RESUME

Colleen A. Caldwell
U.S. Geological Survey / Cooperative Research Units
New Mexico Cooperative Fish and Wildlife Research Unit
Box 30003, MSC 4901
Las Cruces, New Mexico 88003-8003
Phone 575-646-8126 FAX 575-646-1281
ccaldwel@usgs.gov

Educational Background

Ph.D.	Ecology, University of Tennessee-Knoxville, 1988
M.S.	Aquatic Ecology, Texas State University, 1985
B.S.	Fisheries Sciences, Texas A&M University, 1982

Professional Affiliation

2014-Present	Unit Leader and Affiliate Professor, USGS/NMSU-FWCE U.S. Geological Survey/Biological Resources Division New Mexico Cooperative Fish and Wildlife Research Unit College of Agriculture, Consumer and Environmental Sciences Department of Fish, Wildlife and Conservation Ecology
2006-2014	Unit Leader and Affiliate Associate Professor
1994-2006	Assistant Unit Leader-Fisheries and Affiliate Assistant Professor
1991-1994	U.S. Department of Interior/National Biological Survey Field Station Leader, La Crosse, Wisconsin National Fisheries Contaminant Research Center
1989-1991	North Carolina State University, Zoology Department Research Associate (Post-doctoral)

Background of the Federal Unit:
The New Mexico Cooperative Fish and Wildlife Research Unit (Unit), established under cooperative agreement June 1988, is one of 40 U.S. Geological Survey Cooperative Research Units located at major universities under the direction of Cooperative Research in Reston, Virginia. Operations of the New Mexico Unit are governed by a formal Cooperative Agreement among USGS, New Mexico State University, New Mexico Department of Game and Fish, Wildlife Management Institute, and the U.S. Fish and Wildlife Service. Federal Unit Scientists are expected to wear three hats: Research, Teaching, and Technical Assistance.

Evidence of Research Scholarship and Creative Activities

Peer-refereed Journal Articles

1. Vaisvil, A., and **C.A. Caldwell**. 2022. Effects of water-level fluctuations and water temperature on young-of-year largemouth bass in a Southwest irrigation reservoir. Journal of Fish and Wildlife Management (In Press).
2. Wallin, T.J., and **C.A. Caldwell**. 2022. Comparative assessment of laboratory-derived thermal maxima of Gila Trout (*Oncorhynchus gilae*) with current stream temperatures. Southwestern Naturalist (In Press).
3. Kremer, L.B., and **C.A. Caldwell**. 2022. Wildfire effects on mass and thermal tolerance of *Hydropsyche oslari* (Trichoptera) in southwestern USA montane grassland streams. Freshwater Science 41:62-76.
4. Huntsman, B. M., A. J. Lynch, and **C.A. Caldwell**. 2021. Interacting Effects of Density-dependent and Density-independent Factors on Growth Rates in Southwestern Cutthroat Trout Populations. Transactions of the American Fisheries 150:651-664. https://doi.org/10.1002/tafs.10319.
5. Huntsman, B.M., A.J. Lynch, **C.A. Caldwell**, and F. Abadi. 2020. Intrinsic and extrinsic drivers of life-history variability for a southwestern cutthroat trout. Biological Conservation https://doi.org/10.1111/eff.12567.
6. Campbell, M.C., **C.A. Caldwell**, T. Lewis, W.D. Wilson, and C.C. Gard. 2019. Nonlethal detection of Asian fish tapeworm in the federally endangered humpback chub a using molecular screening tool. Transactions of the American Fisheries Society 148:832-842.
7. **Caldwell, C.A.**, H. Falco, W. Knight, M. Ulibarri, and W. R. Gould. 2019. Reproductive potential of captive Rio Grande silvery minnow. North American Journal of Aquaculture 81:47-54.
8. Kalb, B., B. Huntsman, **C.A. Caldwell**, and M. Bozek. 2018. A mechanistic assessment of seasonal microhabitat selection by drift-feeding Rainbow Trout *Oncorhynchus mykiss* in a southwestern headwater stream. Environmental Biology of Fishes 101:257-273.
9. Peterson, D., R.B. Trantham, T.G. Trantham, and **C.A. Caldwell**. 2018. Tagging effects of passive integrated transponder and visual implant elastomer on the small-bodied White Sands pupfish (*Cyprinodon tularosa*). Journal of Fisheries Research 198:203-208.
10. Alvarez, G., **C.A. Caldwell**, and C. Kruse. 2017. Effects of CFT Legumine (5% rotenone) on tadpole survival and metamorphosis of Chiricahua leopard frog (*Lithobates chiricahuensis*), northern leopard frog (*L. pipiens*), and American bullfrog (*L. catebeinanus*). Transactions of the American Fisheries Society 146:512-522.
11. Cain III, J.W., M.M. Avery, **C.A. Caldwell**, L.B. Abbot, and J.L. Holechek. 2017. Diet composition, quality, and overlap of sympatric American pronghorn and gemsbok. Wildlife Biology 296:1-10.
12. Galindo, R., W. D. Wilson, and **C.A. Caldwell.** 2016. Geographic distribution of genetic diversity in populations of Rio Grande chub *Gila pandora*. Conservation Genetics 17:1081-1091.
13. Todd, A. S., B. N. McGee, M. P. Zeigler, and **C.A. Caldwell**. 2016, Water and air temperature throughout the range of Rio Grande cutthroat trout in Colorado and New Mexico; 2010-2015: U.S. Geological Survey data release: ScienceBase: http://dx.doi.org/10.5066/F73R0QZC.
14. Whitney, J .E., R. Al-Chokhachy, D. B. Bunnell, **C.A. Caldwell**, S. J. Cooke, E. J. Eliason, M. Rogers, A. J. Lynch, and C. P. Paukert. 2016. Physiological basis of climate change impacts on North American inland fishes, Fisheries 41:332-345. DOI: 10.1080/03632415.2016.1186656
15. Chase, N., **C.A. Caldwell**, S.A. Carleton, W.R. Gould, and J.A. Hobbs. 2015. Movement patterns and dispersal potential of Pecos bluntnose shiner (*Notropis simus peconensis*) revealed using otolith microchemistry. Canadian Journal of Fisheries and Aquatic Sciences 72:1575-1583.

16. Ayre, K.K., **C.A. Caldwell**, J. Stinson, and W.G. Landis. 2014. Analysis of regional scale risk to whirling disease in populations of Colorado and Rio Grande cutthroat trout using a Bayesian network model. Journal of Risk Analysis 34:1589-1605.
17. **Caldwell, C.A.**, G.Z. Jacobi, M.S. Anderson, R.R. Parmenter, J. McGann, W.R. Gould, R. DuBey, and M.D. Jacobi. 2013. Prescription fire effects on an aquatic community of a southwest montane grassland system. North American Journal of Fisheries Management 33:1049-1062.
18. Young, K.E., L.B. Abbott, **C.A. Caldwell**, and T. S. Schrader. 2013. Estimating suitable environments for invasive plant species across large landscapes: A remote sensing strategy using Landsat 7 ETM+. International Journal of Biodiversity and Conservation 5:122-134.
19. Zeigler, M.P., S.F. Brinkman, **C.A. Caldwell**, A.S. Todd, M.S. Recsetar, and S.A. Bonar. 2013. Upper thermal tolerances of Rio Grande cutthroat trout under constant and fluctuating temperatures. Transactions of the American Fisheries Society 142:1395-1405.
20. Recsetar, M.S., M.P. Zeigler, D.L. Ward, S.A. Bonar, and **C.A. Caldwell**. 2012. Relationship between fish size and thermal tolerance. Transactions of the American Fisheries Society 141:1433-1438.
21. Zeigler, M.P., A. Todd, and **C.A. Caldwell**. 2012. Evidence of recent climate change within the historic range of Rio Grande cutthroat trout: Implications for management and future persistence. Transactions of the American Fisheries Society 141:1045-1059.
22. Sykes, C.L., **C.A. Caldwell**, and W.R. Gould. 2011. Physiological effects of potassium chloride, formalin, and handling stress on Bonytail. North American Journal of Fisheries Management 31:291-298.
23. **Caldwell, C.A.,** F.T. Barrows, M. Ulibarri, and W.R. Gould. 2010. Diet optimization of juvenile Rio Grande silvery minnow. North American Journal of Aquaculture 72:57-64.
24. Cho, S.J., **C.A. Caldwell** and W.R. Gould. 2009. Physiological stress responses of Rio Grande silvery minnow: Effects of individual and multiple physical stressors of handling, confinement, and transport. North American Journal of Fisheries Management 29:1698-1706.
25. Sanchez, B.C. and **C.A. Caldwell.** 2008. Assessment of exposure risk of polychlorinated biphenyls to interior least terns (*Sterna antillarum*). Environmental Toxicology and Chemistry 27:617-622.
26. DuBey, R.J., **C.A. Caldwell**, and W.R. Gould. 2007. Relative susceptibility and effects on performance of Rio Grande cutthroat trout and rainbow trout challenged with *Myxobolus cerebralis*. Transactions of the American Fisheries Society 136:1406-1414.
27. **Caldwell, C.A.**, P. Swartzendrubber, and E. Prestbo. 2006. Concentration and dry deposition of mercury species in arid south central New Mexico (2001-2002). Environmental Science and Technology 40:7535-7540.
28. DuBey, R., **C.A. Caldwell**, and W.R. Gould. 2005. Effects of temperature, photoperiod and *Myxobolus cerebralis* infection on growth, reproduction and survival of *Tubifex tubifex* lineages. Journal of Aquatic Animal Health 17:338-344.
29. Mitchell, S.E., **C.A. Caldwell**, G. Gonzales, W.R. Gould, and R. Arimoto. 2005. Effects of depleted uranium on survival, growth, and metamorphosis in the African clawed frog (*Xenopus laevis*). Journal of Toxicology and Environmental Health, Part A 68:951-965.
30. DuBey, R. and **C.A. Caldwell**. 2004. Distribution of *Tubifex tubifex* lineages and *Myxobolus cerebralis* infection in the tailwater of the San Juan River, New Mexico. Journal of Aquatic Animal Health 16:179-185.
31. **Caldwell, C.A.**, F.A. Fuller, W.R. Gould, P. Turner, and D. Hallford. 2004. Seasonal changes in 17-β estradiol of the Rio Grande chub (*Gila Pandora*) in south-central New Mexico. Southwestern Naturalist 49:311-315.

32. Kuhne, W.W., **C.A. Caldwell**, W.R. Gould, P.R. Fresquez, and S. Finger. 2002. Effects of depleted uranium on the health and survival of *Ceriodaphnia dubia* and *Hyalella azteca*. Environmental Toxicology and Chemistry 21:2198-2203.
33. Schmitt, C.J., **C.A. Caldwell**, B. Olsen, D. Serdar, and M. Coffey. 2002. Inhibition of erythrocyte δ-aminolevulinic acid dehydratase (ALAD) activity in fish from waters affected by lead smelters. Environmental Monitoring and Assessment 77:99-119.
34. Canavan, C.M., **C.A. Caldwell**, and N.S. Bloom. 2000. Discharge of methylmercury-enriched hypolimnetic water from a stratified reservoir. Science of the Total Environment 260:159-170.
35. **Caldwell, C.A**., C.M. Canavan, and N.S. Bloom. 2000. Potential effects of forest fire and storm flow on total mercury and methylmercury in sediments of an arid-lands reservoir. Science of the Total Environment 260:125-133.
36. Sutton, R.J., **C.A. Caldwell**, and V.S. Blazer. 2000. Observations of health indices used to monitor a tailwater fishery. North American Journal of Fisheries Management 20:267-275.
37. **Caldwell, C.A**., M.A. Arnold, and W.R. Gould. 1999. Mercury distribution in blood, tissues, and feathers, of double-crested cormorant nestlings from arid-lands reservoirs in south central New Mexico. Archives of Environmental Contamination and Toxicology 36:456-461.
38. Burden, V.M., M.B. Sandheinrich, and **C.A. Caldwell**. 1998. Effects of lead on the growth and δ-aminolevulinic acid dehydratase activity of juvenile rainbow trout, *Oncorhynchus mykiss*. Environmental Pollution 101:285-289.
39. **Caldwell, C.A.** 1997. Aromatic hydrocarbon pathology in fish following a large spill in the Nemadji River, Wisconsin, USA. Bulletin of Environmental Contamination and Toxicology 58:574-581.
40. **Caldwell, C.A**., and J.M. Hinshaw. 1995. Tolerance of rainbow trout to dissolved oxygen supplementation and a *Yersinia ruckeri* challenge. Journal of Aquatic Animal Health 7:168-171.
41. **Caldwell, C.A**., and J.M. Hinshaw. 1994. Nucleotides and the adenylate energy charge in rainbow trout (*Oncorhynchus mykiss*) subjected to a range of dissolved oxygen concentrations. Comparative Biochemistry and Physiology B 109:313-323.
42. **Caldwell, C.A**., and J.M. Hinshaw. 1994. Physiological and hematological responses in rainbow trout subjected to supplemental dissolved oxygen in fish culture. Aquaculture 126:183-193.
43. **Caldwell, C.A.**, H.G. Kattesh, and R.J. Strange. 1990. Distribution of cortisol among its free and protein-bound fractions in rainbow trout: Evidence of control by sexual maturation. Comparative Biochemistry and Physiology A 99:593-595.
44. **Caldwell, C.A**., J.M. Hinshaw, and H.G. Kattesh. 1990. Validation of a solid-phase enzyme immunoassay technique for the measure of plasma cortisol in rainbow trout. Journal of Aquatic Animal Health 2:228-230.
45. Carmichael, G.J., J.H. Williamson, **C.A. Caldwell**, and J.R. Tomasso. 1988. Responses of northern, Florida, and hybrid largemouth bass to low temperature and low dissolved oxygen. The Progressive Fish Culturist 50:225-231.
46. **Caldwell, C.,** and R.J. Strange. 1987. Physiological stress responses in wild and hatchery-reared rainbow trout. Transactions of the American Fisheries Society 116:574-579.
47. **Caldwell, C.A.,** and J.R. Tomasso. 1985. Stocking and handling-induced stress in red drum fingerlings. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies 39:238-247.

List of research areas, titles and sources of grants and contracts:

2021-2023	Gila Chub Habitat Suitability Study - San Francisco River	$136,897
2020-2022	Differential survival of two size classes of Rainbow Trout Oncorhynchus mykiss and the predatory impact of Northern Pike *Esox lucius* in a high elevation New Mexico reservoir	$33,043
2019-2022	Use of Trojan male brook trout as a conservation tool for restoring native Rio Grande trout in New Mexico (As PI, I was responsible for research development, writing, and obtaining the contract)	$134,434
2016-2019	Influence of stream temperature, intermittency, and nonnative fishes on the current and future distribution of fishes of conservation need in the Gila and Mimbres drainage basins (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$114,374
2018-2019	Susceptibility of Rio Grande cutthroat trout to displacement by brown trout (my graduate student and post-doctoral research associate assisted with the development of the competitive grant)	$49,473
2016-2019	Natal Source and the Influence of Environmental Bottlenecks on Largemouth Bass Recruitment in Elephant Butte Reservoir (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$143,969
2015-2019	Impact of drought on southwestern cutthroat trout: Influences of changes in discharge and stream temperature on the persistence of Rio Grande cutthroat trout populations. National Climate Change and Wildlife Center (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$278,878
2014-2018	Population demographics, hydrology and distribution of White Sands pupfish throughout two military installations. Department of Defense (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$355,600
2015-2020	Influence of fire and forest restoration on spatio-temporal distribution of fish communities and benthic aquatic macroinvertebrates in the Valles Caldera National Preserve, New Mexico (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$21,255
2014-2018	Development and validation of a molecular screening tool to identify presence of Asian fish tapeworm in imperiled southwestern native fish populations. U.S. Fish and Wildlife Service (Co-PI worked with Federal cooperators)	$150,000
2013-2016	Assessment of drought impacts on native trout in the southwestern U.S. USGS National Climate Change and Wildlife Center (Co-PI, I assisted with writing and obtaining the contract)	$18,000
2013	Effects of piscicide Rotenone on native amphibians. New Mexico Department of Game and Fish - Share with Wildlife (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$10,852
2014-2015	Evaluation of intermittency of stream flow in headwater streams for Rio Grande Cutthroat trout. U.S Fish and Wildlife Service, Science Support Program (as Co-PI, I shared research development, writing and obtaining the competitive grant with my research associate and USGS colleague)	$5,000
2013-2015	Habitat and biotic surveys of McKittrick Drainage, Guadalupe Mountains National Park. National Trout Unlimited, Texas Parks and Wildlife Department (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$25,000

2012-2015	Seasonal ecology of Pecos pupfish throughout a remnant wetland. U.S. Fish and Wildlife Service, Science Support Program (as Co-PI, I assisted with research development, writing and obtaining the competitive grant).	$87,000
2012-2015	Evaluation of baseflow as climate stressors in Rio Grande cutthroat trout U.S Fish and Wildlife Service, Science Support Program (as Co-PI, I shared research development, writing and obtaining the competitive grant with my research associate and USGS colleague).	$63,433
2011-2013	Restoration of Rio Grande cutthroat trout to the Mescalero Apache tribal lands. Bureau of Indian Affairs, U.S. Fish and Wildlife Service, Western Native Trout Initiative (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$105,856
2011-2013	Determining limiting factors of Pecos Bluntnose Shiner in the Farmlands Reach of the Pecos River, New Mexico. U.S. Fish and Wildlife Service, Science Support Program (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant)	$83,500
2009-2012	Population genetic assessment of Rio Grande chub. USDA Forest Service. (As PI, I was solely responsible for research development, writing, and obtaining the competitive grant).	$47,928
2009-2011	Productivity of Pronghorn on White Sands Missile Range, New Mexico. USGS Cooperative Research Units (I obtained funding through a contract from USGS to support a graduate student left behind by the departure of a Unit scientist).	$ 42,000
2010-2011	Influence of invasive species on White Sands pupfish and burrowing owls on Holloman Air Force Base. U.S. Department of Defense (as Co-PI, I shared equally with research development, writing and obtaining the contract).	$100,000
2008-2011	Determining condition and productivity of desert bighorn sheep on Kofa NWR. U.S. Fish and Wildlife Service, Science Support Program, Kofa National Wildlife Refuge (The research initiative began with a Unit scientist. After his departed from the Unit, I took over the project to complete the graduate student and contractual obligations).	$176,610
2008-2011	Effects of thermal tolerance limits on the distribution and restoration of southwestern native salmonids. U.S. Fish and Wildlife Service, Science Support Program (I was Co-PI on the competitive grant, however, the research began under my initiative).	$ 78,725
2008-2009	Climate change within the Comanche and upper Pecos River Watersheds, current range of Rio Grande Cutthroat Trout. U.S. Fish and Wildlife Service, Region II, Climate Change Initiative (I was Co-PI on the competitive grant with my graduate student, however, the research began under my initiative).	$ 5,000
2006-2008	Southwest regional risk assessment for whirling disease in native salmonids in arid and semi-arid lands. Whirling Disease Foundation, Coldwater Initiative (as Co-PI, I shared research development with my post-doctoral research associate, however, the research began under my initiative).	$196,310
2005-2006	Post-wildfire effects of Gila trout populations and their habitat. T&E, Inc., Trout Unlimited, U.S. Fish and Wildlife Foundation (as Co-PI, I assisted the graduate student with writing the competitive grants).	$17,135
2005-2009	Grazing effects on the Valles Caldera National Preserve. Valles Caldera National Trust, USDA Rocky Mountain Research Station, T&E, Inc. (as PI, I was solely responsible for writing and obtaining the contract).	$195,820
2001-2003	Ecological differentiation and survivability of *Tubifex tubifex* infested with *Myxobolus cerebralis* in the San Juan River, New Mexico Tailwater Blue Ribbon Trout Fishery. Whirling Disease Foundation, Montana State	$50,000

	University (as Co-PI, I shared in research development, writing and obtaining the competitive grants with my post-doctoral research associate).	
2002-2003	Distribution of Rio Grande Cutthroat trout and native fishes in two National Forests. USDA Regional Forester, T&E, Inc. (as Co-PI, I shared research development with two doctoral students; the research began under my initiative).	$1,500
2000-2002	Air deposition of mercury and other airborne pollutants in the arid southwest. Southwest Center for Environmental Research and Policy, U.S. Environmental Protection Agency (as Co-PI, I developed research methodology with co-investigators, however, I was solely responsible for writing and obtaining the competitive grant; research began under my initiative).	$74,998
1999-2002	The effects of depleted uranium on amphibian health. Department of Energy, Los Alamos National Laboratory (as PI, I was solely responsible for research development, writing, and obtaining the competitive grant).	$81,000
1997-2000	Water quality survey and analysis of surface discharges at the Los Alamos National Laboratory. U.S.G.S./Biological Resources Division, Environmental and Contaminant Research Center, Columbia, MO (as PI, I was solely responsible for research development, writing, and obtaining the competitive grant).	$145,000
1997-2005	Source, transport, and fate of mercury in south-central New Mexico. U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City, UT (as PI, I was solely responsible for research development, writing and obtaining the contract).	$101,000
1996-1997	Spatial distribution of total and methylmercury concentrations in Elephant Butte and Caballo reservoirs, Sierra County, New Mexico. USGS/Water Resources Division, New Mexico Water Resources Research Institute (as PI, I was solely responsible for research development, writing, and obtaining the competitive grant).	$24,650
1995-1998	Effects of environmental contamination on the aquatic community of the San Juan River. U.S. National Biological Survey, Midwest Science Center (National Fisheries Contaminant Research Ctr.), Columbia, MO (as PI, I was solely responsible for research development, writing, and obtaining the contract).	$40,000
1995-1997	Accumulation and food chain transfer of mercury in fish and bald eagles from Caballo Reservoir. U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City, UT (as PI, I was solely responsible for research development, writing, and obtaining the competitive grant).	$32,841
1995-1996	Environmental factors influencing mercury concentrations in water and sediments in Caballo Reservoir, Sierra County, New Mexico. USGS/Water Resources Division, New Mexico Water Resources Research Institute (as Co-PI, I worked equally with the graduate student in development, writing, and obtaining the competitive grants).	$24,980
1993-1994	Assessment of reproductive fitness of walleye in Saginaw Bay, Lake Huron. U.S. Fish and Wildlife Service, Region 3, Division of Environmental Contaminants, East Lansing Field Office (as Co-PI, I worked equally with a research associate in development, writing, and obtaining the competitive grant).	$32,500
1990-1993	Integration of biochemical indicators with physiological stress indices: Applications in trout aquaculture Cooperative State Research Service. U.S. Department of Agriculture (as Co-PI, I worked equally with a research associate in development, writing, and obtaining the competitive grant).	$43,211

Outreach and Information Transfer

My research on the Valles Caldera National Preserve was highlighted in a documentary about the Science of the Valles Caldera National Preserve in 2012. The documentary aired across the U.S. on all Public Broadcasting Stations. http://vcnpearthsystems.nmepscor.net/fire/fire-ecology;
See the introductory video of this award winning production online at:
https://www.youtube.com/watch?v=0omUfbcGwec.

Caldwell, C.A. 2008. Climate change and fisheries: Winners and losers. Fisheries 33(12) 618.

Published Reports (Peer-reviewed)

Zeigler, M.P. and **C.A. Caldwell**. 2017. Feasibility study: Establishing native fish fauna to McKittrick Creek, Guadalupe Mountains National Park, Texas. National Park Service Natural Resource Technical Report Series. 53 pp.

Caldwell, C.A., G. Alvarez, K.G. Boykin. 2014. Toxicity effects of piscicide CFT Legumine (5% rotenone) on *Lithobates* sp. of New Mexico. New Mexico Department of Game and Fish – Share with Wildlife (#13-516-0000-00043). 19 pp.

Zeigler, M.P., A.S. Todd, and **C.A. Caldwell**. 2013. Water temperature and baseflow discharge of Rio Grande cutthroat trout streams in Colorado and New Mexico- 2010 and 2011. U.S. Geological Survey Open-File Report 2013-1051, 18 pp. +appendices. http://pubs.usgs.gov/of/2013/1051/

Caldwell, C.A., T. Bigford, D. Fluharty, R.E. Gresswell, K. Hyatt, D. Inkley, D. MacDonald, M. Mullan, A. Todd, C. Deacon Williams, A. Rosenberger, and R. Valley. 2010. Background paper and American Fisheries Society Policy Statement on Climate Change and Fisheries. 43 pp. http://fisheries.org/docs/policy_statements/policy_33f.pdf

Caldwell, C.A. and K.A. Phillips. 1998. Hematological effects in rainbow trout subjected to a chronic sublethal concentration of lead. Pages 61-62 *In* Proceedings of the 3rd International Congress on the Biology of Fish: Fish Response to Toxic Environments. Baltimore, Maryland.

Caldwell, C.A. and C. M. Canavan. 1998. Spatial and temporal distribution of mercury in Caballo and Elephant Butte reservoirs, Sierra County, New Mexico. Technical Completion Report No. 306. New Mexico Water Resources Research Institute. Project No. 01345672. 48 pp.

Caldwell, C.A., C.M. Canavan, and N.S. Bloom. 1998. Effects of fire on the spatial and temporal distribution of mercury in sediments of an arid-lands reservoir in south central New Mexico. Pages 78-83 *In* Proceedings of the 43rd Annual New Mexico Water Conference. Water Challenges on the Lower Rio Grande. New Mexico Water Resources Research Institute, WRRI Report No. 310, Las Cruces, New Mexico.

Peer-reviewed Technical Reports

Alvarez, G., and **C.A. Caldwell**. 2012. Rotenone: Natural history, chemistry, environmental fate, and toxicity effects in target and non-target organisms. Report and annotated bibliography submitted to New Mexico Department of Game and Fish as a technical assistance request. 55 pp.

Caldwell, C.A. 2012. Production of Pacific white shrimp (*Litopenaeus vannamei*) from glandless cottonseed meal. Report submitted to Agricultural Experiment Station, College of Agriculture, Consumer, and Environmental Sciences. 10 pp.

Guy, R.K., K.G. Boykin, **C. A. Caldwell**, K.E. Young, and A.E. Ernst. 2012. Natural resource geographic changes HAFB Review: Influences of invasive plants and shifting dunes on White Sands pupfish and burrowing owl on Holloman Air Force Base, South central New Mexico. Technical Assistance Report. New Mexico Cooperative Fish and Wildlife Research Unit. Las Cruces, New Mexico. 89 pp.

Caldwell, C.A., S.J. Cho, and J. Remshardt. 2009. Effects of propagation, augmentation, and salvage activities on recovery and survival of Rio Grande silvery minnow (*Hybognathus amarus*). Research Completion Report. New Mexico Cooperative Fish and Wildlife Research Unit. 78 pp + appendices.

Caldwell, C.A., and W. Landis. 2009. An ecological risk assessment for the infection of whirling disease in populations of cutthroat trout in the Southwestern United States. Research Completion Report. 63 pp + appendices.

Anderson, M.C., **C. A. Caldwell**, and R. DuBey. 2009. Grazing effects of livestock and elk on stream morphology, aquatic macroinvertebrates, water quality, and fish populations Valles Caldera National Preserve, New Mexico. Research Completion Report. New Mexico Cooperative Fish and Wildlife Research Unit, Las Cruces, New Mexico. 189 pp + appendices.

Young, K.E., **C. A. Caldwell**, and L.B. Abbott. 2009. Early detection of invasive plant species on Holloman Air Force Base, New Mexico. New Mexico Cooperative Fish and Wildlife Research Unit. Las Cruces, New Mexico. 89 pp.

Young, K.E., K.G. Boykin, **C.A. Caldwell**, J. Seeger, M. Coolidge, T. Ellis, C. Aiello, E. Williams, and A. LeClerc. 2008. California spotted owl and northern goshawk surveys on the Stanislaus National Forest. New Mexico Cooperative Fish and Wildlife Research Unit, New Mexico State University, Las Cruces, New Mexico. 46 pp.

DuBey, R., and **C.A. Caldwell**. 2006. Relative susceptibility of Rio Grande cutthroat trout (*Oncorhynchus clarkii virginalis*) to experimentally induced infection with *Myxobolus cerebralis*. Research Completion Report. New Mexico Cooperative Fish and Wildlife Research Unit, Las Cruces, New Mexico. 21 pp.

Caldwell, C.A., M. Ulibarri, R.T. Barrows, G.A. Kindschi. June 2005. Effects of diet on growth, survival, and performance of Rio Grande silvery minnow: Larvae through juvenile and subadult stages. U.S. Fish and Wildlife Service Leaflet. Bozeman National Fish Technology Center. 55 pp.

Caldwell, C.A. 2003. Hybridization potential and spawning behavior of Rio Grande silvery minnow (*Hybognathus amarus*) and plains minnow (*Hybognathus placitus*). U.S. Fish and Wildlife Service Ecological Services Office, Albuquerque, New Mexico. Final Report.

Caldwell, C.A., R.A. Arimoto, P. Swartzendruber, and E.M. Prestbo. 2003. Air deposition of mercury and other airborne pollutants in the arid southwest. Southwest Center for Environmental Research and Policy. Final Report. Project Number A-00-1.

Dubey, R., R. Calamuso, and **C. A. Caldwell**. 2003. Distribution and status of Rio Grande cutthroat trout and native species in the Carson and Santa Fe National Forests. USDA Forest Service Rocky Mountain Research Station - Technical Completion Report, Project 00-JV-11221606-163. New Mexico Cooperative Research Unit, New Mexico State University, Las Cruces, New Mexico.

Sykes, C. and **C.A. Caldwell**. 2001. San Juan River trout fishery monitoring plan: Fish health assessment. Final report to the U.S. Bureau of Reclamation, Upper Colorado Region, Western Colorado Area Office. Cooperative Agreement No 4-FC-40-15970.

DuBey, R. and **C. A. Caldwell**. 2002. Ecological differentiation and survivability of *Tubifex tubifex* infested with *Myxobolus cerebralis* in the San Juan River, New Mexico Tailwater Blue-ribbon Trout Fishery. Whirling Disease Initiative Final Technical Report, 2001-2002. New Mexico Cooperative Research Unit, New Mexico State University, Las Cruces, New Mexico.

Caldwell, C.A. 2000. Atmospheric deposition of mercury in south central New Mexico, USA. U.S. Bureau of Reclamation, El Paso, Texas. Final Report.

Deitner, R., and **C.A. Caldwell**. 2000. Summary of the WATERQUALITY database. Submitted to the U.S. Fish and Wildlife Service, Ecological Services Division, Albuquerque, New Mexico. Final report and database (ACCESS). Final Report.

Caldwell, C.A. 1998. Summary Report: San Juan River winter flow test, 4 November 1996 – 2 March 2007. Navajo Unit, Colorado and New Mexico Colorado River Storage Project. Upper Colorado Region. Chapter 4: Trout Fisheries. Final Report.

Caldwell, C.A., and M.A. Arnold. 1996. Bioaccumulation and distribution of mercury in the double-crested cormorant (*Phalacrocorax auritus*) from Elephant Butte, and Caballo Reservoirs, New Mexico. U.S. Bureau of Reclamation, El Paso. Final Report.

Caldwell, C.A. 1995. Assessment of reproductive fitness of walleye in Saginaw Bay, Lake Huron. U.S. Fish and Wildlife Service, Office of Natural Resource Damage Assessment, East Lansing, Michigan. Final Report.

Caldwell, C.A. 1995. Bioavailability of trace metals to green sunfish (*Lepomis cyanellus*) exposed to suspended sediments from sites on the upper Mississippi River. U.S. Fish and Wildlife Service, Rock Island Ecological Services Office, Rock Island, Illinois. Final Report.

Caldwell, C.A. 1994. Hepatotoxicity in fish after a chemical Spill. U.S. Fish and Wildlife Service, Research Information Bulletin:81.

Caldwell, C.A. 1993. Damage assessment of injury to natural resources in Fish Creek, Indiana. U.S. Fish and Wildlife Service, Ecological Services Office, Bloomington, Indiana. Final Report.

Caldwell, C.A. 1993. Hematopathological and histopathological responses in fish from the Nemadji River following the June 30, 1002 chemical spill. U.S. Fish and Wildlife Service Ecological Field Office, Green Bay, Wisconsin. Final Report.

Book Reviews

Caldwell, C.A. 2004. Effects of pollution on fish: Molecular effects and population responses. Journal of Environmental Quality 33:1584-1585.

Dissertation

Caldwell, C.A. Ph.D., Ecology, 1988. Physiological stress responses including free and protein-bound cortisol in two strains of rainbow trout. University of Tennessee – Knoxville (Advisor: R.J. Strange; other advisory committee members: J.L. Wilson, H.G. Kattesh, T. Chen, N. Greenberg).

Rendering Scientific Judgment

Participated with regional Forest Service personnel in a panel discussion about adaptation to climate change. Forest Service Climate Change Adaptation Conference and Workshop, Abiquiu, New Mexico. 24 January 2011

Served as an external reviewer on a Doctoral committee, and promotion and tenure of a faculty member in the Department of Natural Sciences, Rand Afrikaans University, South Africa, 2008

Served as panel member to review U.S. Fish and Wildlife Service Genetic Management and Propagation Plan of the Razorback Sucker, 2008

Provided technical review and provided professional opinion to the New Mexico Department of Game and Fish regarding potential threat of contaminants in fishes to River otters within the upper Middle Rio Grande basin (2008). My analysis resulted in the decision that River otters were to be returned to the middle Rio Grande basin. See report: http://fws-nmcfwru.nmsu.edu/fwscoop/pub.htm

Invited expert representing both USGS and New Mexico State University to assist the New Mexico Department of Game and Fish with the investigation to state-list the headwater chub (*Gila nigra*) as either threatened or endangered. October 2006

Served as lead and coordinator in the review of the Fisheries Management Division in the New Mexico Department of Game and Fish. Organized and coordinated an in-depth review of the Fisheries Management Division at the request of the Director. Review resulted in a detailed document describing both attributes and suggestions for improvement to the Fisheries Management Division. November 2004 - February 2005

Served as a peer-reviewer on a Federal Research Grade Evaluation Panel, St. Louis, Missouri. October 2005

Served as an external reviewer for the Fish Technology Center Evaluation Program: Reviewed the Mora National Fish Hatchery and Technology Center, October 2005

Conservation Assessment on Rio Grande cutthroat trout: Peer-reviewed the Conservation Assessment for the American Fisheries Society and the U.S. Forest Service, 2002

Technical Advisory Board of the USGS-Abandoned Mine Lands Initiative. Served as a board member. The Initiative focused on providing clients/partners with information for evaluating abandoned mine lands; as a member of the Advisory Board, reviewed a USGS technical report titled "Transmittal of Work Plans for Colorado and Montana Watershed Investigations" that assessed the effects of historic mining activities on surface water quality.

Assisted Brazilian scientist with developing English transcripts for a video describing general ecology of the Pantanal for English-speaking non-scientists, February 1999

Served as Peer-reviewer of the Following Journals:

PLOS ONE (online open access journal)
Transactions of the American Fisheries Society
Journal of Aquatic Animal Health

Journal of North American Fisheries Management
Journal of Wetlands
Southwestern Naturalist
The Science of the Total Environment
Society of Environmental Toxicology and Chemistry
Archives of Environmental Contamination and Toxicology
Comparative Biochemistry and Physiology
Aquaculture
U.S.G.S. National Institutes for Water Resources Research National Competitive Grants Program
National Sea Grant College Program, National Oceanic and Atmospheric Administration
Canadian Journal of Fisheries and Aquatic Sciences
Great Basin Naturalist
Technical Reports of the Missouri Department of Conservation
Journal of Applied Aquaculture
Journal of Environmental Monitoring and Assessment
4th International Conference of on Acid Rock Drainage
USGS Toxic Substances Hydrology Program Proceedings published as a U.S. Geological Survey Water Resources Investigations Report
Wetlands, the Journal of the Society of Wetlands Scientists

Teaching Responsibility

I teach two courses, alternating each course every other year to provide additional aquatic classes to the fisheries students in the Department. Each course has a weekly laboratory experiential learning techniques (see Table).

FWCE 432/532 Environmental Biology of Fishes (4 cr) taught in even years

FWCE 434/534 Aquatic Contaminants and Toxicology (4 cr) taught in odd years

General Instruction Area - Department of Environmental Sciences has both classes cross-listed as electives for its core curriculum. Department of Chemistry and Biochemistry has Aquatic Contaminants and Toxicology cross-listed for students pursuing a Minor in Toxicology.

Self-improvement Activities Related to Teaching

I enjoy discussing and comparing teaching methods with other instructors. What tools and techniques work and how to incorporate more rigor and basic skill sets that all students should master in their college career (critical thinking, critical review of the literature, and technical writing).

Professional Service to Teaching

Development of Instructional Resources for Others - I wrote the first Graduate Handbook for the Department. There was no one source for graduate students to find the steps needed to apply to the Department and the Graduate College, and the milestones needed to obtain the degree once they entered the Department. The Handbook went from hard spiral bound to electronic and now sits on the Departmental Website.

Assistance to Other Teachers, Researchers, and Courses (Guest Lectures) - I routinely provide guest lectures to Environmental Toxicology (Chemistry & Biochemistry), Introduction to Natural

Resources (FWCE), Professional Development Course (Biology)

Committee Memberships Related to Teaching at the Departmental, College, University, Regional or National Levels - I participated in annual conferences at both Regional and National levels of the American Fisheries Society where I either organized student symposia or judged student presentations. In 1996, I developed the rubric for student presentations (both poster and oral) for the Arizona/New Mexico Chapter of the American Fisheries Society, which is used at every annual meeting.

Former Graduate Advisees

As the major research and academic advisor, I have completed 27 graduate students. Of my former graduate students, two completed Ph.D. programs (Sanchez and Kuhne) and one completed his Veterinary Medical degree (Cho). All completed their degrees within a reasonable time frame (2.5 - 3.5 years for M.S. and 5.5 years for Ph.D.) and all obtained employment with either federal, state, or non-government organizations.

1. Armstrong, B. 2021. YY-Male Brook Trout as an Eradication Tool of Wild Brook Trout Populations in New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
2. Flynn, L. 2020. Is coexistence futile? Brown Trout Salmo trutta suppress cutthroat trout Oncorhynchus clarkii production regardless of temperature. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
3. Wallin, T. 2019. Parameters affecting success of Gila trout recovery streams: An in depth analysis of habitat and community factors on the productivity of Gila trout populations. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
4. Vaisvil, A. 2019. Effects of Reservoir Management and Environmental Variables on Reproduction and Habitat of Largemouth Bass in Elephant Butte Reservoir. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
5. Kremer, L. 2019. Thermal Limits and Resilience of Hydropsychidae (Trichoptera) in Fire Affected Upper Montane Grassland Streams. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
6. Campbell, M. 2016. Development and validation of a molecular screening tool to identify presence of Asian fish tapeworm *Bothriocephalus acheilognathi* in imperiled southwestern native fish populations. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
7. Alvarez, G. 2015. CFT Legumine™ (5% Rotenone) effects on tadpole survival and metamorphosis of Chiricahua Leopard Frog (*Lithobates chiricahuensis*), Northern Leopard Frog (*L. pipiens*), and American Bullfrog (*L. catesbeianus*). Masters of Science, New Mexico State University. Las Cruces, New Mexico.
8. Chase, N. 2014. Causative factors limiting Pecos bluntnose shiner (*Notropis simus pecosensis*) in the Pecos River, New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
9. Kalb, B. 2013. A bioenergetic assessment of seasonal habitat selection and behavioral thermoregulation of rainbow trout *(Oncorhynchus mykiss)* in a southwestern headwater stream. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
10. Galindo, R. 2012. Patterns of genetic diversity in populations of Rio Grande chub (*Gila Pandora*) in New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
11. Zeigler, M.P. 2012. The effects of climate change on the future persistence of Rio Grande

cutthroat trout: An assessment of recent climate change, thermal limits, and current and future stream temperature trends. Masters of Science. New Mexico State University. Las Cruces, New Mexico.

12. Avery, M.M. 2012. Seasonal effects of forage quantity, quality and dietary composition of pronghorn (*Antilocapra americana*) in a semi-arid environment. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
13. Anderson, M.C. 2009. Livestock and elk grazing effects on stream morphology, brown trout population dynamics, movement, and growth rate, Valles Caldera National Preserve, New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
14. Cho, S.J. 2008. Physiological stress responses of Rio Grande silvery minnow (*Hybognathus amarus*): Effects of individual and multiple physical stressors of handling, confinement, and transport. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
15. Coleman, S. 2008. Post-wildfire effects in a Gila trout (*Oncorhynchus gilae*) trout stream. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
16. DuBey, R. 2006. Ecological differentiation and survivability of *Tubifex tubifex* infested with *Myxobolus cerebralis* in the San Juan River, New Mexico. Doctoral Degree, Biology, New Mexico State University. Las Cruces, New Mexico.
17. Sanchez, B. 2005. Ecotoxicological effects of polychlorinated biphenyl contamination in a food web at the Bitter Lake National Wildlife Refuge. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
18. Mitchell, S. 2003. The effects of depleted uranium on the health and development of amphibia. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
19. Everett, E. 2003. Habitat characterization and environmental influences of the Jemez Mountains salamander (*Plethodon neomexicanus*). Masters of Science, New Mexico State University. Las Cruces, New Mexico.
20. Podolsky, J.S. 2000. Organic and metal contaminants in a food chain of the American peregrine falcon (*Falco peregrinus*) at the Los Alamos National Laboratory. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
21. Kuhne, W.W. 2000. The effects of depleted uranium on the health and survival of *Ceriodaphnia dubia* and *Hyallela azteca*. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
22. Canavan, C.M. 1998. Seasonal variability in total mercury and methylmercury at Elephant Butte and Caballo reservoirs, Sierra County, New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
23. Thorn, T.D. 1997. Physical and chemical habitat factors affecting the composition of macroinvertebrate communities in the San Juan River, New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
24. Borunda, D. 1997. Total mercury concentrations in aquatic food web components of Caballo and Elephant Butte reservoirs (Sierra County, NM). Masters of Science, New Mexico State University. Las Cruces, New Mexico.
25. Phillips, K.A. 1997. The stress response of rainbow trout (*Oncorhynchus mykiss*) exposed to lead. Masters of Science, University of Wisconsin. La Crosse, Wisconsin.
26. Arnold, M.A. 1996. Bioaccumulation and distribution of mercury in double-crested cormorants (*Phalacrocorax auritus*) from Elephant Butte and Caballo reservoirs, Sierra County, New Mexico. Masters of Science, New Mexico State University. Las Cruces, New Mexico.
27. Burden, V.M. 1995. Effects of lead on the swimming behavior, growth, and aminolevulinic acid dehydratase (ALA-D) activity of juvenile rainbow trout, *Oncorhynchus mykiss*. Masters of Science, University of Wisconsin. La Crosse, Wisconsin.

Current Graduate Students:

1. Jane Trujillo: Natal Origin, Survival, and Food Web Dynamics of the Rainbow Trout Population in Eagle Nest Lake
2. Kelsie Field: Habitat Suitability for Gila chub Reintroduction in the Upper San Francisco River
3. Michael Miller: Movement and Potential Suppression of Trojan-Y Chromosome Brook Trout in New Mexico

Post-doctoral Research Associates:

1. Brock Huntsman, Ph.D. Dr. Huntsman worked in my laboratory from February 2016 to March 2019 to investigate the effects that a warming climate is having on native Rio Grande cutthroat trout.
2. Heidi Atwood, Ph.D. Dr. Atwood worked in my laboratory from 2013 to 2015 to assist with developing innovative technology in native fish culture.
3. Robert DuBey, Ph.D. Dr. DuBey worked in my laboratory from 2006 to 2009 to investigate the effects of whirling disease in native southwestern fishes.
4. Yong Jiu Chen, Ph.D. Dr. Chen worked in my laboratory from 2005 to 2007 to investigate genetic diversity of endangered fishes subjected to intensive captive propagation.
5. Gerard Zegers, Ph.D. Dr. Zegers worked in my laboratory from 2007 to 2009 to investigate rapid response genetic analysis and genetic management for intensive propagation and recovery of endangered cyprinids.

Former Graduate Student Committees (I was not primary academic or research advisor):

Wride, S. 2016. Non-thesis option in the Department of Biology.

Shafer, N. 2012. Non-thesis option in the Department of Biology.

Recsetar, M. 2011. Thermal tolerance of fishes suing critical thermal maxima. Master of Science, University of Arizona.

Joos, C. 2007. Shrub encroachment and condition of wintering sage sparrows in southern New Mexico. Master of Science, New Mexico State University.

Haan, S. 2005. Habitat characteristics, population demographics, and conspecific interactions of the Sacramento Mountain Salamander, *Aneides hardii.* Master of Science, New Mexico State University.

Paroz, Y. 2005. Population dynamics and landscape scale habitat associations of Rio Grande cutthroat trout (*Oncorhynchus clarkii virginalis).* Master of Science, New Mexico State University.

Umanzor, S. 2008. Phylogenetic reanalysis of chromodorididae (Molluska: Nudibranquia) using a combined approach. Master of Science, New Mexico State University.

Cook, B.A. 2005. Environmental education activity programs, New Mexico Chihuahuan Desert Nature Park. Master of Science, New Mexico State University.

Shemai, B. 2004. Native Rio Grande cutthroat trout restoration and indirect effects on benthic macroinvertebrate community structure in a cold water trout stream. Master of Science, New Mexico State University.

Haan, S. 2004. Habitat characteristics, population demographics, and conspecific interactions of the Sacramento Mountain Salamander, *Aneides hardii*. Master of Science, New Mexico State University.

Foster-Keeler, C. 2003. Genetics of Rio Grande cutthroat trout. Doctoral-Department of Biology, New Mexico State University.

Lopez, V. 2001. Channelpathies in hearing defects. Master of Science, New Mexico State University.

Fuller, A. 2000. Reproductive biology of Rio Grande chub (*Gila pandora*) in a southcentral New

Mexico stream. Master of Science, New Mexico State University.

Cicero, S. 1999. Development and myelination of the post-saccular anterior branch of the eighth cranial nerve in *Xenopus laevis*. Master of Science, New Mexico State University.

International-student Advisees

Cho, S. J. 2008. Physiological stress responses of Rio Grande silvery minnow (*Hybognathus amarus*): Effects of individual and multiple physical stressors of handling, confinement, and transport. Master of Science, New Mexico State University. Las Cruces, New Mexico.

Student Clubs

2016-Present: Faculty co-advisor of the NMSU Graduate Student Organization, Department of Fish, Wildlife and Conservation Ecology.

1994-Present: Faculty co-advisor of the NMSU Student Sub-unit of the American Fisheries Society. As co-advisor, I assist with updating bylaws, annual re-chartering of the club, assist with fund-raising events on and off-campus, and professional development opportunities through attendance to annual meetings of the AZ/NM Chapter of the American Fisheries Society.

2012-Present: Faculty advisor of the Sportsman Bass Fishing Club. As the advisor, I assist with updating bylaws, and approving on and off-campus fund raising and professional development opportunities and ensure grades are maintained at or above 2.5 overall GPA to participate in regional and national fishing tournaments. The club is currently rated 6 out of 50 University Bass Fishing Clubs in the Nation.

Host Department: Fish, Wildlife and Conservation Ecology

2003-Present	Member and rotating Chair of the Space, Computing and Facilities Committee; as member of the committee, we have completed a number of projects that benefit the Department including cleaning and renovating Departmental Conference Room to include telecommunication equipment (large TV monitor and phone conferencing system), locating and renovating permanent storage (total 3,000 sq ft) for Departmental faculty and Unit staff (Quonset Hut, Cropping Storage Facility)
2011	Funds were obtained from Facilities and Services to install emergency alarm and back-up system in the event a loss of air pressure or water pressure from the well.
1994-Present	I oversee the maintenance and upkeep of the living fish teaching collection. This consists of 6-8 aquaria containing live fishes representative of various continents, and a native fish community. In addition, I oversee the maintenance of the Departmental aquaria. One of the first things a visitor should see when passing through the Departmental office door is a native fishes exhibit.
2011	Obtained funds from the University Building Maintenance and Renewal (approximately $26,000) to replace all air lines in the Fisheries Research Laboratory with stainless steel pipe. Two commercial-grade air compressors were installed. I schedule routine maintenance of the air compressors.
2003	Directed the revision and replenishing of the teaching/research fish specimens.

2002 Obtained funding (approximately $20,000) from the College of Agriculture and Home Economics to drill the new deep well for the Fisheries Research Laboratory in Knox 144.

1999 Obtained funds from the University Building Maintenance and Renewal ($4,500) to revamp the Department's Environmental Chamber (which up until this time was used for storage of equipment); also received funds to install a chemical fume hood in Room 143A of Knox Hall.

1998-2003 Member and Chair (2000, 2003), Graduate Curriculum Committee; Accomplishments included development of standardized admission and progress review processes, departmental policy statement on graduate admissions and progress and on graduate student/advisor relations, development of departmental graduate student handbook.

1998 Obtained University Building Maintenance and Renewal grant ($8,500) to add an in-line air filter to the air system used to aerate the laboratory's fish tanks. Air to fish tanks had been coming from Central Plant which contained oil.

1998 Member, Department Head Search Committee

1996 Obtained funds ($11,000) from the University Building Renewal funds to renovate Knox 144 (Fisheries Research Laboratory). The Laboratory was renovated to add floor drains, renovate the deep-well, replace water storage tanks in the basement and deliver air from the Central Plant.

1994-Present Conducted and/or assisted Departmental Safety Officer with organizing laboratory safety procedures and guidelines. Work on a continual basis with the University Safety Office to ensure prompt removal of hazardous chemical waste generated by laboratories in the Department.

1994-1995 Member, Department Research Outcomes Committee

College 2011-2012 I oversaw the production of Pacific white shrimp in my laboratory using an experimental diet of glandless cottonseed meal. The research resulted in a 10 page report to the Agricultural Experiment Station describing the utility of rearing shrimp using cottonseed meal. The work funded summer stipend for an undergraduate student (Chance Roberts).

University 2014-Present Institutional Animal Care and Use Committee, Board Member (Science Representative)

Community

1996, 1999, 2014 Judge, Regional Science Fair at NMSU; 1999 Volunteer in assisting in fund raising for El Caldito soup kitchen; 1995-1999 Created quilts for terminally ill infants and children in Las Cruces.

2008- Present My staff and students continue to work with Las Cruces Public School District to provide hands-on demonstration projects aimed at elementary-level children to educate them about ecology and conservation of aquatic systems. The work has been highlighted in the Las Cruces Sun News and NMSU News Bureau.

State

1999, 2002 Co-taught one day Fish Health Assessment workshop to University students and employees and personnel of the New Mexico Department of Game and Fish. A second full-day workshop was taught to the Arizona/New Mexico American Fisheries Society members as a continuing education class.

2011-2012 Trout Unlimited, Gila-Rio Grande Chapter: Assisted local Trout Unlimited Chapter with two-year survey of a stream (Agua Chiquita) within the Lincoln National Forest to assess suitability of the stream for reintroduction of fishes. Funding was from a national funding program (Embrace-A-Stream).

2010-2013 I assisted the New Mexico Department of Game and Fish and U.S. Fish and Wildlife Service with annual surveys of White Sands pupfish populations throughout its range on two military installations. I convinced the biologists to incorporate into the annual surveys temperature monitoring of the streams. I assist with retrieval, analysis and reporting of the temperature data each year.

Professional Service

American Fisheries Society:
- Parent Society - Resource Policy Committee, Member and Chair of Sub-committee for the development of the Policy Statement and Review Paper (2008-Present)
- Award of Excellence Committee, Member (2010-Present)
- Physiology Section (Founder and President, 1992; Membership Chair 1992-1998; Newsletter Editor 1996-1999)
- Member, National Meeting Oversight Committee
- Western Division - Eugene Maughan Scholarship Committee (2009-Present)
- Arizona/New Mexico Chapter (Secretary/Treasurer, 1995; President Elect, 1996; President 1997; Past President 1998, Newsletter Editor 1997-1999; Developed criteria for Evaluating Student Oral and Poster Presentations; Organizer of the Fisheries Technical Sessions of the 1996 Regional Meeting; Program Editor for the 1999 Regional Meeting; Registration Chair of the 2005 Regional Meetings; Committee Chair of Chapter Bylaws 2003-Present
- Associate Editor, Transactions of the American Fisheries Society (1997-1999)
- Chair, Program Committee, 2009 Western Division Annual Meeting, Albuquerque
- Chair, Program Committee, 131st Annual National Meeting, Phoenix, Arizona (2001) (as Chair of the Program for the 131st Annual Meeting, I participated in three previous annual meetings (1998 Hartford, CT; 1999 Charlotte, NC; 2000 St. Louis, MO)
- Faculty advisor to the New Mexico Student Chapter of the American Fisheries Society (1994-2011, rotated off until 2014)

American Institute of Fishery Research Biologists:
- Member, Hubbs Student Research Scholarship Committee (2008-Present)
- Southwest Division Representative (2011-Present)

Trout Unlimited, Gila/Rio Grande Chapter: Board of Directors (2011-Present)

Special Honors, Awards, or Other Recognition of Excellence in Service

2022 Western Division of the American Fisheries Society - Eugene Maughan Scholarship for Outstanding Graduate (awarded to my graduate student Michael W. Miller)
2021 Best Student Paper Award at the 54th Annual Meeting of the American Fisheries Society AZ/NM Chapter (my graduate student Kelsie Field received the Best Paper Award)
2019 Best Student Paper Award at the 52th Annual Meeting of the American Fisheries Society AZ/NM Chapter (my graduate student Lauren Flynn received the Best Student Paper Award)
2017 Best Student Paper Award at the 50th Annual Meeting of the American Fisheries Society AZ/NM Chapter (my graduate student Damon Peterson received the Best Student Paper Award)
2016 Best Student Poster Award at the Desert Fishes Council Meeting, Albuquerque, New Mexico (my undergraduate student Adam Baca received the Best Student Poster Award)
2016 Best Student Paper Award at the 49th Annual Meeting of the American Fisheries Society AZ/NM Chapter (my graduate student Guillermo Alvarez received the Best Student Paper Award)
2016 Cooperative Research Units Service Award for contributing to the success of the 2016 All Hands Meeting of Cooperative Research Units
2016 Cooperative Research Units awarded the New Mexico Cooperative Fish and Wildlife Research Unit the 2016 Outstanding Science Award
2016 New Mexico State University Graduate Research Student Award for Outstanding Achievement in Science (awarded to my graduate student Meredith Campbell)
2016 Western Division of the American Fisheries Society - Eugene Maughan Scholarship for Outstanding Graduate (awarded to my graduate student Meredith Campbell)
2015 U.S. Geological Survey Performance Award
2015 Best Student Paper Award at the 48th Joint Annual Meeting of the American Fisheries Society AZ/NM Chapter (my student: Guillermo Alvarez received award)
2014 Best Student Poster Award at the 47th Joint Annual Meeting of the American Fisheries Society AZ/NM Chapter (my graduate student: Meredith Campbell received award)
2013 Best Student Paper Award at the 46th Joint Annual Meeting of the American Fisheries Society AZ/NM Chapter (my graduate student: Nathan Chase received award)
2013 U.S. Geological Survey Performance Award
2011 U.S. Geological Survey Promotion to GS-14
2011 Distinguished Service Award, American Fisheries Society for work on the Society's publication and adopted policy of climate change in North American fisheries. While it was a group effort, I was solely responsible for the organization, majority of the writing, editing, and seeing it to completion.
2011 U.S. Geological Survey STAR Award
2010 Outstanding Student Sub-unit Award, Western Division, American Fisheries Society, New Mexico State University Student Sub-unit, presented at the 2010 Annual Meeting in Salt Lake City, Utah
2009 U.S. Geological Survey STAR Award
2008 U.S. Geological Survey STAR Award
2005 New Mexico Branch for the Association of Laboratory Animal Sciences, Certificate of Appreciation for contributions made to the Annual Meeting
2004 U.S. Geological Survey STAR Award for performance associated with assuming the Unit Leader (Acting) Role
2004 Promoted to the Rank of Fellow, American Institute of Research Fishery Biologists
2004 Promoted to Associate Professor, New Mexico State University
2004 Professional of the Year Award, Arizona/New Mexico Chapter of the American Fisheries Society

2001 Chair of the Technical Program for the 131st Annual Parent Society Meeting in Phoenix, Arizona 2001; Received special recognition for service to AFS, August 2001

2000 Received special recognition from the Consortium for Environmental Education and Technology Development as a mentor in their Undergraduate Fellowship Program (1997-2000) Participated in the mentoring program by working with a Consortium undergraduate Fellow for three years (K. Browne)

1999 Best Student Paper Award at the 20th Annual Meeting of the Society of Environmental Toxicology and Chemistry

1999 Associate Editor, Transactions of the American Fisheries Society (1997-1999); Received special recognition for service to AFS

1998 Arizona/New Mexico Chapter of the American Fisheries Society: Elected as the following officers: Secretary/Treasurer, 1995; President Elect, 1996; President 1997; Past President 1998; Received special recognition for service to the Chapter

1993 Physiology Section of the American Fisheries Society- Special Recognition as Founder of the Physiology Section