickford, M., Gara, R., et al. 1994. Maintaining and creating old growth structural features in previously disturbed stands typical of the eastern Washington Cascades. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 353-387.

974 Pickett, S.T.A. and White, P.S., eds. 1985. The ecology of natural disturbance and patch dynamics. Orlando, FL: Academic Press, INC. 472 pp.
The book's chapters cover regional and broad subjects relevant to disturbance's and patch dynamic's role in the ecosystem (p. xiii).

975 Pickett, S.T.A., Kolasa, J., Armesto, J.J., and Collins, S.L. 1989. The ecological concept of disturbance and its expression at various hierarchical levels. Oikos 54:129-136.
The authors take an ecological approach to disturbance and discuss disturbance associated with "various specific ecological levels of organization (abs.)."

976 Rudis, V.A. and Skinner, T.V. 1990. Fire's importance in South Central U.S. forests: Distribution of fire evidence. In: Nodvin, S.C. and Waldrop, T.A., eds. Fire and the environment: Ecological and cultural perspectives; proceedings of an international symposium. Asheville, NC: USDA Forest Service Southeast Forest Experiment Station SE-GTR-69. pp. 240-251.

This report describes the widespread extent and distribution of fire evidence which emphasizes the importance of fire research and potential changes in fire management.

977 Runhaar, H.J. and Udode Haes, H.A. 1994. The use of site factors as classification characteristics for ecotopes. In: Klijn, F., ed. Ecosystem classification for environmental management. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp. 139-172.

"This chapter describes a classification of small-scale ecosystems or ecotypes using abiotic and biotic site factors as classification characteristics" (abs.).

978 Shugart, H.H., Smith, T.M., Hulpin, P.J., and Weishampel, J.F. 1993. Simulation models of succession. In: LeMaster, D.C. and Sedjo, R.A., eds. Modeling sustainable forest ecosystems. Proceedings of a 1992 workshop in Washington, DC. American Forests. pp. 47-64.

Reviews "models designed to simulate the dynamics of ecological succession and on the application of these models to problems in sustainable forestry (p.47)."

979 Steele, R. 1994. The role of succession in forest health. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 138-190.

980 Turner, M.G., Gardner, R.H, O'Neill, R.V., and Pearson, S.M. 1994. Multiscale organization of landscape heterogeneity. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. II: Ecosystem management: Principles and applications. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-318. pp. 73-79.

A discussion of landscape connectivity, its hierarchical organization, variation over temporal and spatial scales, and the role of disturbance (abs.).

981 Williams, G.W. 1994. References on the American Indian use of fire in ecosystems. Draft. Portland, OR: USDA Forest Service Pacific Northwest Region.

Note this is a DRAFT and much of the analysis and conclusions drawn are being studied and sometimes contested by a few Native American scholars.

982 Zonneveld, I.S. 1994. Basic principles of classification. In: Klijn, F., ed. Ecosystem classification for environmental management. Dordrecht, The Netherlands: Kluwer Academic Publishers. pp. 23-47.

Discusses the needs and possibilities of developing landscape and ecosystem classification systems and the role of these classification systems.

983 Zonneveld, I.S. 1988. Introduction to the application of vegetation maps. In: Kuchler, A.W. and Zonneveld, I.S., eds. Vegetation mapping. Dordrecht, Netherlands: Kluwer Academic Publishers. pp. 487-490.

A brief overview of the character of vegetation in relation to application and the goals of vegetation mapping.

984 Zonneveld, I.S. 1988. Landscape (ecosystem) and vegetation maps: Their relation and purpose. In: Kuchler, A.W. and Zonneveld, I.S., eds. Vegetation mapping. Dordrecht, Netherlands: Kluwer Academic Publishers. pp. 481-486.

WILDLIFE AND RANGE

985 Brennan, L.A. 1994. Broad-scale population declines in four species of North American Quail: An examination of possible causes. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-PNW-247. pp. 44-50,

The decline of North American Quails is examined in an ecological context looking at a variety of factors as opposed to single causes. Management is also examined in an ecological context.

986 Bull, E.L. 1994. Conserving wildlife habitat. In: Everett, R.L., comp. Volume IV: Restoration of stressed sites and processes. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-330. pp. 37-38.

"This paper presents options for forest management direction, with wildlife as the key emphasis, for northeastern Oregon forests affected by the western spruce budworm" (p. 37).

987 Corn, P.S. 1994. What we know and don't know about amphibian declines in the West. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 59-67.

Discusses amphibian declines in the West and how ecosystem management may be employed in this situation but causes must be known before any management can be prescribed.

988 Crawley, M.J. 1983. Herbivory: The dynamics of animal-plant interactions. Oxford: Blackwell Scientific Publications. 437 pp.

Discusses how plant population characteristics affects animal populations and how animals grazing habits affect plants. Keywords: wildlife, range, animal-plant interaction

989 Erickson, J.R. and Toweill, D.E. 1994. Forest health and wildlife habitat management on the Boise National Forest, Idaho. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 389-409.

Evaluates three management strategies in terms of the risk of wildfire's effects on plant community diversity and habitat for the pleated woodpecker and flammulated owl.

990 Everett, R.L. and Hardesty, L.H. 1994. Restoration of stressed, forested rangelands. In: Everett, R.L., comp. Vol. 4: Restoration of stressed sites and processes. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-330. pp. 99-102.

991 Finch, D.M., Block, W.M., Fletcher, R.A., and Fager, L.F. 1993. Integrating neotropical migratory birds into Forest Service plans for ecosystem management. Transactions of the 58th North American Wildlife and Natural Resources Conference:417-421.

992 Garsd, A. and Howard, W.E. 1982. Microtine population fluctations: An ecosystem approach based on time-series analysis. Journal of Animal Ecology 51(1):225-234.

A 21-year study of voles in Northern California.

993 Graham, R.T., Jain, T.B., Reynolds, R.T., and Boyce, D.A. 1994. From single species management to ecosystem management, "The goshawk." In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experient Station SE-GTR-88. pp. 113-123.

994 Heady, H.F. and Child, R.D. 1994. Rangeland ecology and management. Boulder, CO: Westview Press. 519 pp.

The text "focuses on the ecology of rangeland grazing, practical management of animals, and vegetational manipulation (p. xv)."

995 Huff, M.H., Norris, L.K., Nyberg, J.B., and Wilkin, N.L., coords. 1994. Expanding horizons of forest ecosystem management: Proceedings of the third habitat futures workshop; 1992 October. Vernon, BC. Portland, OR: USDA Forest Service, Pacific Northwest Station, General Technical Report PNW-GTR-36. 100 pp.

"Presented here are five papers that examine ecosystem management concepts at international, national, regional, and local scales" (abs). Focusing on issues dealing with wildlife-habitat relations.

996 Irwin, L.L. 1994. A process for improving wildlife habitat models for assessing forest ecosystem health. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID: Binghamton, NY: Forest Products Press. pp. 293-306.

Discusses why and how wildlife habitat models can be better predictors of wildlife population responses to landscape-scale changes in forest ecosystems if they are improved.

997 Leopold, A. 1930. Environmental controls for game through modified silviculture. Journal of Forestry 28(3):321-326.

The author stresses the need for coordinated management of forestry and wildlife and provides reasons and possible techniques.

998 Lewis, J.K. 1969. Range management viewed in the ecosystem framework. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 97-187.

Discusses perspectives and definitions dealing with range management and how range management fits into an ecosystem framework.

999 Marcot, B.G., Wisdom, M.J., Li, H.W., and Castillo, G.C. 1994. Managing for featured, threatened, endagered, and sensitive species and unique habitats for ecosystem sustainability. From Vol. 3: Assessment. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-329. 39 pp.

Keywords: Wildlife habitat, fish habitat, biodiversity, eastside, threatened species, endangered species, sensitive species, management indicator species, species planning.

1000 Martin, S.K. 1994. Priority wildlife habitats and restoration management. In: Everett, R.L., comp. Vol. 4: Restoration of stressed sites and processes. Eastside forest ecosystem health assessment. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-330. pp. 39-42.

Uses ecosystem management principles to discuss protection of unique wildlife habitats in eastside forest ecosystems. Focusing on insect infestation threats.

1001 Mehlhop, P. and Vaughn, C.C. 1994. Threats to and sustainability of ecosystems for freshwater mollusks. In: Covington, W.W. and Debano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land managmenet. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 68-77.

The authors discuss the causes of decline of prosobranch and ecological management strategies necessary to sustain the snails in North America.

1002 Meslow, E.C. 1993. Spotted owl protection: Unintentional evolution toward ecosystem management. Endangered Secies Update 10(3-4):34-38.

Examines the history of spotted owl management in the Pacific Northwest and how that management addresses the conservation of old-growth forest ecosystems.

1003 Miller, R.M. 1993. Is ranching on public lands destroying the ecosystem--A response. Veterinary Medicine 88(8):711-712.

1004 Monsen, S.B. and Kitchen, S.G., comps. 1994. Proceedings ecology and management of annual rangelands. Boise, ID, May 18-21, 1992. Ogden, UT: USDA Forest Service Intermountain Research Station, General Technical Report INT-GTR-313. 416 pp.

1005 Murphy, D.D. and Noon, B.R. 1992. Integrating scientific methods with habitat conservation planning: Reserve design for Northern Spotted Owls. Ecological Applications 2(1):3-17.

1006 Patton, D.R. 1992. Wildlife habitat relationships in forested ecosystems. Portland, OR: Timber Press. 392 pp.

Focuses on "species that use, are associated with, or depend on trees and forests for part or all of their habitat requirements" and discusses factors affecting habitats and populations (p. 14).

1007 Peterson, R.O. 1988. The pit or the pendulum: Issues in large carnivore management in natural ecosystems. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 105-117.

The author discusses the difficulties associated with managing for large carnivores and importance of maintaining large carnivores as part of the ecosystem (abs.).

1008 Pieper, R.D. and Beck, R.F. 1990. Range condition from an ecological perspective: Modifications to recognize multiple use objectives. Journal of Range Management 43(3):550-551.

Stress the use of more ecological terms and concepts (climax, late-seral, mid-seral) to rate range condition and to develop relationships between products and successional stages (abs.).

1009 Rinne, J.N. 1994. Declining Southwestern aquatic habitats and fishes: Are they sustainable? In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 256-265.

The author discusses the decline of aquatic habitat for fishes in the Southwest concentrating on hydrologic, watershed, and biological impacts along with conservation efforts to sustain native fishes.

1010 Sheffield, M.J. 1993. Is ranching on public lands destroying the ecosystem? Veterinary Medicine 88(8):711-712.

1011 Simberloff, D. 1994. How forest fragmentation hurts species and what to do about it. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 85-90.

The author discusses effects of fragmentation in the longleaf pine ecosystem in the Southeast.

1012 Smith, B.H. 1980. Not all beaver are bad: Or, an ecosystem approach to stream habitat management. Proceedings of the Annual Meeting of the American Fisheries Society.

1013 Stelfox, H.A., Ironside, G.R., and Kansas, J.L., eds. 1991. Guidelines for the integration of wildlife and habitat evaluations with ecological land survey. Wildlife Working Group of the Canada Committee on ecological land classification. Ottawa, Ontario: Wildlife Habitat Canada and Canadian Wildife Service (Environment Canada). 107 pp.

The book contains papers that discuss practical and theoretical issues of ecological land surveys and how wildlife management can be improved through ecological land surveys.

1014 Talbot, L.M. 1978. The role of predators in ecosystem management. In: Holdgate, M.W. and Woodman, M.J., eds. The breakdown and restoration of ecosystems. New York: Plenum Press. pp. 307-321.

Considers the role of predators, primarily mammalian, in temperate zone ecosystems and the importance of maintaining the presence in order to preserve ecosystem integrity.

1015 Thompson, I.D. 1987. The myth of integrated wildlife/forestry management. Queen's Quarterly 94(3):609-621.

Argues there is a lack of societal commitment to integrated multiple-use forest management.

1016 U.S.D.I. Bureau of Land Management. 1993. Grazing administration regulations, proposed rule. Washington, D.C.: Federal Register 58(155): 43208-43231.

1017 USDA Forest Service 1992. Change on the range: New perspectives for rangeland research in the 90's. Washington, D.C.: USDA Forest Service, Miscellaneous. 13 pp.

Describes the type of research needed to address changing range management on Forest

Service lands. Specifically targets: rangeland watershed interactions, biodiversity, widlife/lifestock issues.

1018 Verner, J. and McKelvey, K.S. 1994. Developing and managing sustainable forest ecosystems for spotted owls in the Sierra Nevada. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 82-98.

Summarizes the needs of spotted owls in forest ecosystems, past and present forest management of this habitat, and the future directions of forest management in the Sierra Nevada.

1019 Wagner, F.H. 1969. Ecosystem concepts in fish and game management. In: Van Dyne, G.M., ed. The ecosystem concept in natural resource management. New York: Academic Press. pp. 259-307.

Addresses problems with single species exploitation and describes vegetation composition and secondary production in ungulates along with population regulation.

1020 West, N.E. 1993. Biodiversity of rangelands. Journal of Range Management 46(1):2-13.

The author discusses why understanding all the different species in a rangeland is important and suggests how measuring and managing biodiversity may be improved.

FOREST ISSUES

1021 Allen, T.F.H. and Hoekstra, T.W. 1994. Toward a definition of sustainability. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological appraoch to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 98-107.

1022 Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A. 1993. Defining sustainable forestry. Washington, D.C.: Island Press. 328 pp.

Papers explore the objectives of sustainable forestry, using ecosystem management when desiging sustainable ecological systems, and social and policy considerations in defining sustainable forestry.

1023 Blatner, K.A., Keegan, C.E. III, O'Laughlin, J., and Adams, D.L. 1994. Forest health management policy: A case study in southwestern Idaho. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 317-337.

"This paper describes some of the recent forest conditions on the Payette and Boise National Forests and Boise Cascade Corporation lands in southwestern Idaho" and strategies used in salvage (p. 319).

1024 Bowyer, J. 1995. Wood and other raw materials for the 21st century: Where will they come from? Forest Products Journal 45(2):17-24.

1025 Cairns, J., McCormick, P.V., and Niederlehner, B.R. 1993. A proposed framework for developing indicators of ecosystem health. Hydrobiologia 263(1):1-44.

Linkages between human activities and well-being and the state of the environment are argued to be essential to evaluation of a system's health.

1026 Caraher, D. and Knapp, W.H. 1994. Assessing ecosystem health in the Blue Mountains. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 34-41.

Using the Sustaining Ecological Systems framework, the authors asses the forest management's shift from focusing on forest health to focusing on ecosystem health in the Blue Mountains.

1027 Clancy, K.M. 1994. Research approaches to understanding other roles of insect defoliators in forest ecosystems. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 211-217.

"I review some of the empirical approaches that have been used by other scientists to investigate the roles of insect defoliators and recyclers of nutrients and regulators of primary production"(abs).

1028 Costanza, R. 1993. Developing ecological research that is relevent for achieving sustainability. Ecological Applications 3:579-581.

1029 Costanza, R. 1991. Toward and operational definition of ecosystem health. In: Costanza, R., Norton, B.G. and Haskell, B.D., eds. Ecosystem health: New goals for environmental management. Covelo, CA: Island Press. pp. 239-256.

1030 Craig, G.A. 1994. Forest health on nonindustrial private lands: Meeting owners' needs and wants. Journal of Forestry 92(7):27-28.

The author argues that forest health is determined by the capacity of the forest to meet objectives and "ecologically sound management is the best means to achieve them (p.27)."

1031 Ervin, D.E. and Berrens, R.P. 1994. Critical economic issues in ecosystem management of a national forest. In: Jensen, M.E. and Bourgeron, P.S., tech. eds. Vol. 2: Ecosystem management-

principles and applications. Portland, OR: USDA Forest Service Pacific Northwest Research Station. General Technical Report PNW-GTR-318. pp. 298-306.

1032 FEMAT 1993. Forest ecosystem management: An ecological, economic, and social assessment. Washington, D.C.: Government Printing Office.

1033 Ferguson, D.E. 1994. Advance regeneration in the Inland West: Considerations for individual tree and forest health. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 411-422.

1034 Gottschalk, K.W. and MacFarlane, W.R. 1994. Using silviculture to increase forest health: A national forest/research/state and private demonstration area. In: Foley, L.H., comp. Silviculture: From the cradle of forestry to ecosystem management. Proceedings of the National Silviculture Workshop. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station SE-GTR-88. pp. 132-137.

Describes an area in the Glenwood Ranger District, Jefferson National Forest to demonstrate the effectiveness of silvicultural treatments in minimizing gypsy effects.

1035 Gray, G. and Clark, L. 1992. The changing science of forest health. American Forests 98(11-12):13-16.

Describes an ecological approach to managing for forest health specifically focusing on applying the Sustaining Ecological Approach (SEA) using the Blue Mountains in the Pacific Northwest.

1036 Grigal, D.F. 1988. Long range impacts of air pollution on terrestrial resources. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 118-134.

The effects of natural ecosystems due to long- and short-term contact with air pollution (abs.).

1037 Harvey, A.E. 1994. Integrated roles for insects, diseases and decomposers in fire dominated forests of the Inland Western United States: Past, present and future forest health. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 211-220.

1038 Haufler, J.B. 1994. An ecological framework for planning for forest health. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 307-316.

Proposes a strategy for planning for forest health using an appropriate ecological land classification based on ecological land types or habitat types.

1039 Johnson, K.N. 1994. Sustainable harvest levels and short term sales. Journal of Forestry 92(4):41-43.

Using existing forest plans or proposed forest plans as the base, sustainable harvest levels were developed under the rules of the Forest Ecosystem Management Assessment Team (FEMAT) and discussed.

1040 Kimmins, J.P. 1990. Modelling the sustainability of forest production and yield for a changing and uncertain future. Forestry Chronicle 66(3):271-280.

1041 Kimmins, J.P. 1995. The health and integrity of forest ecosystems are they threatened by forestry? In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 22-40.

Stresses that there must be a better understanding of ecology and the social and economic aspects of the values and of forest conditions before forest managers can set clear objectives for management.

1042 Kolb, T.E., Wagner, B.R., and Covington, W.W. 1994. Concepts of forest health: Utilitarian and ecosystem perspectives. Journal of Forestry 92(7):10-15.

Discusses different definitions of forest health, problems in scaling the concept of health from individual trees to ecosystems, and the relationship between forest health and pest management (p. 11).

1043 Lankford, L. 1994. Forest health on nonindustrial private lands: Ecosystem forestry from the ground up. Journal of Forestry 92(7):26, 28.

With an understanding that forests are dynamic processes, the author states that nonindustrial private forest land owners can learn about forest health and provide on-the-ground ecosystem management.

1044 Liebhold, A.M. 1994. Use and abuse of insect and disease models in forest pest management: Past, present, and future. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 204-210.

1045 Lucier, A.A. 1994. Criteria for success in managing forested landscapes. Journal of Forestry 92(7):20-24.

The author discusses the goals of ecosystem management and how working off a basis of knowledge regarding forest health can help managers reach many of those goals.

1046 MacCleery, D.W. 1993. American forests: A history of resilience and recovery. Durham, NC.: Forest History Society.

1047 MacCleery, D.W. 1994. What on Earth have we done to our forests? A brief overview of the conditions and trends of U.S. forests. Washington, D.C.: USDA Forest Service.

1048 Mandzak, J.M. and Moore, J.A. 1994. The role of nutrition in the health of Inland Western forests. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 191-210.

Discusses the premise that "forest nutrition, nutrient cycling and nutrient management are critical factors for the health of Inland Western forests and for management of the ecosystems." (p. abs.).

1049 Maser, C. 1988. The redesigned forest. San Pedro: R&E Miles.

Northwest Pacific area of North America.

1050 McKetta, C., Blatner, K.A., Graham, R.T., Erickson, J.R., and Hamilton, S.S. 1994. Human dimensions of forest health choices. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 135-149.

Addresses socioeconomic forest health considerations relevant to different forest management strategies.

1051 Moir, W.H. and Mowrer, H.T. 1995. Unsustainablility. Forest Ecology and Management 73:239-248.

Discusses the fact that most decisions based on long-term projections from computer models fail to provide for sustainable conditions due to uncertainty and chaos. Suggestions for planning are given.

1052 Morelan, L.Z., Menley, S.P., and Corroll, F.O. 1994. Forest health on the Boise National Forest. Journal of Forestry 92(8):22-24.

An example of ecosystem management in practice. A response to the severe forest fires of 1986 and the potential for additional fires.

1053 Noss, R.F. 1993. Sustainable forestry or sustainable forests? In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 17-43.

The author conceptualizes the definition and practices of sustainability and discusses biodiversity, specific forest management practices, monitoring and assessment, and the uncertainty of the future.

1054 O'Laughlin, J., Livingston, R.L., Thier, R., Thornton, J., et al. 1994. Defining and measuring forest health. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. 461 pp.

Develops a broad definition that provides criteria in which forest health can be measured and managed for.

1055 O'Laughlin, J. 1994. Assessing forest health conditions in Idaho with forest inventory data. In: Sampson, R.N. and Adams, D.L., eds. Assessing

forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 221-247.

1056 O'Laughlin, J. 1995. Forest health concepts and forest resource management. In: Society of American Foresters. Managing forests to meet people's needs. Proceedings of the 1994 Society of American Foresters/Canadian Institute of Forestry Convention. Bethesda, MD: Society of American Foresters. pp. 92-97.

Discusses the concept of forest health and reviews forests in Idaho as examples of intensively- and extensively-managed forests.

1057 O'Laughlin, J., MacCracken, J.G., Adams, D.L., Bunting, S.C., and et al. 1993. Forest health conditions in Idaho. Boise, ID: Idaho Forest, Wildlife, and Range Policy Analysis Group, University of Idaho.

Includes defining the characteristics and prospects of ecosystem approach and desired future conditions.

1058 Oliver, C.D., Ferguson, D.E, Harvey, A.E., Malany, H.S., et al. 1994. Managing ecosystems for forest health: An approach and the effects on uses and values. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 113-133.

"This paper will describe how forests can be managed to restore and maintain forest health." (p. 115).

1059 Rolston, H. and Coufal, J. 1991. A forest ethic and multivalue forest management. Journal of Forestry 89(4):35-40.

1060 Romm, J. 1993. Sustainable forestry: An adaptive process. In: Aplet, G.H. et al., eds. Defining sustainable forestry. Covelo, CA.: Island Press. pp. 280-293

1061 Salwasser, H., MacCleery, D.W., and Snellgrove, T.A. 1993. An ecosystem perspective on sustainable forestry and new directions for the U.S. National Forest System. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 44-89.

Discusses key concepts of forest sustainability in relation to the use of forests by humans, the history of forests in the U.S., forests issues and policies, and ecosystem management implementation.

1062 Sample, V.A., Johnson, N., Aplet, G.H. and Olson, J.T. 1993. Introduction: Definining sustainable forestry. In: Aplet, G.H., Johnson, N., Olson, J.T., and Sample, V.A., eds. Defining sustainable forestry. Washington, D.C.: Island Press. pp. 3-8.

The authors discuss the need for an ecologically based forest management and the challenges facing forests and forestry.

1063 Sampson, N. 1993. Forest health and ecosystem management. American Forests 99(7-8) July/August:6.

1064 Sampson, R.N. and Adams, D.L., eds. 1994. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. November 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. 461 pp.

Papers discuss the ecology and history of forest ecosystem health in the Inland West and the practical means in which to manage for ecosystem health.

1065 Sampson, R.N., Adams, D.L., Hamilton, S.S., Mealey, S.P., et al. 1994. Assessing forest ecosystem health in the Inland West. In: Sampson, R.N. and Adams, D.L., eds. Assessing forest ecosystem health in the Inland West. Papers from the American Forests Workshop. Nov. 14-20, 1993. Sun Valley, ID. Binghamton, NY: Forest Products Press. pp. 3-10.

"This paper presents on overview of the conclusions developed by 35 participating scientists and land manages at a scientific workshop." (p. 4). Key words: Ecosystem health, wildfire, management.

1066 Schaeffer, K.J. and Kiser, S.L. 1994. Hypotheses concerning population decline and rarity in insects. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest

Service, General Technical Report RM-PNW-247: pp. 78-84.

The authors take an ecological perspective dealing with the decline and sustainability of Oregon Silverspot butterflies along the Northern Pacific Coast.

1067 Schofield, C.L. 1987. Lake acidification in wilderness areas: An evaluation of impacts and options for rehabiliation. In: Agee, J.K. and Johnson, D.R., eds. Ecosystem management for parks and wilderness. Seattle, WA: University of Washington Press. pp. 135-144.

Discusses lake acidification in the Adirondack Mountains focusing on atmospheric transport and deposition. Reviews possible management actions (abs.).

1068 Schowalter, T.D. 1994. An ecosystem-centered view of insect and disease effects on forest health. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 189-195.

The author argues that when taking an ecosystem-centered view, phytophagous insects and pathogens "respond to changes in forest condition in ways that contribute to" forest health (abs.).

1069 Society of American Foresters 1993. Task force report on sustaining long-term forest health and productivity. Bethesda, MD: Society of American Foresters. 83 pp.

Discusses issues, concepts, knowledge and skills, and strategies associated with sustainability and forest health.

1070 Society of American Foresters. 1993. Task force report on sustaining long-term forest health and productivity. Bethesda, MD: Society of American Foresters.

A definition of ecosystem management is proferred.

1071 Sprenkel, C.B. 1993. Restoring a "grass-roots" forest. American Forests 99(5-6) May/June:43-45, 60.

A description of a project that uses fire to reinvigorate longleaf/wiregrass piney woods and how the project can be used in similar ecosystems to restore forest health.

1072 Suter, G.W. 1993. A critique of ecosystem health concepts and indexes. Environmental Toxicology and Chemistry 12(9):1533-1539.

Includes human directives, actions, and consequences as management strategies.

1073 Thompson, R., Pillsbury, N., and Hanna, R. 1994. The elements of sustainability in urban forestry. Urban Forest Ecosystem Institute, California Polytechnic State University, San Luis Obispo, CA. 56 pp.

Indentifies urban forestry program elements that are ecologically, economically, and politically sustainable and connects urban forestry with other basic public services (preface).

1074 Toman, M.A. 1993. Defining an economic of sustainable forestry: General comments. In: Aplet, G.H., et al., eds. Defining sustainable forestry. Covelo, CA.: Island Press. pp. 270-279.

1075 Troendle, C.A. and Olsen, W.K. 1994. Potential effects of timber harvest and water management on streamflow dynamics and sediment transport. In: Covington, W.W. and Debano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247. pp. 34-41.

"This paper addresses the flow parameters which influence sediment transport and the implications of changing flow dynamics whether from flow or forest management" (abs.).

1076 Wagner, M.R. 1994. The healthy multiple-use forest ecosystem: An impossible dream. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-PNW-247: pp. 185-188.

The author discusses that the concept of forest health is a paradox and "alternatives for the resolution of this paradox may require deviation from the multiple-use" concept of forest land management

1077 Wessman, C.A. Nel, E.M. 1994. A distant perspective: Approaching sustainability in a regional context. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecologcial systems: Implementing an ecological approach to land management. Ft. Collins, C0: USDA Forest Service, General Technical Report RM-GTR-247: pp. 169-177.

Discusses the role and necessity of remote sensing in ecosystem management and measures of ecolgical functions using remote sensing at landscape levels.

1078 Wilson, J.L. and Tkacz, B.M. 1994. Status of insects and diseases in the Southwest: Implications for forest health. In: Covington, W.W. and DeBano, L.F., tech. coords. Sustainable ecological systems: Implementing an ecological approach to land management. Ft. Collins, CO: USDA Forest Service, General Technical Report RM-GTR-247: pp. 196-203.

Discusses the status of bark beetles, western spruce budworm, dwarf mistletoes, root diseases, and white pine blister rust in the Southwest and ecological implications on forest health.

AUTHOR INDEX