

BIOGRAPHICAL DATA

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Position: 1991-2002 Distinguished Professor,
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Degrees: B. S. Midwestern University
Wichita Falls, Texas, 1956

Ph.D. University of Kansas, Lawrence, 1960

Previous Career:

1959-1960 University of Kansas, Lawrence; Assistant Instructor

1960-1964 University of Nevada, Las Vegas; Assistant Professor of Biology

1964-1965 University of Nevada, Reno (Desert Research Institute); Assistant Research Professor

1965-1968 University of Nevada, Las Vegas; Associate Professor of Biology

1968-1991 University of Nevada, Las Vegas; Professor of Biology

1974-1982 University of Nevada, Las Vegas; Chairman, Department of Biological Sciences

1991-1996 University of Nevada, Las Vegas; Director, Environmental Studies Program

1996-1998 University of Nevada, Las Vegas; Chair, Department of Environmental Studies,
Greenspun College of Urban Affairs

1998-2002 University of Nevada, Las Vegas; Professor, Department of Environmental Studies,
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2002-present Retired

Publications:

1. Cross, F., J.E. Deacon and C. Ward. 1959. Growth data on sport fishes in Twelve Lakes in Kansas. Trans. Kansas Academy of Science, 62(2):162-164.
2. Minckley, W.L. and J.E. Deacon. 1959. New distributional records for three species of Kansas crayfish. Trans. Kansas Academy of Science, 26(2):165.
3. Minckley, W.L. and J.E. Deacon. 1959. Biology of the flathead catfish in Kansas. Trans. Am. Fish. Soc., 88:344-355.
4. Deacon, J.E. and A.L. Metcalf. 1961. Fishes of the Wakarusa River, Kansas. Univ. of Kansas Publ., Mus. Nat. Hist., 13(6):309-322.
5. Deacon, J.E. 1961. A new staining method for marking large numbers of small fish. Prog. Fish Cult., 21(1):41-42.
6. Deacon, J.E. 1961. Fish populations following drought in the Neosho and Marais des Cygnes Rivers of Kansas. Univ. of Kansas Publ., Mus. Nat. Hist., 13(9):359-427.
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9. Deacon, J.E., C. Hubbs and B. Zahuranec. 1964. Some effects of introduced fishes on the native fish fauna of southern Nevada. Copeia 1964, (2):384-388.
10. Hubbs, C. and J.E. Deacon. 1964. Additional introductions of tropical fishes into southern Nevada. Southwestern Naturalist, 9(4):249-251.
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13. Wilson, B.L., J.E. Deacon and W.G. Bradley. 1966. Parasites of fishes of the Moapa River. Trans. of the Calif.-Nev. section of the wildlife society. pp. 12-23.
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15. W.G. Bradley and J.E. Deacon. 1967. The biotic communities of southern Nevada. In: Quaternary History of Tule Springs, Nevada. Nevada State Anthropological Papers, 13:201-295.
16. Deacon, J.E. and B.L. Wilson. 1967. Daily activity cycles of *Crenichthys baileyi*, a fish endemic to Nevada. Southwestern Naturalist, 12(1):31-44.
17. Deacon, J.E. and W.L. Haskell. 1967. Observations on the ecology of the freshwater jellyfish in Lake Mead, Nevada. American Midland Naturalist, 78(1):156-166.
18. Deacon, J.E. 1968. Endangered non-game fishes of the west: causes, prospects and importance. Proc. Western Assoc. of State Fish and Game Commissioners, 1968:534-549.
19. Minckley, W.L. and J.E. Deacon. 1968. Southwestern fishes and the enigma of endangered species. Science, 159:1424-1432.
20. Deacon, J.E. 1969. Nevada's endangered species: The Pupfish. Nevada Outdoors, 3(3):18-19.
21. Deacon, J.E. and S. Bunnell. 1970. Man and pupfish. Cry California, 5(2):14-21.
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41. Paulson, L.J., J.R. Baker and J.E. Deacon. 1979. The fate of biogenic suspensoids in a desert reservoir. In Swanson, G. A. Tech. Coordinator. *The mitigation symposium*. General technical report Am-65. Rocky Mtn. Forest and Range Exp. Sta., Fort Collins, Colorado.
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44. Greger, P. and J.E. Deacon. 1982. Observations on woundfin spawning and growth in an outdoor experimental stream. *Great Basin Nat.*, 42(4):549-552.
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54. Baugh, T.M., J.E. Williams, D.A. Buck and J.E. Deacon. 1986. New distributional records for *Cyprinodon nevadensis mionectes*, an endangered pupfish from Ash Meadows, Nevada. *Southwestern Naturalist*, 31(4):544-546.
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78. Andersen, M. E. and J. E. Deacon. 1996. Status of Endemic Non-Salmonid Fishes in Eastern Nevada. *Journal of the Arizona/Nevada Academy of Science*. 29:124-133
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90. Riggs, A. C., and J. E. Deacon. In review. CONNECTIVITY IN DESERT AQUATIC ECOSYSTEMS: THE DEVILS HOLE STORY. *In* S. Rowland and A. Heindl (eds.) Natural History of Death Valley National Park. UC Berkeley Press.

Reports:

Deacon, J. E. and D. W. Sada. 1994. Effects of the Virgin River Water Resources Development Project on Native Fishes. Report to U. S. National Park Service, Denver, CO. pp. 1-22.

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Sada, D. W. and J. E. Deacon. 1994. Annotated Bibliography for Non-Game Aquatic Biota in the Deserts of Southern Nevada and Southeastern California, Through 1993. Report to U. S. National Park Service, Denver, CO. pp. 1-108.

Truman, K., C. Chairsell, and J. Deacon, eds. 1995. Challenges to Natural Resource Sustainability in the Colorado River Basin: An opportunity to reinvent the future. 1-84. Executive Summary of a conference sponsored by the Presidents Council on Sustainable Development. Dec. 12-14, 1994. Tropicana Hotel, Las Vegas, Nevada.

Sada, D. W. and J. E. Deacon. 1995. Spatial and Temporal Variability of Pupfish (genus *Cyprinodon*) Habitat and Populations at Salt Creek and Cottonball Marsh, Death Valley National Park, California. Report to U. S. National Park Service, Death Valley National Park. Coop. Agreement No. 8000-2-9003. pp. 1-75.

Deacon, J. E. 1995. Report and Recommendations to Virgin River Fishes Recovery Team. Oct. 5, 1995. pp 1-7.

Sada, D. W., K. Pindal, D. Threlhoff and J. E. Deacon. 1996. Spatial and Temporal Variability of Pupfish (genus *Cyprinodon*) Habitat and Populations at Saratoga Springs and the Lower Amargosa River, Death Valley National Park, California. Report to U. S. National Park Service, Death Valley National Park. Coop. Agreement No. 8000-2-9003. pp. 1-100.

Gustafson, Eric. S. and James E. Deacon. 1998. Distribution of Larval Devils Hole Pupfish, *Cyprinodon diabolis* Wales, in Relation to Dissolved Oxygen Concentration in Devil's Hole. Final Report to the National Park Service, Death Valley National Park. Pp. 1-51.

Interpretive Articles:

- 1978 Devil's Hole pupfish, victim of environmental damage. *Mainstream*. 9(3):24-25.
- 1983 The most endangered pupfish. *Freshwater and Marine Aquarium*, 6(6)L22-26, 78-79 (with T.M. Baugh).
- 1984 Seasons of the blackwater ponds. *Freshwater and Marine Aquarium*, 7(8):22-24, 62 (with T.M. Baugh).
- 1984 From this leaf... *Freshwater and Marine Aquarium*, 7(10):8-12 (with T.M. Baugh).
- 1984 The ocean lawn. *Freshwater and marine Aquarium*, 7(10):8-12 (with T.M. Baugh).
- 1984 Day and night on a coral reef. *Freshwater and Marine Aquarium*, 7(11)L34-37 (with T.M. Baugh).
- 1985 The natural history of Caribbean coral reefs. pp. 1-75m (with Phyllis Cathy).
- 1987 Diving the Devil's Hole. *Underwater Naturalist*, 16(2):6-7 (with T.M. Baugh)
- 1987 Diving the Mangrove Swamp. *Underwater naturalist*, 16(3):12-14 (with T.M. Baugh and Jeannie Masters).

Theses Directed: status of student post masters indicated by ():

- 1968 Spawning periodicity and fecundity of Crenichthys balileyi, a fish endemic to Nevada. F.A. Espinosa, Jr. (Fisheries Biologist, U.S. Forest Service).
- 1968 Some ecological and taxonomic consideration of Death Valley Cyprinodonts. James Francis LaBounty (Ph.D., Arizona State University; Research Scientist, U.S. Bureau of Reclamation, Denver, CO).
- 1969 Habitat preference, responses to environment and activity patterns of lizards at Saratoga Springs, Death Valley National Monument, California. Fenton R. Kay (Ph.d., New Mexico State University; Biological Consultant, Tucson, AZ)
- 1969 Aspects of the ecology of the Devil's Hole pupfish. Carol James (businesswoman, Las Vegas, NV).
- 1971 Life history studies of the Virgin River spinedace. William Rinne (Chief environmental officer, U.S. Bureau of Reclamation, Boulder City, NV).
- 1972 Age and growth observations on the largemouth bass, Micropterus salmoides (Lacepede) in Lake Mead. C.O. Minckley (USFWS, Parker, AZ).

- 1975 Ecological distribution of the fishes of the Virgin River (Utah, Arizona, Nevada). Jeffrey Cross (Ph.D., University of Washington; Research Scientist, Southern California Coastal Water Resources Project, Long Beach, CA).
- 1975 Seasonal and spatial variation in primary productivity in Boulder Basin, Lake Mead, Clark County, Nevada. Isamu Aoki (Environmental Scientist, EG&G).
- 1977 Benthic macroinvertebrates of lower Lake Mead. Susan SmSm Melancon (Ph.D. in progress, University of Nevada, Reno, NV).
- 1977 Responses of the woundfin, Plagopterus argentissimus, to natural saline waters. Jack Williams (Ph.D., 1081, Oregon State University; (Program Manager for Fisheries, USBCM, Washington, DC)
- 1977 Life history and thermal responses of Empetrichthys latos, the Pahump killifish. Douglas Selby (Ph.D., 1983, Utah State University; Engineer, Las Vegas Valley Water District, Las Vegas, NV).
- 1977 Zooplankton and metalimnetic oxygen depletion in Lake Mead. Tom Burke (Aquatic Biologist, U.S. Bureau of Reclamation, Boulder City, NV).
- 1978 Primary productivity in Lake Mojave. John Priscu (Ph.D., 1982, University of California, Davis; Professor, Montana State University, Bozeman, MT).
- 1978 Thermal relations of the Virgin River roundtail, Gila robusta seminuda. Paul Schumann (Ph.D. University of California, Los Angeles; Environmental Scientist, U.S. Environmental Protection Agency, Los Alamos, NM).
- 1982 Instream flow requirements of the fishes of the outflow of Ash Springs. Thomas B. Hardy (Ph.D., Utah State University; Assistant Professor, Utah State University, Logan, UT).
- 1983 Foods of largemouth bass in the Atchafalaya Basin. Linda Blakey (homemaker, Reno, NV).
- 1983 Foods of fishes in the Virgin River. Paul Greger (Biologist, UCLA, Nevada Test Site).
- 1985 Social behavior of the Devil's Hole pupfish. Thomas M. Baugh (Biologist, Endangered Species Office, U.S. Fish and Wildlife Service, Jacksonville, FL).
- 1986 Community metabolism in the outflow of Ash Spring, Pahrangat Valley. Nadine R. Kanim (Biologist, U.S. Fish and Wildlife Service, Sacramento, CA).
- 1997 Relationship of Water Level to Population Size of Devils Hole Pupfish (*Cyprinodon diabolis*). Matthew Andersen (Biologist, Dames and Moore, Las Vegas, NV).
- 1998 Distribution of Larval Devils Hole Pupfish, *Cyprinodon diabolis* Wales, in Relation to Dissolved Oxygen Concentration in Devil's Hole. Eric Gustafson (Biology teacher, Chapparel High School, Las Vegas, NV).

1998 Recreational Disturbance of a Desert Stream Fish Community: Detecting Ecological Effects of Environmental Impact. Johnny Mark Sappington

Research Support:

\$9,800 Life history studies of the Pahrump Valley poolfish, Empetrichthys latos latos, Miller, NSF, 1964

\$4,021 Population regulation and the effects of exotic introduction on native Nevada fish, Desert Research Institute Committee for Research Planning, 1965.

\$1,000 Ecological distribution of the mammals of the Carson Range, Nevada University of Nevada Graduate School, 1965.

\$47,000 Population regulation and effects of exotic introduction on Nevada fish populations, NSF, 1965-68.

\$3,177 Construction of a refuge for Crenichthys baileyi and studies of interaction between native and sport fishes at Hot Creek, Sunnyside Wildlife Management Area, Bureau of Sport Fishes and Wildlife, 1966-67

\$1,000 Studies on the ecology of Pine Creek Canyon, Charleston Mountains, Nevada, Nature Conservancy, 1966-67.

\$1,000 Liminology of desert springs, Desert Research Institute Committee for Research Planning, 1966-67.

\$3,000 Experimental studies on endemic fish and management of artificial ponds, Nevada Equities, Inc., 1966-67.

\$2,800 Undergraduate research participation, NSF, 1967.

\$21,000 Ecology of aquatic habitats in Death Valley, NPS, 1968.

\$1,200 Ecology of desert fishes, DRI, 1968.

\$2,000 Transplanting of endangered fishes in Nevada, Sport Fishery Research Foundation, 1969.

\$192,000 Rearing bait fishes in the lower Colorado River Basin, Bureau of Commercial Fisheries, 1968-75.

\$5,000 Rearing bait fishes in the lower Colorado River Basin, faculty Research committee, University of Nevada, las Vegas, 1969-70.

\$1,000 Ecology of desert springs, UNLV, 1970.

\$46,000	An ecosystem analysis of Saratoga Springs, International biological program through NSF, Utah State University, 1971.
\$8,635	The effects of effluent from Las Vegas Wash on fish populations in Lake Mead, Nevada Fish and Game, 1970-71.
\$17,000	Application of EROS program data to arid regions, USGS, 1971.
\$84,000	Endangered fishes of the Virgin River system Fish and Wildlife Service, 1973-79.
\$8,793	Aquatic investigations on the Colorado River from Separation Canyon to the Gand Wash Cliffs, National Park Service, 1975-76
\$220,000	Effects of Las Vegas Wash on Lake Mead, Clark County, 1971-77.
\$15,000	Metalimnetic oxygen depletion in Lake Mead, Office of Water Resources Research, 1975-76.
\$3,500	Food habits of young bass, Nevada Fish and Game Department, 1978.
\$245,970	Phytoplankton in lakes of the U.S., EPA, 1975-78.
\$36,000	Research on endangered fishes in Nevada, U.S. Fish and Wildlife Service, 1976-79.
\$15,363	Detection of lake pollution by remote sensing, EPA, 1977-79
\$188,000	Environmental consequences of modification of lower Colorado River reservoirs for increased energy output, Water and Power Resources Service, 1979-81.
\$405,800	Environmental Protection Agency Cooperative Agreement, 1980-81.
\$10,000	Habitat requirements of Pahrnagat roundtail chub, U.S. Fish and Wildlife Service, 1980-81.

\$35,700	Competitive relationships of Virgin River fishes, U.S. Fish and Wildlife Service, 1980-81.
\$28,000	Exotic fishes of the southwest, 1981-82
\$440,000	Environmental Protection Agency Cooperative Agreement, 1981-82.
\$60,000	Endemic fishes in Nevada, Nevada Department of Wildlife, 1983-85.
\$4,000	Development of laboratory culture methods for the endangered White River springfish, Nevada Department of Wildlife, 1986-87.
\$300	Population size of Devil's Hole pupfish in the Amargos pupfish station, U.S. fish and Wildlife Service, 1987.
\$5,000	Parasites of Virgin River fishes, U.S. Fish and Wildlife Service, 1987.
\$26,000	Habitat preference of Virgin spinedace, National Park Service, 1987-89.
\$20,000	Habitat Preference of Big Spring spindace, Nevada Department of Wildlife, 1990-91.
\$75,000	Development of a degree program in Environmental Studies, DOE, 1991.
\$107,000	Development of a Cooperative Internship Program in Environmental Monitoring and Measurement, U S EPA, 1992-93.
\$63,940	The Impact of Water Withdrawals on Aquatic Biota and Desert Races of Pronghorn, Elk, and Mule Deer. National Park Service, 1992-93.
\$33,521	Population and Habitat Monitoring of Pupfishes in Cottonball Marsh and Salt Creek, Death Valley, California. National Park Service, 1992-93.
\$40,000	Environmental Resource Analysis and Optimization Plan. Las Vegas Flamingo Hilton, 1992-93.
\$27,000	Probable Causes of Losses in Fish Biodiversity in the Virgin River Drainage. National Park Service, 1992-94.
\$35,000	Population Status of Pupfishes in Death Valley National Monument. National Park Service, 1993-94.
\$36,323	Fish Habitat and Population Monitoring, Saratoga Springs and Lower Amargosa River, Death Valley National Monument - 1995. National Park Service, 1994-95.
\$2499	Breeding Ecology of Devil's Hole Pupfish. National Park Service, 1994-95.

\$2400	Growth of Endangered Species in Golf Course Ponds in Boulder City. U. S. Fish and Wildlife Service, 1995-96.
\$5000	Feasibility Study of Community Composting in southern Nevada. Nevada Division of Forestry, 1995-96.
\$40,000	Effects of Recreation on Native Fishes in Zion National Park. National Park Service, 1996-98.
\$22,000	The Wetlands Project: Desert Wetlands Education, Water Quality, and GLOBE. U. S. EPA. 1997-98.
\$60,000	Integrating Studies of Changes in Water Quality of Sewage Effluent in the Boulder City Wetland Park with Middle School - University Science Education. U. S. Bureau of Reclamation. 1997-1999.

Awards and Recognitions:

1955-56	Who's Who in Biology, Undergraduate
1956	Who's Who in American Colleges and Universities
1960	NSF Summer Institute, Virginia Institute of Marine Sciences
1963-64	RISSECA Award for Outstanding Contributions to Human Relations in Science
1967	Certified as a fisheries scientist by the American Fisheries Society
1967	Selected as a fellow of the American Association for the Advancement of Science
1970	Wildlife Conservationist Award. Presented by the Nevada Wildlife Federation and the National Wildlife Federation for outstanding contribution to the wise use and management of the nation's natural resources.
1975	Elected Fellow, American Institute of Fishery Research Biologists
1979	Elected Fellow, Arizona-Nevada Academy of Science
1979	Special Internal Resolution of Commendation, American Fisheries Society (the first such recognition ever given by the AFS)
1982-83	Barrick Distinguished Scholar, UNLV
1984	Prof. R. R. Miller (University of Michigan), one of the nations most distinguished ichthyologists, described a new fish species from southern Nevada, naming it <i>Rhinichthys deaconi</i> .

- 1985 UNLV nominee for the Phi Kappa Phi National Scholar Award
- 1987 Distinguished Faculty Award, UNLV Alumni Association
- 1987 Award of Excellence, California/Nevada Chapter American Fisheries Society
- 1988 Distinguished Professor, UNLV
- 1988 Certificate of Special Recognition, The Nature Conservancy
- 1990 Trustees Award from the Nevada State Department of Museums and History for contributions to the conservation of Nevada's natural resources.
- 1994 UNLV Commencement Speaker
- 1995 Certificate of Recognition, Las Vegas Indian Center
- 2001 Selected by Nevada chapter of The Nature Conservancy as their "Nevada Hero" as a part of the 50th anniversary celebration for The Nature Conservancy

Invited Presentations of Professional Papers:

- 1966 Ecology of Saratoga Springs, Death Valley National Monument. Symposium on research in the national parks. AIBS Annual Meetings, College Park, MD.
- 1968 Endangered fishes of the western United States. Western section of the American Fisheries Society, Reno, NV.
- 1968 Endangered fishes and fisheries management. Symposium on ichthyology and fisheries management. American Fisheries Society, Tucson, AZ.
- 1968 Marshes, mice and men on the Mojave Desert. National Assn. of Biology Teachers. Annual meeting of the western division. Las Vegas, NV.
- 1969 The endangered species view. Symposium of problems of exotic fishes and other aquatic organisms. Sponsored jointly by American Fisheries Society and American Society of Ichthyologists and Herpetologists. Washington, DC.
- 1969 Population dynamics of a warm spring fish population. Faculty of Population and Environmental Biology, University of California, Irvine.
- 1969 Where should science be taking society? National Science Teachers Assn., Silver Science Symposium.

- 1970 A preliminary ecosystem model of Saratoga Springs. Western Division AAAS Meeting, Berkeley, CA.
- 1970 Can biologists and natural resource managers communicate effectively? Discussion chairman, second AIBS interdisciplinary workshop, Laramie, WY.
- 1971 Rearing bait fishes in the desert southwest. Inland Commercial Fisheries Workshop, Laramie, WY.
- 1974 Devil's Hole pupfish. Desert Fishes Council Annual Meeting, Las Vegas, NV.
- 1975 Devil's Hole: A case in point. American Fisheries Society National Meeting.
- 1975 The limnology of Lake Mead in relation to plans for pump storage. U.S. Bureau of Reclamation workshop on ecology of pumped storage reservoirs, Denver, CO.
- 1977 Research on endangered fishes in the national parks with special emphasis on the Devil's Hole pupfish. *Plenary address*, aquatic ecology section, first annual symposium on research in national parks, New Orleans, LA.
- 1978 Endangered fishes of North America. Fisheries administrators Section, American Fisheries Society, Huntington, WV. (May)
- 1978 Endangered fishes of western North American. BYU symposium on endangered plants and animals. (December)
- 1979 Long and short term changes in western North American fishes populations. Faculty/student seminar, Oregon State University. (April)
- 1979 Ecology and population biology of desert fishes. Annual Biology Symposium, University of California, Fullerton. (November)
- 1980 Endangered species and faith in our future. Natural resource days, Colorado State University. (April)
- 1981 Biogeographical relationships of Cyprinodontid fishes of southwestern U.S. Faculty/student seminar, University of Texas, Austin. (February)
- 1981 Endangered fishes...who cares? Faculty/student seminar, Midwestern University, Wichita Falls, TX. (February)
- 1981 Cyprinodontid biogeography in southwestern U.S. Faculty/student seminar, Sacramento State University. (October)
- 1986 Endangered southwestern fishes. Faculty/student seminar, Brigham Young University. (January)

- 1986 Status of the Devil's Hole pupfish. Cal State Long Beach Biology Colloquium I: Recovery of rare and endangered species. (February-March)
- 1991 Environment at Risk - Green Choices. Nevada Public Health Assoc. Annual Meeting, Sept. 19, 1991. Holiday Hotel, Las Vegas.
- 1991 Pupfish, People and Posterity in Death Valley. 75th Anniversary Celebration of the National Park Service. October 12, 1991. Death Valley, Ca.

In addition, numerous presentations were made as contributed papers at annual meetings of scientific societies (1-4 per year from about 1966-1986)

Recent Presentations:

- 1992 A Water Strategy for Southern Nevada. 1992 Nevada Water Conference. January 15, 1992. Las Vegas, NV.
- 1992 Potential Incentives for Water Efficiency. Southern Nevada's F.U.T.U.R.E. Conference. January 16, 1992. Las Vegas, NV.
- 1992 Future Environmental Educational Needs in Southern Nevada. Nevada Governor's Safety and Health Conference/Expo. March 23, 1992. Las Vegas, NV.
- 1992 Humans as Facilities Managers of the Earth. Nevada Professional Facility Managers Association Greenlights Meeting. June, 1992. Las Vegas, NV.
- 1992 Global Connections to Wildlife Habitat in Nevada. Nevada Wildlife Federation. Luncheon address, 42nd Annual Meeting. Nov. 7, 1992. Las Vegas, NV.
- 1993 Individual Rights, Community Responsibility and Environmental Values. Arizona/Nevada Academy of Sciences. Annual Invited Address. April 16, 1993. Las Vegas, NV.
- 1993 Environment and the Las Vegas Community. Water, Environment and Transportation day for Leadership Las Vegas. April 16, 1993. Las Vegas, NV.
- 1993 From The Trenches. National Meeting of Forest Service Regional Hydrologists and Fish Biologists. May 3-7, 1993. Aspen Lodge, CO.

- 1993 Environmental Opportunities. Professional Opportunity Network. May 11, 1993. Las Vegas, NV.
- 1993 Red Rock Recreation Lands and Quality of Life in Las Vegas. Friends of Red Rock. Annual Awards Banquet. Oct. 16, 1993. San Remo Hotel, Las Vegas, NV.
- 1993 Natural History of Ash Meadows. Natural Science Scholarship Association. Oct. 23, 1993. Ash Meadows, NV.
- 1993 Water Requirements for Fishes of Zion National Park. Virgin River Adjudication. Zion National Park. Nov. 1-5, 1993.
- 1993 Environmental Education. Nevada Environmental Conference. Nov. 15-16, 1993. Reno, NV.
- 1994 Desert Fish. Southwestern Marine Educators Association. Mar. 12, 1994. Mirage Hotel, Las Vegas, NV.
- 1994 Desert Fish. Burkholder Middle School. Henderson, Nevada. Mar. 18, 1994.
- 1994 A Water Strategy for Southern Nevada. International Association of Building Contractors. April 5, 1994. Emerald Springs Holiday Inn, Las Vegas, NV.
- 1994 Desert Fish. Green Valley High School. Henderson, Nevada. April 8, 1994.
- 1994 Natural History of Ash Meadows. Gifted and Talented Students. Clark County Schools. Rod Lee Bigelow Hall. UNLV. Ap. 15, 1994.
- 1994 Human Induced Changes to Native Fishes in the Virgin River Drainage. American Water Resources Association. June 1994. Jackson Hole, WY.
- 1994 Environmental Ethics. University Methodist Church. October 23. Las Vegas, NV.
- 1994 Endangered Species Educational Forum. UNLV Campus. SCOPE and the Endangered Species Coalition. October
- 1994 A Water Strategy for Southern Nevada. Real Estate Talk Radio. September.
- 1994 Oxygen variation and egg survival in Devil's Hole: an Hypothesis. Desert Fishes Council annual meeting. Death Valley, CA. November 17-19.
- 1995 Collision Course? Native Aquatic Systems versus Hydraulic Empire. Environmental History Conference. Alexis Park Hotel, Las Vegas, NV. Panel member. March 10, 1995.

- 1996 Elemental - Global and Local Environmental Problems and Solutions. A performance with Opus Dance Ensemble at The Sierra Club Eco-Fair. Clark Co. Library - Flamingo. March 3, 1996
- 1997 Western Water Policy: Implications for Vertebrate Animals. Presentation to the President's Western Water Policy Review Commission. Tempe, AZ. Feb. 16, 1997.
- 1998 Western Water, Ethics and Politics. UNLV Colloquium. March, 1998.
- 1998 Population and Environment. Las Vegas Humanist Association. July, 1998

Other Professional Activities:

1. Wrote Nevada Fish and Game Commission Policy Number 16: Endemic Endangered Fishes, January 14, 1967.
2. Lecturer, Summer Institute of Desert Biology, Arizona State University, 1968-70.
3. Chairman (1975-77) and founding member (1969-present) of the Desert Fishes Council, the primary conservation organization dedicated to the preservation of desert fishes and therefore responsible for much public and scientific input to government agencies relative to conservation efforts on endemic desert fishes.
4. Sabbatical leave - 1970.
5. Assisted in planning and appeared with other scientists and Jack Lemmon in, "Timetable for Disaster," an NBC documentary, one hour in length, 1970. (Emmy Award for outstanding documentary of the year.
6. Assisted in preparing "Death Valley, the Land and the Legend," National Geographic, PBS TV, Spring, 1970.
7. Assisted in the Bill Burred Animal World ABC-TV program, "Animals of Death Valley," 1971.
8. IPB Modeling Group for construction of a generalized model of aquatic ecosystems in the desert, 1971-73.
9. President, Environmental Consultants, Inc., 1972-86; Chairman, Board of Directors, 1977-86.
10. Endangered species committee chairman. A committee of the American Fisheries Society, 1972-79.

11. Liaison/representative for Ecological society of America to Bureau of Sport Fisheries and Wildlife for matters concerning endangered species, 1973-75.
12. Obtained the first federal funding for establishment of a refuge for endemic fish. Refuge funded by Fish and Wildlife, constructed by Nevada Fish and Game at Hot Creek, White River Valley, Nevada, for White River springfish, *Crenichthys baileyi*.
13. Referee, American Society of Ichthyologists and Herpetologists, American Fisheries Society and numerous other scientific periodicals.
14. Provided the crucial testimony in the Devil's Hole pupfish case. Testimony was based on extended studies made by me and my students which provided information on factors controlling population size. This permitted the court to establish guidelines for management of water levels compatible with survival of the species. The Supreme Court decision that the fish had a prior right to enough water to insure their survival rested heavily on my testimony relative to the mechanisms of population control in this species. Efforts to explain the significance of this case and its meaning in the broader context of developing a "conservation ethic" continues. For example, in November, 1976, I appeared on local television with a rancher, (Tim Hafen) from Pahrump Valley to discuss the implications of the Supreme Court decision. I was also invited to present the Plenary Address in Aquatic Biology at the First Annual Symposium on research in the national parks in New Orleans, November, 1976. The address emphasized the significance of scientific knowledge to both administrative and judicial decision making. Another U.S. District Court hearing to set the final water level for Devil's Hole according to the guidelines established the U.S. Supreme Court was held in November, 1976. I was the expert witness at that time, also.
15. Consultant to Time-Life Books for their volume on Sagebrush Desert.
16. Consultant to national Geographic Society for their volume on Endangered Wildlife.
17. Assisted Stanton Films with production of an educational movie, "The Desert Pupfish."
18. Produced and wrote narrative for 35 mm colored slide presentations for Harper and Row Publishing Company on The Galapagos Islands and Baja California.
19. Workshop on understanding and obtaining federal grants, June, 1978.
20. Seminar on faculty evaluation and development, February, 1979.
21. Research administration training session offered by the National Council of University Research Administrators, November, 1979.
22. Chautauqua course, Life in the Oceans, University of Texas, 1980-81.
23. Sabbatical leave - 1983.
24. Consultant to BBC for television series, "The Making of a Continent," 1983.

25. Consultant to BBC for television program "Resurrection at Truk lagoon," 1984.
26. Chautauqua course, Tropical Marine Ecology, University of Puerto Rico, April, 1985.
27. Taught summer short course offered through International College of the Cayman Islands, "Natural History of Coral Reefs," July, 1984, 1985.
28. Endangered species recovery teams organized by the U.S. Fish and Wildlife Service:
 - a. Warm Springs Pupfish Recovery Team, 1975-80
 - b. Woundfin Recovery Team, 1978-present
 - c. Devil's Hole Pupfish Recovery Team, 1978-82
 - d. Eastern Mojave Desert Endangered Fishes Recovery Team, 1982-present
 - e. Virgin River Fishes Recovery Team, 1990-present
29. Wrote species workbooks, (literature review and current state of knowledge, 1985-86) for the U.S. Fish and Wildlife Service centralized data base known as the Endangered Species Information System, covering the following species:
 - a. Moapa dace
 - b. Pahrnagat speckled dace
 - c. Ash Meadows speckled dace
 - d. Pahrump poolfish
 - e. Devil's Hole pupfish
 - f. Ash Meadows pupfish
 - g. Warm Springs pupfish
30. Expert witness for State of Nevada in Yucca Mountain Water Rights Hearing, 1991.
31. Consultant to U. S. National Park Service, Bureau of Land Management, Fish and Wildlife Service, and Bureau of Indian Affairs for evaluation of probable impacts of the proposed Las Vegas Valley Water District projects to obtain water from the Virgin River and eastern and central Nevada. 1992-95.
32. Consultant to U. S. National Park Service for water rights litigation/negotiation for Zion National Park. 1993-1996.
33. Straw Bale Workshop. Nevada Power Company. March 15 - 17, 1996.
34. Expert Witness for Great Basin Water Network in hearings before the Nevada State Engineer for SNWA groundwater rights in eastern Nevada (Spring Valley, and Cave, Dry Lake and Delamar Valleys). 2007, 2009.

Community Service:

1. Board of Directors, Las Vegas Zoological Society, 1963
2. Board of Directors, Las Vegas Symphony Society, 1969-70
3. Advisory Board, Las Vegas Salvation Army, 1970
4. Organizer and lecturer of a non-credit university course, "Environmental Pollution," 1969
5. Lecturer in a non-credit university course, "The Desert Environment," 1970
6. Clark County Comprehensive Health Planning Council, 1970
7. Regional Planning Council Committee on Solid Waste Disposal, 1970
8. Frequent talks before local service clubs, public schools, radio, television, 1960-present
9. Young Audiences Vocal Ensemble (Baritone), 1970-73
10. Nevada Fish and Game Advisory Committee on Endangered Species, 1970-74.
11. Judge, Clark County Forensics Tournament, 1971-73
12. Clark County School District Advisory Committee for Career Education Development, 1973-74
13. Ad hoc Nevada Radioactive Materials Storage Advisory Committee, appointed by Governor O'Callaghan, 1974
14. Career Day speaker, Clark County School District, 1975, 1985; Bishop Gorman High School, 1986, 1987, 1991.
15. Consultant, Nevada State Council on the Arts, 1978-81
16. Nevada Metropolitan Opera Auditions Committee, 1979-80
17. UNLV Speakers Bureau, 1981-87; 1991-2.
18. Founding member, University Library Society, 1985
19. Resource person, Clark County Schools Academically Talented Program, 1984-present
20. Governor's Institute for Academically Talented Students, 1990, 1991.
21. Consumer Advisory Council, Nevada Power Company. 1992.

22. Board of Trustees. Desert Wetlands Park. 1995 - ?

University Committees:

1. University Council, 1962-63
2. Wildlands Research Coordination Board, 1970-77 (UNS)
3. Water Resources Advisory Board, 1968-82, (Desert Research Institute)
4. Environmental Studies Council, 1973-75
5. Committee to define minimum requirements of a thesis at UNLV, 1974-75
6. University Research Council, 1975-82
7. Priorities Committee, 1979-80
8. Academic Vice President Search Committee, 1979-80
9. Dean Search Committee, College of Science, Math and Engineering, 1981.
10. Promotion and Tenure Committee, 1981
11. UNLV Faculty Senate, 1984-87 (Vice-Chair, 1984-85; Chair, 1985-86)
12. UNLV Priority and program Review Committee, 1984-85
13. UNLV Budget Committee (Chairman) 1984-85
14. Campus Beautification Committee, 1985-86
15. UNLV Committee to define requirements for the rank for Distinguished Professor, 1985
16. Biology Department Committee to Evaluate the Department Chair (Chair) 1985
17. President's Faculty Legislative Advisory Committee, 1986
18. Senate ad hoc Committee on Excellence in Undergraduate Education, 1985-86
19. Committee to Evaluate the Dean, College of Science, Math and Engineering, 1986
20. Grants Officer Search Committee, Graduate College, 1986-87

21. Senate ad hoc Committee on Student Assessment and Faculty Development (chair), 1986-87
22. Barrick Distinguished Scholar and Barrick Scholar Selection Committee, 1987-89
23. Distinguished Professor Selection Committee, 1989, 1992
24. Environmental Studies Program Planning Committee
25. Ethics Committee
26. Research Advisory Council
27. Advisory Committee on Assistive Technology
28. University Task Force on Planning 1995-96.
29. Search Committee, Director, Greenspun School of Communication, Chair. 1997-8.
30. Merit, Tenure and Promotion Committee. Greenspun College of Urban Affairs. 1998

Courses Taught:

1. Humans and the Environment
2. Human Ecology
3. Ichthyology
4. Vertebrate Zoology
5. Comparative Vertebrate Anatomy
6. Biology of Man
7. Human Anatomy & Physiology
8. Comparative Vertebrate Embryology
9. Herpetology
10. General Physiology
11. Mammalogy
12. Aquatic Ecology

13. Advanced Ichthyology
14. Limnology
15. Fish Hatchery Management Techniques
16. Ecology of Fishes
17. Natural History of Baja California
18. Natural History of the Galapagos, Andes & Amazon
19. Principles of Modern Biology
20. Biology of Oceanic Islands
21. Fisheries Biology
22. Marine Biology
23. Natural History of Coral Reefs
24. Life in the Oceans
25. Seminar in Environmental Studies