

VITA

DUNCAN T. PATTEN

Land Resources and Environmental Sciences
Box 173120
Montana State University
Bozeman, MT 59717-3120

Home: 8945 Trooper Trail
Bozeman, MT 59715
Home Phone: (406) 582-0486

Telephone: (406) 944-2784
FAX: (406) 994-5122
e-mail: dtpatten@montana.edu

Home Office Phone: (406) 582-0594
FAX: (406) 582-0488
e-mail: dtpatten@mcn.net

Research Professor, Land Resources and Environmental Sciences, Montana State University,
Bozeman, MT
Professor Emeritus, School of Life Sciences, Arizona State University, Tempe, AZ
Certified Senior Ecologist, Ecological Society of America

DEGREES

A.B., Biology-Chemistry, Amherst College, 1956
M.S., Botany, University of Massachusetts, 1959
Ph.D., Botany-Ecology, Duke University, 1962

ACADEMIC EXPERIENCE

Instructor (part-time) 1957-59, University of Massachusetts
Assistant Professor 1962-65, Virginia Polytechnic Institute
Assistant Professor 1965-67, Arizona State University
Associate Professor 1967-73, Arizona State University
Professor 1973-1995, Arizona State University
Professor Emeritus 1995 -- present, Arizona State University
Research Professor (adjunct) 1995-1999, Montana State University
Research Professor 1999 -- present, Montana State University

ADMINISTRATIVE EXPERIENCE

Chairman, Faculty Assembly, President, Faculty Senate, Arizona State University (elected position), 1971-72.

Plant Process Coordinator, US/IBP Desert Biome, 1971-76.

Chairman, US/IBP Interbiome Primary Production Committee, 1971-75.

Co-director, Rocky Mountain Environmental Research Grant (NSF-RANN \$100,00), 1973-74.

ADMINISTRATIVE EXPERIENCE (CONT.)

Assistant Academic Vice President, Arizona State University, 1972-76.

Chairman, Department of Botany and Microbiology, Arizona State University, January 1977-July 1981.

Director, Center for Environmental Studies, Arizona State University, 1980-1995.

Business Manager, Ecological Society of America, 1979-1995.

President, Arizona Riparian Council, 1985-89.

President, Society of Wetland Scientists, 1996-97

OTHER PROFESSIONAL EXPERIENCE

Bureau of Reclamation - Department of the Interior.

Senior Scientist, Department of the Interior, Bureau of Reclamation, Glen Canyon Environmental Studies 1989-1996.

National Research Council/National Academy of Sciences:
Committees, Boards, and Commissions.

Member, Environmental Assessment Committee, Environmental Studies Board, Commission on Natural Resources, 1975-76. Chairman: Panel on Environmental Impacts of Resource Management.

Chair, Mono Basin Ecosystem Study, Board on Environmental Studies and Toxicology, 1985-87.

Member, Glen Canyon Environmental Studies Committee, Water Science and Technology Board, 1986-89, ex officio 1989-1996.

Member, Board on Environmental Studies and Toxicology, 1987-90.

Member, Committee on Opportunities in Applied Environmental Research and Development, Board on Environmental Studies and Toxicology, 1988-91.

Member, Committee on Western Water Management Change, Water Science and Technology Board, 1989-91.

Member, Committee on Science in the National Parks, Board on Environmental Studies and Toxicology, 1989-92.

Member, Commission on Geoscience, Environment and Resources, 1990-93.

Member, Planning Committee for Managing Water Resources and Water Quality Along the U.S./Mexico Border. Water Science and Technology Board. 1993.

Member, Committee to Review Specific Scientific and Technical Safety Issues Related to the Ward Valley, California Low-Level Radioactive Waste Site. Board on Radioactive Waste Management. 1994-1995.

Chair, Committee to Evaluate Navy's Extreme Low Frequency Antenna Ecological Monitoring Program, Board on Environmental Studies and Toxicology. 1995-97.

Member, Committee on Ungulate Management in Yellowstone National Park, Board on Environmental Studies and Toxicology, 1998-2001.

Member, Committee on Hardrock Mining on Federal Lands, Board on Earth Sciences and Resources, 1999

Member, GAO Funded Workshop on Environmental Indicator Sets (organized by NAS)

National Science Foundation:

Scientific Consultant to the National Science Foundation, 1973-75.

Panel Member -- National Science Foundation: Environmental Biology 1975-76 and Ecological Sciences, 1976-78.

Environmental Protection Agency:

Member: Scientific Advisory Committee Panel to Review 2007 Report on the Environment, 2007.

Member: Chartered Science Advisory Board, 2008-present

Member: Science Advisory Board Environmental Engineering Committee (supplemented) reviewing EPA ORD Report on Hydraulic Fracturing research program. Spring 2010.

Chair: Science Advisory Board ad hoc Panel reviewing ORD reports on Mountain Top Mining and Benchmark for Conductivity. Summer 2010 – Winter 2011.

Member: Science Advisory Board ad hoc Panel reviewing ORD Study Plan on Effects of Hydraulic Fracturing on Drinking Water Resources. Spring 2011 – Fall 2011.

Advisory Activities:

District Advisor (Environmental Protection) Bureau of Land Management, Arizona Strip Multiple-Use Advisory Board, 1977.

Member, Man and the Biosphere-4 Directorate: Arid and Semi-Arid Lands, 1988-90.

Science Advisory Council, Greater Yellowstone Coalition, 1988-present.

Chair, Technical Advisory Committee, National Institute for Global Environmental Change, 1994-96; member, 1990-96.

Chair, Technical Advisory Committee, Southwest Center for Environmental Research and Policy. 1993-1995.

Scientific and Technical Advisory Committee member. American Rivers, 1993-present.

Chair, Technical Advisory Committee, Yellowstone River Cumulative Effects Task Force, 1999-2005.

Chair, Status of U.S. Ecosystems: Grass/Shrubland Committee. Heinz Center, Washington, DC, 2000-2001.

Member, Design Committee, State of the Nation's Ecosystems, Heinz Center, Washington, DC, 2000-2007.

Consulting Activities:

Consultant to the Public Land Review Commission on the environmental impact of open-pit mining in the Southwest, 1969.

Consultant to ASARCO on the ecological impact of open-pit molybdenum mining in Idaho and on the impact of SO₂ on natural vegetation near Winkelman, Arizona, 1970.

Consultant to the Bureau of Reclamation on ecological impacts of the CAP dams, 1971.

Consulting on environmental impact problems with Salt River Project, ABI Corporation, Arizona Public Service, 1971-1995.

Consultant to Environmental Protection Agency on environmental effects of increased coal burning, 1977-78.

Consultant to the U.S. Army Corps of Engineers on reclamation projects, 1978-1995.

Consultant to Arizona Environmental Consultants for ecological impacts of a refinery at Mobile, Arizona, 1978-80.

Advisor and Consultant to Pacific Gas and Electric Company and Southern California Edison Company on effects of management of instream flow in Sierra streams on riparian communities, 1984-1985.

Consulting to EBASCO on riparian restoration of streams in the Mono Basin, California. 1992-1993.

Science Board, CALFED, Bay-Delta Watershed Ecosystem Restoration Program. December 1999 to 2005.

Independent Science Board, California Bay-Delta Authority. October 2003 to 2008.

Consulting to U.S. Forest Service. Pacific SW. San Bernardino Inland Feeder Tunnel project. 2000-2003

Other Activities:

Participant (Invited) -- ERDA (Department of Energy) Ecology-Meteorology Workshop on effects of increased atmospheric CO₂. University of Michigan Biological Station, August 1977.

Organizer and Chairman -- Department of Energy Workshop: Ecological impacts of solar energy conservation, Arizona State University, 11-12 May 1978.

AWARDS AND HONORS

Phi Sigma 1963

Sigma Xi 1959 (Associate), 1962 (Full)

Arizona State University Chapter:

Treasurer, 1966-68

President-Elect, 1968-69

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OTHER EXPERIENCE (CONT.)

President, 1969-70

American Association for the Advancement of Science, Fellow 1979

Arizona/Nevada Academy of Sciences, Fellow 1976.

Ecological Society of America, Distinguished Service Award. 1994.

Bureau of Reclamation, Citizens Award. 1996.

RECOGNITION

Who's Who in the West

Who's Who in America

ACADEMIC COMMITTEES

(Arizona State University, excluding period when Assistant Academic Vice President.)

University (ASU):

Academic Affairs Committee, Secretary 1969-70, Chair 1970-71

Faculty Senate 1962-72, Vice Chair 1970-71, Chair 1971-72

Code of Conduct Committee (ad hoc), 1970-71

Sabbatical Leave Committee (ad hoc), 1971

Salary and Wage Review Board, Chair, 1971

University Research Council, 1976-82

Research Park Committee, 1982-84

Safety Committee, 1985-86

Intellectual Property Committee, 1992-1995.

College:

Liberal Arts Honors Council, 1967-70

Liberal Arts Curriculum Council, 1969-71

RESEARCH GRANTS AND CONTRACTS

A study of vegetation-environmental relations in northwest Yellowstone National Park.

National Science Foundation Grant BG-2205, 1964.

\$32,000

Vegetation-environmental relations. National Science Foundation

Grant BG-4683, 1966.

\$13,600

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| Altitudinal influence of succulent distribution. Arizona State University Faculty Grant-in-Aid, 1968. | \$1,500 |
| Ecological and taxonomic studies. Arizona State University Faculty Grant-in-Aid, 1969. | \$2,284 |
| Productivity and water stress in cacti. IBP Desert Biome (National Science Foundation), 1970, \$7,958; 1971, \$10,200; 1972, \$4,077. | Total: \$22,235 |
| Factors influencing stream quality. Arizona State University, Faculty Grant-in-aid, 1971. | \$1,400 |
| Phenology and function of Sonoran Desert Annuals in relation to environmental changes. IBP Desert Biome (National Science Foundation), 1972, \$8,200; 1973, \$8,200; 1974, \$10,321; 1975, \$7,627. | Total: \$34,348 |
| A vegetation management study for the enhancement of wildlife along the lower Colorado River (with R. D. Ohmart). Bureau of Reclamation, 1973-75. | \$150,000 |
| Rocky Mountain Environmental Research. Co-Director through the Eisenhower Consortium and The Institute of Ecology. National Science Foundation-RANN Grant, 1973-74. | \$100,000 |
| Solar energy conversion: analysis of impacts on desert ecosystems. | |
| | ERDA (DOE), 1977-78 \$43,000 |
| | University of California-Los Angeles, 1978 \$30,000 |
| | University of California-Los Angeles, January-September 1979 \$42,812, |
| | University of California (DOE), 1979-80 \$35,800 |
| | Total: \$151,612 |
| Department of Energy Traineeship Grant (with T. H. Nash), 1978-79. | \$14,600 |
| Seed mix and establishment in Indian Bend Wash. U.S. Army Corps of Engineers, 29 November 1978-29 March 1979. | \$4,731 |
| Ecology of mesquite bosque communities. U.S. Army Corps of Engineers, 29 November 1978-29 March 1979. | \$2,960 |
| Ecology of a riparian forest community. Faculty Grant-in-Aid, 1979. | \$3,300 |

A study of revegetation and revegetation potential on Cave Buttes Dam Site, U.S. Army Corps of Engineers, 1979. \$5,744

Silvics of Arizona walnut (*Juglans major*). U.S. Forest Service Cooperative Agreement,
1981. \$17,000
1984. \$5,000
Total: \$22,000

A study of revegetation methods on Adobe Dam. U.S. Army Corps of Engineers, 1981. \$4,000

Response of riparian species to recreational impact. U.S. Forest Service Cooperative Agreement, 1982-84. \$19,632

Environmental assessment in Nepal. 1983.
National Science Foundation \$1,250
National Geographic Society \$2,098
Rolex Corporation \$1,300
Explorers Club \$ 600
Total: \$5,248

Fire effects following prescribed burning in a selected desert ecosystem. U.S. Forest Service, 1983-87. \$18,000

Riparian vegetation response model. Southern California Edison, 1986. \$15,454

Inventory and evaluation of riparian vegetation along lower Rush Creek, Mono County, California. Los Angeles Department of Water and Power, 1987. \$9,008

Riparian vegetational changes along Bishop Creek: an historical photo interpretation. Desert Research Institute/Southern California Edison, 1988. \$7,150

Evaluation sensitivity to disturbance of high-elevation ecosystems in the Pinaleno Mountain. Research Corporation, 1988. \$25,000

Dynamics of riparian species along Rush Creek. Los Angeles Department of Water and Power, 1988. (With J. Stromberg.) \$30,015

Restoration of riparian herbaceous understory. Arizona Nature Conservancy, 1989. (With J. Stromberg.) \$3,000

Cone production by conifers at high elevation sites in the Pinaleno Mountains. Research Corporation, 1989-91. (With J. Stromberg.) \$22,300

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| IGPA. Department of the Interior, Bureau of Reclamation, 1989-91. | | \$102,580 |
| | 1991-93 | \$84,501 |
| Instream flow requirements for riparian vegetation at Bishop Creek, Inyo County, California. Southern California Edison, 1989-92. (With J. Stromberg.) | | \$64,310 |
| Effective management of water resources: a function of geomorphology and instream flow requirements. U.S. Geological Survey, 1990-92. (With J. Stromberg.) | | \$36,740 |
| Instream flow needs of riparian trees. Los Angeles Department of Water and Power (Jones and Stokes, Prime). (With J. Stromberg). | 1990. | \$9,020 |
| | 1991. | \$43,588 |
| Development of best management practices for water and riparian resources along the Santa Cruz watershed, U.S./Mexico border. EPA (Southwest Center for Envir. Research and Policy) (with J. Stromberg, M. Sommerfeld and D. Green). 1992. | | \$104,000 |
| Science Advisory Committee: Glen Canyon Environmental Studies, Dept. of the Interior (Bureau of Reclamation). | 1993. | \$134,000 |
| | 1994. | \$141,000 |
| | 1995 | \$175,000 |
| Integration and Evaluation | 1996 | \$98,750 |
| | 1997-98 | \$42,000 |
| Effects of modified groundwater and surface water on riparian and wetland ecosystems in Nevada. UNLV (National Park Service prime). (with J.C. Stromberg). 1992-93. | | \$50,835. |
| | 1994-1997 | \$76,000. |
| Water and riparian resources of the Santa Cruz River basin: best management practices for water and resource quality. EPA (SW Center for Env. Res. and Policy) (with J. Stromberg and M. Sommerfeld). 1993-94. | | \$173,658. |
| Water quality and discharge issues at Ambos Nogales: use of a border environmental action team to assist in information analysis, problem solving, and action plan development. EPA (Southwest Center for Envir. Res. and Policy). 1993-1995. | | \$31,520 |
| Groundwater recharge and riparian habitat enhancement. Arizona Department of Water Resources (with J. Stromberg) | 1995-96. | \$30,910 |
| Functional assessment of effluent dominated riparian ecosystems. University of Arizona (USGS) (with J. Stromberg) | 1995-96. | \$23,020 |

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| Long-term research and monitoring of cottonwood and other riparian woody plants in the Bill Williams Wildlife Refuge. USFWS. (with J. Stromberg) | 1995-97. | \$25,622 |
| Dam management and riparian ecosystems. Univ. Of Ariz. (with J. Stromberg) | 1995-96. | \$10,240 |
| Assessment of the role of effluent dominated rivers in supporting riparian functions. Arizona Water Protection Fund. (with J. Stromberg). | 1996-97. | \$46,750 |
| Riparian vegetation restoration for the Provo River Restoration Project. Utah Reclamation Mitigation and Conservation Commission (with J. Stromberg). | 1997-99. | \$42,000 |
| Developing effective ecological indicators for watershed analysis. Environmental Protection Agency. Through Yellowstone Ecosystem Studies, Bozeman, MT. (Principal Investigator with Co-PIs A. Marcus, R. Lawrence, W. Minshall) | 1999-2002. | \$868,242 |
| Developing effective ecological indicators for watershed analysis. EPA Grant transferred to Montana State University. | 2001-2003 | \$455,000 |
| Complexities Across Boundaries: Coupled human and natural systems across the Yellowstone National Park northern winter elk range. National Science Foundation Biocomplexity program. (Co-PI with D. McGinnis (senior PI at Idaho State U.), D. Bennett (Iowa), W. Travis (Colorado), J. Shogren (Wyoming). | 2002-2005 | \$660,000 |
| Developing Conceptual Models for the Yellowstone Network. NPS Cooperative Agreement | 2002-2003 | \$24,000 |
| | 2003-2004 | \$21,000 |
| Seeps and Springs Monitoring Plan for Big Horn Canyon. NPS Cooperative Agreement. (with Brian McGlynn). | 2004-2006 | \$57,500 |
| Land use/land cover change governing nitrogen thresholds and transport in mountain watersheds. EPA Star Grant (with Brian McGlynn). | 2004-2007 | \$278,000 |

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Association for the Advancement of Science (Fellow)
American Geophysical Union
American Institute of Biological Sciences
American Water Resources Association
Arizona-Nevada Academy of Sciences (Fellow)
Arizona Riparian Council (President 1985-89)
British Ecological Society
Ecological Society of America (Business Manager 1979-1995, elected)
Society of Range Management
Society of Wetland Scientists (Vice President 1995-96, President 1996-97)

ABSTRACTS AND PRESENTATIONS

- 1962 Patten, D. T. Vegetation patterns in relation to environments in the Madison Range of Montana. *Bulletin of the Ecological Society of America* 43(3):53-54. A.I.B.S., Oregon State University, Corvallis, OR.
- 1964 Patten, D. T. The influences of over-browsing on willow survival along a northern Rocky Mountain river. *Bulletin of the Ecological Society of America* 44(33):77. A.I.B.S., University of Colorado, Boulder, CO.
- 1968 Patten, D. T. Succession from sagebrush to mixed conifer forest in the northern Rocky Mountains. *Bulletin of the Ecological Society of America* 49(3):111. A.I.B.S., Ohio State University, Columbus, OH.
- 1968 Patten, D. T. Ecology of the non-forested areas of northwest Yellowstone National Park. *Bulletin of the Ecological Society of America* 49(3):112. A.I.B.S., Ohio State University, Columbus, OH.
- 1968 Patten, D. T., and B. E. Dinger. CO₂ exchange patterns and endogenous rhythms of cacti from different environments. *Bulletin of the Ecological Society of America* 49(3):107. A.I.B.S., Ohio State University, Columbus, OH.
- 1968 Patten, D. T., and J. C. O'Toole. Ecology of Douglas fir near its upper altitudinal limits. *Journal of the Arizona Academy of Science* 5:15. A.A.S., Northern Arizona University, Flagstaff, AZ.

ABSTRACTS AND PRESENTATIONS (CONT.)

- 1970 Patten, D. T. Dry matter accumulation. U.S./IBP. Analysis of Ecosystems, Desert Biome Plant Meeting Report. Las Vegas, NV. Pages 30-32.
- 1970 Patten, D. T. Vegetation history of the Upper Gallatin Region. AMQUA Meeting, 29 August-1 September, Montana State University and Yellowstone National Park.
- 1971 Patten, D. T. Temperature and heat flux of desert plants. American Association for the Advancement of Science and Arizona Academy of Science, Arizona State University, Tempe, AZ.
- 1972 Patten, D. T. Growth and productivity of cacti in relation to environments in the Sonoran Desert, North America. International Symposium on Ecophysiological Foundations of Ecosystem Productivity in Arid Lands. June, Leningrad and Dushanbe, USSR.
- 1972 Patten, D. T. Seasonal temperature adaptation of cacti. Journal of the Arizona Academy of Sciences 7:14. Arizona Academy of Science, Prescott College, Prescott, AZ.
- 1972 Nisbet, R. A., and D. T. Patten. Temperature acclimation in prickly pear cactus. 15 June, Ecological Society of America and American Association for the Advancement of Science, Eugene, OR.
- 1973 Nisbet, R. A., and D. T. Patten. Temperature acclimation in prickly pear cactus in south central Arizona. Bulletin of the Ecological Society of America 54:15-16. A.I.B.S., University of Massachusetts.
- 1973 Patten, D. T. Winter: a major determinant of desert vegetation patterns. Journal of the Arizona Academy of Science, Tucson, AZ.
- 1973 Patten, D. T., and E. M. Smith. Early annual plant development in relation to environmental variables in the Sonoran Desert. Bulletin of the Ecological Society of America 54:26. A.I.B.S., University of Massachusetts.
- 1974 Patten, D. T. Ecological consequences of current use patterns. Proceedings of the American Association for the Advancement of Science, University of Arizona Energy Inquiry, Tucson, AZ, 17-18 January. Pages 37-39.
- 1974 Patten, D. T. Carbon allocation in desert plants. U.S./IBP Desert Biome Third Annual Synthesis Meeting, Salt Lake City, UT.
- 1974 Patten, D. T. Carbon flow through desert ecosystems. Symposium on Metabolism of Biomes. Invited paper, A.I.B.S., Arizona State University, Tempe, AZ.

ABSTRACTS AND PRESENTATIONS (CONT.)

- 1974 Patten, D. T., and E. M. Smith. Energy flux and the thermal regime of desert plants. Symposium on Environmental Physiology of Desert Organisms. A.I.B.S., Arizona State University, Tempe, AZ.
- 1974 Smith, E. M., and D. T. Patten. Primary production of annual plants as related to microenvironment in a Sonoran Desert shrub community. *Bulletin of the Ecological Society of America* 55(2):28. A.I.B.S., Arizona State University, Tempe, AZ.
- 1976 Patten, D. T. Phenology and function of Sonoran Desert annuals in relation to environmental changes: a synthesis. U.S./IBP Desert Biome Fifth Annual Conference, Alta, UT.
- 1979 Barstad, J., and D. T. Patten. Factors controlling vegetational patterns in a riparian forest community in southeastern Arizona. *Bulletin of the Ecological Society of America* 60(2):130. A.I.B.S., Oklahoma State University, Stillwater, OK.
- 1979 Smith, S. D., and D. T. Patten. Impacts of a simulated solar collecting array on a Sonoran Desert ecosystem. *Journal of the Arizona Academy of Science* 14(Supple.):23-24.
- 1979 Smith, S. D., and D. T. Patten. Effects of a simulated solar collector array on abiotic and biotic parameters in a Sonoran Desert ecosystem. *Bulletin of the Ecological Society of America* 60(2):81. A.I.B.S., Oklahoma State University, Stillwater, OK.
- 1980 Barstad, J., and D. T. Patten. Methods of studying riparian ecosystems: how effective are they? *Bulletin of the Ecological Society of America* 61:77. A.I.B.S., University of Arizona, Tucson, AZ.
- 1980 Patten, D. T. Ecological aspects of an expanding development and use of plants. A.I.B.S./ESA Symposium: The economic development of desert plants. *Bulletin of the Ecological Society of America* 61:57. A.I.B.S., University of Arizona, Tucson, AZ.
- 1980 Smith, S. D., and D. T. Patten. Effects of shading on gas exchange patterns and morphology of two Sonoran Desert shrubs. *Bulletin of the Ecological Society of America* 61:59. A.I.B.S., University of Arizona, Tucson, AZ.
- 1980 Smith, S. D., and D. T. Patten. Comparative productivity of winter annuals under natural and artificial shade conditions in the Sonoran Desert. *Bulletin of the Ecological Society of America* 61:123. A.I.B.S., University of Arizona, Tucson, AZ.

ABSTRACTS AND PRESENTATIONS (CONT.)

- 1982 Cave, G., and D. T. Patten. Vegetation response to fire and the resulting nutrient changes in the Sonoran Desert. *Bulletin of the Ecological Society of America* 62:180. A.I.B.S., Pennsylvania State University, College Park, PA.
- 1982 Patten, D. T., and G. Cave. Fire temperatures and physical characteristics of a controlled burn in the Upper Sonoran Desert. *Bulletin of the Ecological Society of America* 63:163. A.I.B.S., Pennsylvania State University, College Park, PA.
- 1983 Conrad, B., and D. T. Patten. Community dynamics of old fields in the Sonoran Desert. *Bulletin of the Ecological Society of America* 64:150. A.I.B.S., North Dakota State University, Grand Fork, ND.
- 1984 Patten, D. T. Timberline and forest gradients in the upper Marsyandi River Valley, Nepal. *Bulletin of the Ecological Society of America* 65:83. A.I.B.S., Colorado State University, Fort Collins, CO.
- 1984 Stromberg-Wilkins, J., and D. T. Patten. Reproductive output and seedling establishment of *Juglans major* along riparian moisture gradients. *Bulletin of the Ecological Society of America* 65:119. A.I.B.S., Colorado State University, Fort Collins, CO.
- 1984 Turner, B., and D. T. Patten. Recreational impacts on riparian woodlands in central Arizona. *Bulletin of the Ecological Society of America* 65:249. A.I.B.S., Colorado State University, Fort Collins, CO.
- 1986 Loftin, S., and D. T. Patten. Nitrogen dynamics following fire in a Sonoran Desert ecosystem. Abstract, IVth International Congress of Ecology, Syracuse, NY. Page 219.
- 1986 Patten, D. T., C. Fox, and R. Risser. Effects of stream diversion and instream flow requirements in the riparian ecosystems of the Sierra Nevada. Abstract, First Annual Arizona Riparian Council Meeting, Flagstaff, AZ. Page 11.
- 1986 Stromberg-Wilkins, J., and D. T. Patten. Patterns of reproduction in *Juglans major* as related to yearly moisture stress. Abstract, IVth International Congress of Ecology, Syracuse, NY. Page 324.
- 1986 Stromberg-Wilkins, J., and D. T. Patten. *Juglans major*: reproduction and establishment in terrace and streamside habitat. Abstract, First Annual Arizona Riparian Council Meeting, Flagstaff, AZ. Page 12.
- 1987 Jackson, J., and D. T. Patten. Plant-soil-water relationships in Las Vegas Wash. Abstract, Second Annual Arizona Riparian Council Meeting, Wickenburg, AZ. Page 12.

ABSTRACTS AND PRESENTATIONS (CONT.)

- 1987 Larkin, G., and D. T. Patten. Regeneration and distribution of riparian species along four streams in the Sierra Anchas, Arizona. Abstract, Second Annual Arizona Riparian Council Meeting, Wickenburg, AZ. Page 16.
- 1987 Larkin, G., and D. T. Patten. Riparian vegetation patterns: a result of recruitment strategies. Abstract, Society of Wetland Scientists, 8th Annual Meeting, "Wetland and Riparian Ecosystems of the West," Seattle, WA. Page 62.
- 1987 Larkin, G., and D. T. Patten. Microsite requirements for successful riparian vegetation regeneration. Abstract, 72nd Annual Meeting, Ecological Society of America, Columbus, OH. Pages 346-347.
- 1987 Patten, D. T., and S. Loftin. Nitrogen flux and allocation in a Sonoran Desert ecosystem following fire. Abstract, 72nd Annual Meeting, Ecological Society of America, Columbus, OH. Page 385.
- 1987 Stromberg-Wilkins, J., and D. T. Patten. Mast cropping in Arizona walnut (*Juglans major*). Abstract, Society of Wetland Scientists, 8th Annual Meeting, "Wetland and Riparian Ecosystems of the West," Seattle, WA. Page 45.
- 1987 Valenciano, D., and D. T. Patten. Gradients within riparian forests of the southwestern U.S. Abstract, Society of Wetland Scientists, 8th Annual Meeting, "Wetland and Riparian Ecosystems of the West," Seattle, WA. Page 48.
- 1987 Valenciano, D., and D. T. Patten. Riparian forests: elevational gradient and relationships to adjacent upland vegetation in the southwestern U.S. Abstract, 72nd Annual Meeting, Ecological Society of America, Columbus, OH. Pages 435-436.
- 1987 Valenciano, D., and D. T. Patten. Montane riparian forests and their relationship to adjacent upland vegetation. Abstract, Second Annual Arizona Riparian Council Meeting, Wickenburg, AZ. Page 18.
- 1988 Patten, D. T. Response of a mountain riparian system to the interaction of phased highway improvements and elk browsing. Bulletin of the Ecological Society of America 69(Supple.):256.
- 1988 Patten, D. T., and J. C. Stromberg. Riparian vegetation response to stream diversion: clues for instream flow requirements. Abstract, Third Annual Arizona Riparian Council Meeting, Casa Grande, AZ.

ABSTRACTS AND PRESENTATIONS (CONT.)

- 1988 Randall, K. E. and D. T. Patten. Revegetation of the Tempe Rio Salado with native riparian plants -- a land-use plan. Abstract, Third Annual Arizona Riparian Council, Casa Grande, AZ.
- 1988 Stromberg, J. C., and D. T. Patten. A season at the Hassayampa River. Abstract, Third Annual Arizona Riparian Council Meeting, Casa Grande, AZ.
- 1988 Stromberg, J. C., and D. T. Patten. Total protection: one management option. Proceedings of the Symposium, on Restoration, Creation and Management of Wetland and Riparian Ecosystems in the American West, Society of Wetland Scientists, Denver, CO.
- 1989 Patten, D. T. Ecosystem risk assessment: case studies of natural resource perturbation. National Research Council Workshop on Ecosystem Risk Assessment and Monitoring, 2-3 March, Airlie House, VA.
- 1989 Gabriel, I. E., and D. T. Patten. The impacts of industrial air pollutants on a semi-arid ecosystem. *Bulletin of the Ecological Society of America* 70(2)Supple.:118-119.
- 1989 Richter, B. D., J. C. Stromberg, and D. T. Patten. The influences of flooding in a Southwestern riparian system. Abstract, Fourth Annual Arizona Riparian Council Meeting, Sunrise Ski Resort, McNary, AZ.
- 1989 Stromberg, J. C., and D. T. Patten. Long-term effects of stream diversion on riparian tree growth. *Bulletin of the Ecological Society of America* 70(2)Supple.:275.
- 1989 Stromberg, J. C., and D. T. Patten. Spruce-fir dynamics. Paper presented at Workshop on Biology of Mt. Graham, 19-21 October, University of Arizona, Tucson, AZ.
- 1989 Stromberg, J. C., and D. T. Patten. Flow needs for growth and maintenance of woody riparian vegetation. Abstract, Fourth Annual Arizona Riparian Council Meeting, Sunrise Ski Resort, McNary, AZ.
- 1990 Gabriel, I. E., and D. T. Patten. Accumulation of pollutants in mesquite foliage during operational and non-operational periods of a copper smelter. *Bulletin of the Ecological Society of America (Proc. Suppl.)* 71(2):161-162.
- 1990 Gabriel, I. E., and D. T. Patten. Impact of industrial air pollutants on a semi-arid ecosystem. International Conference on Metals in Soils, Water, Plants, & Animals, 29 April-4 May, 1990, Orlando, FL.

ABSTRACTS AND PRESENTATIONS (CONT.)

- 1990 Patten, D. T., and J. C. Stromberg. Ecological impacts of water supply projects. Water Supply Alternative Workshop Proceedings, Environmental and Energy Study Institute, Special Report for U.S. EPA Office of Wetlands Protection, Tucson, AZ.
- 1990 Patten, D. T., and J. C. Stromberg. Ecological effects of urbanized watersheds. Presented at the Watershed Management Council 3rd Biennial Conference, Ontario, CA Proceedings pages 17-25.
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VITA

Duncan T. Patten

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- 1998 Patten, D.T. Integration and evaluation of Glen Canyon Environmental Studies research findings: the Grand Canyon riverine ecosystem functions, processes and relationships among biotic and abiotic driving and response variables. Final Report to the Department of the Interior Grand Canyon Monitoring and Research Center, Flagstaff, AZ

GRADUATE STUDENT PROGRAM

M.S. in Botany, M.S. in Natural Sciences, MS in Land Rehabilitation, MS in Land Resources -- 33 students completed (through 2009), two student in progress.

Ph.D. in Botany and Ecology and Environmental Sciences -- Fifteen students completed (through 2009), one student in progress.

COURSES TAUGHT

Ecological Methods
Plant Ecology
Ecology and Conservation
Plant Geography
Fundamentals of Biology
General Botany (directed program 1964-70)
Graduate Seminars in various aspects of botany and ecology
Morphology of Nonvascular Green Plants
Introduction to Water Resources

PRINCIPAL AREAS OF RESEARCH INTEREST

Plant Ecology
Conservation
Applied Ecology (Man's impact)
Physiological Ecology of Desert Plants
Environment-Vegetation Relations
Structure and Function of Desert and Mountain Subalpine Ecosystems
Restoration Ecology
Riparian Ecosystems
Isolated Spring Wetlands
Watershed Landscapes and Ecosystems

VITA

Duncan T. Patten

REPORTS (CONT.)

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COMMUNITY SERVICE

Arizona Conservation Education Advisory Council, 1969-71.

Comprehensive Health Planning Council: Air Pollution Committee, 1970-71.

Valley Forward Association: Environmental Quality Control Committee, 1971-73.

Planning and Zoning Commission, City of Tempe, 1971-76.

United Fund, Chairman, Arizona State University, 1971.

Board of Trustees, Desert Botanical Garden, Phoenix, AZ, 1979-85; President, 1981-83.

Governor's Commission on Arizona Environment, 1980-83.

Board of Trustees, Research Ranch, Elgin, AZ, 1982-88.

Board of Trustees, Museum of Northern Arizona, Flagstaff, AZ, 1983-91.

Board of Trustees, Arizona Nature Conservancy, Tucson, AZ, 1987-96.

Board of Directors, Southwest Center for Education in the Natural Environment. 1992-1995.

Board of Trustees, Southwest Rivers. 2002-2003

Science and Technical Advisory Committee, American Rivers. 1995-present

Board of Trustees, Future West. 2011-

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