

THOMAS DAVID HAYES, Ph.D.

EDUCATION:

- Ph.D.** Conservation Biology and Landscape Ecology, Dept. of Integrative Biology, Univ. of California, Berkeley, CA, 2002.
- M.For.Sci.** Ecosystem Biology, School of Forestry and Environ. Studies, Yale Univ., New Haven, CT, 1977.
- B.A.** Biology, Cum Laude, Rice Univ., Houston, TX, 1975.
- Diploma** McClellan High School, Mabelvale, AR, 1971.
- Diploma** Marine Biology and Higher Mathematics, National Science Foundation Summer Fellow, Humboldt State Univ., Arcata, CA, 1970.

WORK EXPERIENCE:

- Executive Director and Senior Scientist**, Environmental Conservation Alliance, Austin, TX, 2011-present.
- Science Director**, Greater Edwards Aquifer Alliance, Austin, TX, 2008-11.
- Research Ecologist** (3-mo grant), Lower Colorado River Habitat Conservation Project, Marine Sciences Institute, U. of California, Santa Barbara, 2008.
- Vallier Resident Ecologist & Associate Scientist**, Treehaven Environmental Learning Center, Tomahawk, WI, & College of Natural Resources, U. of Wisconsin - Stevens Point, 2005-08.
- Project Manager** (post-doc), Flambeau Experiment, Forest Landscape Ecology Laboratory, Dept. of Forest Ecology & Management, U. of Wisconsin, Madison, 2003-05.
- Research Faculty**, Dept. of Forest Science, Oregon State U., Corvallis, 1996-2003.
- Ph.D. Candidate** (part time), Dept. of Integrative Biology, U. of California, Berkeley, 1993-2002.
- State Stewardship Ecologist**, The Nature Conservancy of Texas, San Antonio, 1989-92.
- Biologist III**, Habitat Assessment, Resource Protection Div., Texas Parks & Wildlife Dept, Austin, 1986-89.
- Biologist II**, Resource Management, Parks Div., Texas Parks & Wildlife Department, Austin, 1985-86.
- Project Manager/Conservation Biologist**, Espey, Huston & Associates, Austin, TX, 1978-84.
- Research Assistant**, Hubbard Brook Exp. Forest, USDA Forest Service, in cooperation with School of Forestry & Environmental Studies, Yale U., New Haven, CT, 1976-77.
- Research Assistant**, Biology & Environmental Engineering Depts., Rice U., Houston, TX, 1972-75.
- Biological Technician**, Southwest Research Institute, Houston, TX, 1973-74.

OTHER QUALIFICATIONS:

Technical Skills:

Community outreach, management strategies for endangered species and sensitive habitats, habitat typing and restoration, reserve design, invasive species control, environmental and ecological monitoring, wetland delineation, project coordination and consensus building, conservation easements, regulatory compliance, estuarine bioaccumulation and bioassay, environmental-flows analysis, remote sensing and GIS, mensuration.

Selected Honors/Committees:

- Vice Chair, Urban Forestry Board**, Austin, TX, 2011-present
- Biological Advisory Team**, Member, Southern Edwards Plateau Habitat Conservation Plan, TX, 2010-present.
- Science Advisory Board**, Member, Hill Country Alliance, Austin, TX, 2009-present.
- Vallier Foundation Fellowship**, Treehaven Field Station, UW-Stevens Point, Tomahawk, WI, 2005-2008.
- Post-Doctorate Fellowship**, Forest Landscape Ecology Laboratory, Department of Forest Ecology and Management, University of Wisconsin-Madison, 2003-2005.
- STAR Graduate Fellowship**, Environ. Sci. Res. Div., US Environ. Protection Agency, 1997-2000.
- National Network for Environ. Manag. Studies**, Fellow, US Environ. Protection Agency, 1994-96.
- Texas Org. for Endangered Species**, Communities Committee Chair/Steering Committee, 1991-92.
- Texas Academy of Science**, Conservation Section Chair, 1989-1990.
- Texas Organization for Endangered Species**, Plant Committee Chair/Steering Committee, 1982-1984.
- Phi Beta Kappa**, Rice University, Houston, TX, 1975.
- President's Honor List**, Rice University, Houston, TX, 1971-1975.
- National Science Foundation Fellowship**, Humboldt State University, Arcata, CA, summer 1970.

PROFESSIONAL SUMMARY AND QUALIFICATIONS:

Dr. Tom Hayes earned his B.A. in species and community biology from Rice University, Masters in ecosystem biology from Yale University, and Ph.D. in landscape conservation and biogeochemistry from the University of

California, Berkeley. He has authored over 100 publications and technical papers, plus numerous conference and workshop presentations.

For 33 years, Dr. Hayes has worked as a land-water resource manager, landscape ecologist, regional planner and negotiator, and conservation administrator. His direct experience encompasses habitat restoration, rare species conservation, habitat conservation and management plans (writing and evaluation), ecological and environmental monitoring, impact and mitigation assessment, reserve design and implementation, regulatory compliance, climate change, and issue-oriented research. His landscape-scale conservation and adaptive-management research address a full array of fish, wildlife, and plant species and biotic communities; and their terrestrial, wetland, and aquatic habitats.

Dr. Hayes is currently the Executive Director and Senior Scientist of a 19-year old nonprofit in Austin, Texas, recently renamed the Environmental Conservation Alliance (ECA). This revised nonprofit model provides affordable scientific and technical services to public agencies and the conservation community in the areas of land and water stewardship, biodiversity and ecosystem management, rare species and habitat conservation, and sustainable development. Working with many of the same organizations, ECA is an extension of Dr. Hayes' previous work as Science Director for the Greater Edwards Aquifer Alliance (GEAA), an alliance of 53 community environmental organizations.

Current projects include: cooperative research to recommend overbank stream flows for maintaining riparian forests and coastal wetlands as part of the Texas Senate Bill 3 process; input as a member of the Biological Advisory Team for the seven-county Southern Edwards Plateau Habitat Conservation Plan; environmental impact analyses; GIS and remote-sensing analyses; land management planning and implementation; updating habitat models and identifying "at risk" habitats range wide for the endangered Golden-cheeked Warbler and other rare species; and collaborative development of databases and conservation strategies for other rare and endangered aquatic, karst, and terrestrial species, and biotic communities, across Texas.

Prior Work History:

Throughout his undergraduate and graduate studies at Rice and Yale, respectively, Dr. Hayes was at the same time employed in environmental and ecological studies of stream runoff, aquatic and estuarine ecosystems, and biogeochemical processes within disturbed landscapes. Upon earning his Master's degree in 1977, he worked for Espey, Huston, and Associates, Austin, Texas, first as manager of an estuarine bioassay/bioaccumulation laboratory in Galveston, and subsequently as senior biologist and project manager for aquatic and terrestrial impact assessments and mitigation, wetland determinations, habitat restoration, and Section 404/10 and water-rights regulatory compliance.

In 1985, Dr. Hayes gained employment as Biologist II with the Resource Management Section, Parks Division, Texas Parks & Wildlife Department (TPWD), Austin. He primarily trained and organized resource-management teams throughout the State Park System, to lessen human impacts and proactively restore native terrestrial and aquatic habitats. He also completed special projects, including large volunteer restoration efforts, regulatory and endangered-species assessments, and water-rights testimony.

Upon his promotion to the Resource Protection Division (Wetlands Program, 1986-89), TPWD, Austin, Dr. Hayes continued to oversee regulatory assessments (Sec. 404/10, etc.), water-rights studies, community outreach, and related mitigation implementation. Notable projects included riparian and in-stream flows analyses in support of state water rights and other regulatory hearings for floodplain and coastal development, such as the Paluxy and Little Cypress reservoir projects. He also acted as the primary Department liaison to the U.S. Forest Service, coordinating and writing the formal State responses to 10-year plans and other documents and activities concerning all National Forests and Grasslands in Texas.

Later, as the first State Stewardship Ecologist for The Nature Conservancy (TNC), he was the chief scientist and resource manager for Texas. Projects included acquisition and restoration of coastal and inland habitats, such as the Mad Island Marsh Preserve and WMA near Palacios, the Diamond Y Springs Preserve near Fort Stockton, and Dolan Falls Preserve on the Devil's River in Val Verde County.

Returning in 1993 to academic research at the University of California-Berkeley (UCB) and Oregon State University, Dr. Hayes managed a long-term field and lab study of the biogeochemical impacts of landscape-scale disturbance. Upon completing concurrent Ph.D. (UCB) and research-faculty (OSU) appointments in 2003, he continued his research on disturbed ecosystem processes, along with teaching duties, at two University of Wisconsin campuses: Madison and Stevens Point. In 2008, Dr. Hayes accepted a 3-month grant with the Marine Sciences

Institute, University of California-Santa Barbara, to help design a wetlands and riparian restoration project, spanning the Mojave Desert in southern Nevada and portions of three adjacent states.

In October 2008, Dr. Hayes returned to applied research and impact assessment with Texas NGOs (see above).

PUBLICATIONS AND TECHNICAL REPORTS:

During his career, Dr. Hayes has authored over 100 publications and technical papers, as well as numerous conference and workshop presentations. The following abbreviated publication list is representative:

- Hayes, T., and R. Reid, 1979, "Fish, Wildlife, and Recreation Resources of the Matagorda Bay System," prepared for U.S. Fish and Wildlife Service, Albuquerque, NM, Espey, Huston, and Associates (EH&A) Doc. No. 79240.
- Sexton, C., and T. Hayes, 1980, "Biological Assessment of the Impact of Florida Gas Transmission Company's Proposed Trans-Gulf Pipeline Construction and Conversion Project on Threatened and Endangered Species of the Apalachicola River Basin," prepared for Federal Energy Regulatory Commission, Environmental Evaluation Branch, Washington, D.C., EH&A Doc. No. 80131.
- Reid, R., T. Hayes, and C. Perino, 1980, "Vegetation and Wildlife Resources of the Black Mesa and Kayenta Mine Sites," prepared for Peabody Coal Company, Flagstaff, AZ, EH&A Doc. No. 8071.
- Hayes, T., P. Jensen, and C. Green, 1981, "Critical Area Mapping and Spill Probability Evaluation of the Houston Ship Channel," prepared for The Clean Channel Association, Houston, TX, EH&A Doc. No. 81149.
- Hayes, T., and EH&A staff, 1981, "Acid Deposition in Texas: Technical Summary and Perspective," prepared for Texas Energy and Natural Resources Advisory Council, Austin, TX, Energy Dev. Act Project 80-L-11-6, EH&A Doc. No. 81305.
- Hayes, T., P. Price, and B. Stewart, 1982. "Ecological Baseline Studies of the Shell Vanderrick Mine Facilities Area, Vanderburgh County, Indiana," prepared for Shell Oil Company-Mining, Houston, TX, EH&A Doc. No. 82367.
- Hayes, T., 1984, "Remote Sensing Analysis: Potential Impacts to Forest Vegetation Due to Cooling Tower Plume Drift, Farley Nuclear Power Plant," prepared for Alabama Power Company, Birmingham, Alabama, EH&A Doc. No. 83775.
- Hayes, T., and D. Riskind, 1985, "Instream-Flows Impact Assessment of Proposed Paluxy Reservoir upon Dinosaur Valley State Park," Testimony Preparation, TWDB Water Rights Hearing; Resource Protection Div., Texas Parks and Wildlife Dept., Austin, TX.
- Hayes, T., D. Riskind, and W. Pace, 1987, "Patch-Within-Patch Restoration of Man-Modified Landscapes Within Texas State Parks," Chapter 10, pp. 173-198, in M. Turner (editor), Landscape Heterogeneity and Disturbance, Springer-Verlag Publisher, New York, NY.
- Hayes, T., 1987, "Downstream Impacts of the Proposed Little Cypress Reservoir upon Bottomland Hardwood Forests and Swamps," Spec. Rpt., TWDB Water Rights Hearing; Resource Protection Div., Texas Parks and Wildlife Dept., Austin, TX.
- Riskind, D., R. George, G. Waggenerman, and T. Hayes, 1987, "Restoration in the Subtropical United States," Restoration and Management Notes 5(2): 80-82.
- Pace, W., III, D. Riskind, and T. Hayes, 1988, "Restoration and Management of Native Plant Communities on Texas Parklands: The Mixed-prairie Experience," in Proceedings of the Tenth North American Prairie Conference, Native Prairies Association of Texas, Dallas, TX.
- Hayes, T., 1990, "Reclamation Plan and Surface Use Agreement for Oil and Gas Operations at Diamond Y Spring Preserve, Pecos County, Texas," The Nature Conservancy of Texas, San Antonio, TX.
- Hayes, T., 1992, Endangered, Threatened, and Watch List of Natural Communities of Texas, Publication # 8, Texas Organization for Endangered Species, Austin, TX.
- Hayes, T., 1993, "Long-term Integrated Monitoring Plan, Diamond Y Spring Preserve, Pecos County, Texas," The Nature Conservancy of Texas, San Antonio, Texas.
- Hayes, T., 1993, "Invited Written and Oral Testimony Before Congress in Support of H.R. 1164, Forest Biodiversity Act of 1993," U.S. House of Representatives, Committee on Agriculture, Washington, DC, October 28, 1993.
- Hayes, T., 1994, "Standard Operating Procedure 5.1: Litter Decomposition," Environmental Research Laboratory, US Environmental Protection Agency, Corvallis, OR.
- Hayes, T., R. Griffiths, and C. D'Antonio, 1997, "Biogeochemical Attributes of Old-growth Forest-Clearcut Edges," Bulletin of the Ecological Society of America 78 (4):105.
- Hayes, T., R. Griffiths, and C. D'Antonio, 1999, "Nitrogen and Carbon Cycling in Fragmented Old-growth Forest," oral paper, Ecological Society of America annual meeting, Spokane, WA.
- Hayes, T., A. Swanson, C. D'Antonio, and R. Griffiths, 2002, "Biogeochemical Edge Effects on Nitrogen and Carbon Retention in Fragmented Old-growth Forest," invited oral paper, Forest Edges Symposium, Ecological Society of America annual meeting, Tucson, AZ.

- Hayes, T., 2005, "Field and Laboratory Manual for the Flambeau Experiment: Methods for Examining Canopy Gaps and Coarse Woody Debris to Determine the Mechanisms of Sustainable Forest Management," Forest Landscape Ecology Laboratory, Dept. of Forest Ecology & Management, University of Wisconsin, Madison.
- Hayes, T., 2006, "Strategic Plan for Integrating Research, Education, and Outreach at Treehaven Center," NSF Proposal Number 0627273, awarded to University of Wisconsin, Stevens Point.
- Hayes, T., 2007, "Treehaven Land Management Plan," Treehaven Field Station, University of Wisconsin, Stevens Point.
- Hayes, T. 2008. "Lower Colorado River Habitat Conservation Project: Monitoring and Restoration Database for Riparian and Spring Habitats," University of California, Santa Barbara, in cooperation with Clark County, NV, and the U.S. Geological Survey, Henderson, NV.
- Hayes, T., 2010, "Data Analyses in Support of Out-of-Bank Stream Flow Recommendations for the Maintenance of East Texas Bottomland Hardwoods: Thematic-Mapper Inundation-Area and Hydrologic Results," Greater Edwards Aquifer Alliance, report to National Wildlife Federation, Austin, TX.
- Hayes, T, and J. Trungale. 2010. "Sustainable Rivers Project - Phase 1: Floodplain Forest Inundation – Data Analysis and Monitoring Design, Cypress-Caddo Watershed." Greater Edwards Aquifer Alliance, report to Caddo Lake Institute, Austin, TX.
- Hayes, T. 2011. "Wildlife Management Plan," Bingham Creek Ranch, Travis County, TX, ECA project 2011-02.
- Hayes, T. 2011. "Environmental Analysis of the White Stallion Energy Center: Section 10/404 Permit Application." Prepared for Glenrose Engineering, Austin, TX, ECA project 2011-06.