

Matthew M. Chumchal, Ph.D.
Curriculum Vita

Texas Christian University
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Educational Background

Ph.D. in Zoology, University of Oklahoma, 2007
M.S. in Biology, Texas Christian University, 2003
B.S. with Honors in Biology, Southwestern University, 2001

Year of Appointment to the University and Rank

Associate Professor of Biology, Texas Christian University, 2013-Present
Assistant Professor of Biology, Texas Christian University, 2007-2013

Significant University Administrative Appointments

Director of the Pre-Health Professions Institute and Chair of the Health Professions
Advisory Committee, 2013- Present
Associate Chair of the Health Professions Advisory Committee, 2012-2013

Previous Professional Positions

Hydrologic Technician, United States Geological Survey, 2003

Previous Teaching Positions

Graduate Teaching Associate, University of Oklahoma 2006-2007. (In this role I served as the Instructor of Record for two courses.)

Courses Taught

Comparative Vertebrate Anatomy (TCU, BIOL 30404)
Contemporary Issues in Biology (OU, BIOL 1003 and TCU BIOL 10003)
Contemporary Issues in Biology Online (OU, BIOL 1003)
Ecology and the Environment* (TCU, BIOL 30403)
Environmental Biology (TCU, BIOL 40443/60443)
Human Health and Global Change Seminar (BIOL 40001/60910)
Introduction to Research in the Biological Sciences* (TCU 40021/60011)
Introductory Biology* (TCU, BIOL 10514)
Professional Development in Biology Seminar (TCU, BIOL 60121)
Scientific Presentations Seminar (TCU, BIOL 60001)
Stable Isotope Ecology Seminar (TCU 50910/60910)

**Denotes team-taught course*

External Support

1. Mercury in the Food Web of Caddo Lake. Coypu Foundation, M. Chumchal and T. Rainwater (Texas Tech University) Primary Investigators. Total Award of \$50,000 made directly to Caddo Lake Institute (\$13,995 subaward to TCU). 2006-2008.
2. Freshwater turtle population trends and health in Texas' priority ecoregions. Texas Parks and Wildlife, R. Hudson (Fort Worth Zoo), Primary investigator. \$3,000 subaward for Mercury Analysis of Texas Turtles to M. Chumchal and R. Drenner. 2007-2010.
3. Mercury analysis of estuarine fish. NOAA-Louisiana SeaGrant , B. Fry (LSU) Primary Investigator. M. Chumchal – Co-PI. Total Award \$9,950 (\$9,950 subaward to TCU), 2008.
4. Mercury speciation analysis of livers from Caddo Lake fish. Caddo Lake Institute, \$1,500, M. Chumchal, 2009.
5. Watershed-Level Patterns of Mercury Contamination in the Caddo Lake Watershed and Other Areas of North Texas: Phase 1, Caddo Lake Institute, M. Chumchal and R. Drenner, Primary Investigators, \$5,000, 2012.
6. Wind Turbine Impacts on Birds and Bats; TCU-University of Oxford-NextEra Energy Wind Research Initiative, M. Slattery, Primary Investigator.
 - a. \$123,633 subaward for Analysis of mercury contamination in largemouth bass from the Southcentral U.S. to M. Chumchal and R. Drenner, 2009-2010.
 - b. \$6,585 subaward for Bottom-up nutrient and top-down fish impacts on contaminant flux from aquatic ecosystems. to M. Chumchal and R. Drenner, 2011.
 - c. \$8,856.12 subaward for Effects of fish on mercury transport out of experimental ponds by invertebrates to M. Chumchal and R. Drenner, 2012.
 - d. \$10,000 subaward for Analysis of Hg contamination in fish from the Southeastern U.S. to M. Chumchal and R. Drenner, 2014.

Internal Support

1. Examination of mercury in gar otoliths, Science and Engineering Research Center Award for Undergraduate Students to Christina Ta (E. Couch and M. Chumchal, advisors), \$451, 2007-2008.
2. Using isotopes to characterize the Caddo Lake invertebrate food web, Andrews Institute of Mathematics, Science and Technology Education Research Grant, \$3,000, 2008.
3. Examination of mercury in commercial pet food, URCAI award to Josh Carlin (R. Drenner, M.Chumchal and J. Pinder, advisors), \$1,250, 2008.
4. Mercury contamination of Gulf of Mexico red snapper, TCU Research and Creative Activities Fund Grant, \$4,000, 2008.
5. Mercury concentrations in four different species of Snapper from the Northern Gulf of Mexico. Science and Engineering Research Center Award for Undergraduate Students to Travis Jones (M. Chumchal, advisor), \$2,500, 2009.
6. Mercury contamination in pond food webs at the LBJ National Grasslands: Stable isotope analysis to determine food web structure and allochthony in ponds. Andrews Institute of Mathematics, Science and Technology Education Research Grant, \$3,000, 2009-2010.

7. Fairy shrimp as bioindicators of mercury contamination in temporary ponds. TCU Research and Creative Activities Fund Grant and Junior Faculty Summer Research Program Grant, \$10,000, 2009-2010.
8. Survey of mercury contamination in three species of Texas turtles and development of a non-lethal sampling technique. TCU Research and Creative Activities Fund Grant, \$2,000, 2010-2011.
9. Survey of mercury contamination in three species of Texas turtles: Mercury speciation analysis of livers and stable isotope analysis to determine food web structure. Andrews Institute of Mathematics, Science and Technology Education Research Grant, \$3,000, 2010-2011.
10. Influence of evolutionary history on the sensitivity of fish to mercury pollution: Mercury speciation analysis. Andrews Institute of Mathematics, Science and Technology Education Research Grant, \$3,000, 2011-2012.
11. Influence of evolutionary history on the sensitivity of fish to mercury pollution. TCU Research and Creative Activities Fund Grant, \$4,000, 2011-2012.
12. Insect mediated transfer of aquatic mercury to terrestrial systems. M. Lewis and M. Chumchal. Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$1,500, 2012-2013.
13. Determination of methyl mercury (MeHg) movement between aquatic and terrestrial ecosystems via stable isotope analysis. S. Speir and M. Chumchal. Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$1,500, 2012-2013.
14. Nutrient impacts on contaminant flux from aquatic ecosystems: Mercury speciation analysis. Andrews Institute of Mathematics, Science and Technology Education Research Grant, \$3,000, 2012-2013.
15. Nutrient impacts on contaminant flux from aquatic ecosystems. TCU Research and Creative Activities Fund Grant, \$4,000, 2012-2013.
16. Relationship between Hg concentrations in fish and terrestrial spiders. M. Rightley, R. Drenner and M. Chumchal. Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$1,500, 2013-2014.
17. Habitat-specific variation in insect-mediated mercury flux from Caddo Lake. TCU Research and Creative Activities Fund Grant, \$2,800, 2013-2014.
18. Succession of aquatic insects in response to drought: effects on size. A. Courville, R. Drenner and M. Chumchal Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$509.50, 2014-2015.
19. Mercury contamination of tetragnathid spiders at the LBJ National Grassland: Seasonal variation in Hg concentrations. N.Farha, R. Drenner and M. Chumchal Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$715, 2014-2015.
20. Mercury contamination of tetragnathid spiders at the LBJ National Grassland: Risk to birds. J. Fernandez, R. Drenner and M. Chumchal Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$715, 2014-2015.
21. Succession of larval aquatic insects in response to drought. C.Gober, R. Drenner and M. Chumchal Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$337.50, 2014-2015.

22. Effects of pond permanence on insect-mediated mercury flux from ponds in the Great Plains. M. Chumchal and R. Drenner, Co-investigators, TCU Invests in Scholarship Grant, \$28,409, 2014-2015.
23. Seasonal transfer of methylmercury out of experimental ponds by emerging dragonflies. TCU Research and Creative Activities Fund Grant, \$4,000, 2015-2016.
24. Survey of mercury contamination in spiders from the Eagle Mountain Fish Hatchery. K. Lauck, R. Drenner and M. Chumchal Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$879, 2015-2016.
25. Survey of mercury contamination in Gulf of Mexico fish. C. Cochran, and M. Chumchal Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$750, 2015-2016.
26. Linkages between aquatic and terrestrial systems along the Trinity River. TCU Research and Creative Activities Fund Grant, \$4,000, 2016-2017.
27. Survey of mercury contamination in spiders from the LBJ Grasslands. K. Guilbeau, M. Chumchal and R. Drenner Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$196, 2016-2017.
28. Survey of mercury contamination in spiders from the Trinity River, Fort Worth. A. Kahn, G. Wallace, M. Chumchal and R. Drenner Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$1450, 2016-2017.
29. Mercury in mud daubers. M. Hannappel, M. Chumchal and R. Drenner Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$498, 2016-2017.
30. Methyl mercury contamination of red-winged blackbirds. TCU Research and Creative Activities Fund Grant, \$4,500, 2017-2018.
31. Seasonality of insect-mediated methyl mercury from emerging odonates. W. Mitchell, M. Chumchal and R. Drenner. Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$1,450, 2017-2018.
32. Seasonality of insect-mediated methyl mercury from emerging odonates. M. Self, M. Chumchal and R. Drenner. Science and Engineering Research Center – Undergraduate Research Grant Program Grant, \$724, 2018-2019.
33. Diets of nestling Red-winged blackbird (*Agelaius phoeniceus*). T. Thalhuber, M. Chumchal, R. Drenner. College of Science and Engineering Graduate Student Research Fund Grant, \$3,000, 2018-2019.

Graduate Thesis Directed or Co-Directed

1. Michael Sawey. 2008. Habitat-specific differences in mercury concentrations of Mississippi grass shrimp from Caddo Lake, Texas.
2. Byron Henderson. 2010. Mercury contamination of macroinvertebrates from ponds with and without fish at the LBJ National Grassland.
3. Jacob Wadlington. 2011. Mercury in game fish from North Texas reservoirs.
4. Christina Jones. 2012. Landscape-level patterns of mercury contamination in the South Central United States. (coadvised with Ray Drenner)
5. Brent Tweedy. 2012. Effects of Fish on Insect Emergence and Transport of Methyl Mercury from Ponds. (coadvised with Ray Drenner)
6. Gary Cocke. 2013. Top down and bottom up effects on emergent insect mercury flux from experimental ponds.

7. Taylor Jones. 2013. Top down and bottom up effects on emergent insect mercury flux from experimental mesocosms.
8. Kimberly Adams. 2014. Do fish consumption advisories for mercury adequately protect the public? (coadvised with Ray Drenner)
9. Gretchen Gann. 2014. Mercury-contaminated terrestrial spiders pose a potential health risk to songbirds at Caddo Lake, TX/LA. (coadvised with Ray Drenner)
10. Cleve Powell. 2014. Mercury contaminated riparian spiders along three east Texas rivers pose a potential risk to song birds. (coadvised with Ray Drenner)
11. Frank Greenhill. 2015. Effect of pond permanence on insect emergence and methyl mercury flux. (coadvised with Ray Drenner)
12. Eddie Williams. 2016. Seasonality of MeHg flux from odonates in fish and fishless ponds. (coadvised with Ray Drenner)
13. Celeste Ortega. 2017. Mercury in spiders. (coadvised with Ray Drenner)
14. Christopher Gerstle. 2018. Risk assessment of consuming mercury-contaminated fish to birds in the southern US. (coadvised with Ray Drenner)
15. Thomas Thalhuber. In progress. Mercury in red-winged blackbirds. (coadvised with Ray Drenner)
16. Maddy Hannappel. In progress. Transport of mercury from small grassland ponds. (coadvised with Ray Drenner)

Graduate Committees

1. Brad Blackwell, MS, TCU, 2008
2. Alex Smith, MS, Texas State University, 2009
3. Natalia Quinteros, MS, TCU, 2010
4. Ben Barst, MS, University of North Texas, 2010
5. Meredith Hawkins, MS, TCU, 2010
6. Alisa Abuzeineh, PhD, Texas State University, 2011
7. Sarah Schulwitz, MS University of North Texas, 2012
8. Jim Smith, PhD, University of North Texas, 2012
9. Jesse Becker, PhD, Texas State University, 2013
10. Amy Hardy, MS, TCU, 2015
11. Kristin Nielsen, MS, University of North Texas, 2015
12. Jess Eberle, PhD, University of Oklahoma, 2015
13. Kristin Nielsen, PhD, University of North Texas, 2016
14. Julie Krzykwa, MS, TCU, 2017
15. Brent Tweedy, PhD, University of Oklahoma, 2017
16. Rachel Alenius, MS, TCU, 2018

Undergraduate Honors Thesis Directed or Co-Directed

1. Genesis Sultemeir. 2010. Effects of Water Chemistry on Mercury Concentrations of Fish from Texas Reservoirs.
2. Rachel Meeks. 2011. Mercury Concentrations in Emerging Insects from the Eagle Mountain Hatchery, Texas.
3. Jack O'Brien. 2012. Survey of Mercury Concentrations of Aquatic Invertebrates from the Eagle Mountain Hatchery, Texas.

4. Meghan Lewis. 2013. Insect mediated transfer of aquatic mercury to terrestrial systems.
5. Holly Whitt. 2013. Use of emergent aquatic insects of bioindicators mercury concentrations in fish.
6. Shannon Speir. 2014. Determination of methyl mercury (MeHg) movement between aquatic and terrestrial ecosystems via stable isotope analysis.
7. Ashlyn Courville. 2015. Succession of aquatic insects in response to drought: effects on size.
8. Natalie Farha. 2015. Mercury contamination of tetragnathid spiders at the LBJ National Grassland: Risk to birds.
9. Joan Fernandez. 2015. Mercury contamination of tetragnathid spiders at the LBJ National Grassland: Seasonal variation in Hg concentrations.
10. Charlie Gober. 2015. Succession of larval aquatic insects in response to drought.
11. Cameron Keylor. 2015. Relationship between Hg concentrations in aquatic insects and terrestrial spiders.
12. Madison Rightley. 2015. Relationship between Hg concentrations in fish and terrestrial spiders.
13. Courtney Cochran. 2016. Mercury in Gulf of Mexico fish.
14. Kyle Lauck. 2016. Mercury in spiders.
15. Kirkland Polk. 2016. Seasonality of small insect emergence from fish and fishless ponds.
16. Macgregor Hall. 2016. Small insect mercury flux from fish and fishless ponds.
17. Madeline Hannappel. 2017. Mud daubers as biosentinels of mercury contamination in the Trinity River.
18. Amal Khan. In progress. Mercury contamination of spiders from the Trinity River.
19. Will Mitchell. In progress. Seasonality of odonate emergence and MeHg flux.

Presentation of Scholarly and Creative Activities (* denotes graduate students, ** denotes undergraduate students)

a. Refereed Publications

1. **Chumchal, M.M.** and R.W. Drenner. 2004. Interrelationships between phosphorus loading and common carp in the regulation of phytoplankton biomass. *Fundamental and Applied Limnology (formerly Archiv Für Hydrobiologie)* 161:147-158.
2. **Chumchal, M.M.**, W.H. Nowlin, and R.W. Drenner. 2005. Biomass dependent effects of common carp on water quality in shallow ponds. *Hydrobiologia* 545:271-277.
3. Drenner, R.W., **M.M. Chumchal**, D.H. Marshall, J.L. Owens, and M.R. Ernst. 2005. Changes in water quality following renovation of a water supply reservoir. *Proceedings of the International Association of Theoretical and Applied Limnology (formerly Verhandlungen Internationale Vereinigung für theoretische und angewandte Limnologie)* 29: 979-981.
4. McClain, W., **M.M. Chumchal**, R.W. Drenner, and L. Newland. 2006. Mercury concentrations in fish from Lake Meredith, Texas: Implications for the issuance of fish consumption advisories. *Environmental Monitoring and Assessment* 123:249-258.

5. Walvoord, M.E., M.H. Hoefnagels, D.D. Gaffin, D.A. Long, and **M.M. Chumchal**. 2008. An analysis of calibrated peer review (CPR) in a science lecture classroom. *Journal of College Science Teaching* March/April: 66-73.
6. **Chumchal, M.M.**, R.W. Drenner, B. Fry, K.D. Hambright, and L.W. Newland. 2008. Habitat-specific differences in mercury concentrations in a top predator from a shallow lake. *Transactions of the American Fisheries Society* 137:195–208.
7. Wells, R.J.D., **M.M. Chumchal**, J.H. Cowan Jr. 2008. Effect of trawling and habitat on mercury concentration in juvenile red snapper, *Lutjanus campechanus*, from the northern Gulf of Mexico. *Transactions of the American Fisheries Society* 137:1839-1840.
8. **Chumchal, M.M.** and K.D. Hambright. 2009. Ecological factors regulating mercury contamination of fish from Caddo Lake, Texas, USA. *Environmental Toxicology and Chemistry*, 28:962–972.
9. Burks, R. L. and **M.M. Chumchal**. 2009. To co-author or not to co-author: How to write, publish, and negotiate issues of authorship with undergraduate research students. *Science Signaling*, 2: Teaching Resource 3.
10. Hill, J.J.* , **M. M. Chumchal**, R.W. Drenner, J.E. Pinder III and S. M. Drenner**. 2010. Use of preserved museum fish to evaluate historical and current mercury contamination in fish from two rivers in Oklahoma, USA. *Environmental Monitoring and Assessment*, 161: 509-516.
11. Smith, A.* , A.A. Abuzeineh* , **M.M. Chumchal**, T. H. Bonner, and W.H. Nowlin. 2010. Mercury contamination of the Rio Grande/Rio Bravo del Norte fish community: Spatial variation and the influence of environmental gradients. *Environmental Toxicology and Chemistry*, 29: 1762-1772.
12. **Chumchal, M.M.**, R.W. Drenner, D.R. Cross and K. D. Hambright. 2010. Mercury contamination of three species of forage fish from Caddo Lake, Texas, USA. *Journal of Environmental Sciences*, 22:1158-1163.
13. Barst, B.D.* , A.K. Gevertz** , **M.M. Chumchal**, J.D. Smith* , T.R. Rainwater, P.E. Drevnick, K.E. Hudelson* , G.F. Verbeck, A.Hart, and A.P. Roberts. 2011. Mercury accumulates in melanomacrophage aggregates in wild fish livers: Evidence of link between Hg exposure and negative effects on health in wild fish. *Environmental Science and Technology* 45: 8982–8988.
14. Becker, J.C* , A.W. Groeger, W.H. Nowlin, **M.M. Chumchal**, D. Hahn. 2011 Spatial variability in the speciation and bioaccumulation of mercury in an arid subtropical reservoir ecosystem. *Environmental Toxicology and Chemistry* 30: 2300–2311.
15. **Chumchal, M.M.**, T.R. Rainwater, S.C. Osborn** , A.P. Roberts, M.T. Abel* , G.P. Cobb, P.N. Smith, and F.C. Bailey. 2011. Mercury speciation and biomagnification in the food web of Caddo Lake (TX/LA, USA), a subtropical freshwater ecosystem. *Environmental Toxicology and Chemistry* 30: 1153–1162.
16. Drenner, R.W. **M.M. Chumchal**, S.P. Wentz, M. McGuire* , and S.M. Drenner**. 2011. Landscape-level patterns of mercury contamination of fish in North Texas. *Environmental Toxicology and Chemistry* 30:2041–2045.
17. Fry, B. and **M.M. Chumchal**. 2011. Sulfur stable isotope indicators of residency in estuarine fish. *Limnology and Oceanography*. 56:1563–1576.
18. Fry, B., **M.M. Chumchal**. 2012. Mercury bioaccumulation in estuarine food webs. *Ecological Applications*, 22: 606–623.

19. Henderson, B.L.*, **M.M. Chumchal**, R.W. Drenner, Y.Deng,** P.Diaz*, W.H. Nowlin. 2012. Effects of fish on mercury contamination of macroinvertebrate communities of grassland ponds. *Environmental Toxicology and Chemistry* 31: 870-876.
20. Lavoie, R.*, T. Jardine, **M.M. Chumchal**, K. Kidd, L. Campbell. 2013. Biomagnification of mercury in aquatic food webs: a worldwide meta-analysis. *Environmental Science and Technology*, 47: 13385–13394. ****Highly cited paper - Thomas Reuters Essential Science Indicators*
21. Barst, B.*, C. Hammerschmidt, **M.M. Chumchal**, D. Muir, J. Smith*, A.P. Roberts, T. Rainwater, P. Drevnick. 2013. Determination of mercury speciation in fish tissue with a Direct Mercury Analyzer. *Environmental Toxicology and Chemistry*, 32: 1237-1241.
22. Drenner, R.W., **M.M. Chumchal**, C.M. Jones*, Christopher M. B. Lehmann, David A.Gay, David I. Donato. 2013. Effects of mercury deposition and coniferous forests on the mercury contamination of fish in the south central United States. *Environmental Science and Technology*, 47: 1274-1279.
23. Jones, T.A.*, **M.M. Chumchal**, R.W. Drenner, G.N. Timmins, W.H. Nowlin. 2013. Bottom-up nutrient and top-down fish impacts on mercury flux from aquatic ecosystems. *Environmental Toxicology and Chemistry*, 32: 612–618.
24. Tweedy, B.N.*, R.W. Drenner, **M.M. Chumchal**, J.H. Kennedy. 2013. Effects of fish on emergent insect-mediated flux of methyl mercury across a gradient of contamination. *Environmental Science and Technology*, 47: 1614-1619.
25. Zapp Sluis, M.*, K.M. Boswell, **M.M. Chumchal**, R.J.D. Wells, B. Soulen**, J.H. Cowan, Jr. 2013. Regional variation in mercury and stable isotopes of red snapper (*Lutjanus campechanus*) in the northern Gulf of Mexico, USA. *Environmental Toxicology and Chemistry*, 32: 434-441.
26. Speir, S.L.***, **M.M. Chumchal**, R.W. Drenner, W.G. Cocks*, M.E. Lewis**, H.J. Whitt**. 2014. Methylmercury and stable isotopes of nitrogen reveal a terrestrial spider consumes emergent aquatic insects. *Environmental Toxicology and Chemistry*, 33: 2506-2509.
27. **Chumchal, M.M.** and R.W. Drenner. 2015. An environmental problem hidden in plain sight: small man-made ponds, emergent insects and mercury contamination of biota in the Great Plains. *Environmental Toxicology and Chemistry*, 34: 1197-1205.
28. Gann, G.*, C. Powell*, **M.M. Chumchal**, R. Drenner. 2015. Mercury-contaminated terrestrial spiders pose a potential risk to songbirds at Caddo Lake, Texas/Louisiana, USA. *Environmental Toxicology and Chemistry*, 34:303-306.
29. Schulwitz, S.E.*, **M.M. Chumchal**, J.A. Johnson. 2015. Mercury concentrations in birds from two atmospherically contaminated sites in north Texas, USA. *Archives of Environmental Contamination and Toxicology*, 69:390-398.
30. Adams K.J.*, R.W. Drenner, **M.M. Chumchal**, D.I. Donato. 2016. Disparity between state fish consumption advisory systems for methyl mercury and U.S. Environmental Protection Agency Recommendations: A case study of the south central U.S. *Environmental Toxicology and Chemistry*, 35:247-251.
31. **Chumchal, M.M.**, R.W. Drenner, K.J. Adams. 2016. Abundance and size distribution of permanent and temporary farm ponds in the southeastern Great Plains. *Inland Waters*, 6: 258-264.

32. Becker, D., **M.M. Chumchal**, A. Bentz, S. Platt, G. Czirják, T. Rainwater, S. Altizer, Sonia, D. Streicker. 2017. Predictors and immunological consequences of sublethal mercury exposure in vampire bats. *Royal Society Open Science*, 4: 170073.
33. **Chumchal, M.M.**, R.W. Drenner, F. Greenhill*, J. Kennedy, C. Gober**, A. Courville** and L. Lossau**. 2017. Recovery of aquatic insect-mediated methylmercury flux from ponds following drying disturbance, *Environmental Toxicology and Chemistry*, 36:1986-1990.
34. Williams, E.B.*, **M.M. Chumchal**, R.W. Drenner, J.H. Kennedy. 2017. Seasonality of odonate-mediated methyl mercury flux from permanent and semi-permanent ponds and potential risk to red-winged blackbirds (*Agelaius phoeniceus*), *Environmental Toxicology and Chemistry*, 36: 2823-2832.
35. Becker, D., **M.M. Chumchal**, H. Broders, J. Korstian*, T. Rainwater, S. Platt, N. Simmons, M. Fenton. 2018. Mercury bioaccumulation in bats reflects phylogeny and dietary connectivity to aquatic food webs, *Environmental Pollution*, 233:1076-1085.
36. Burnham, J., K. Burnham, **M.M. Chumchal**, J. Johnson, and J. Welker. 2018. Correspondence between mercury contamination and trophic position in marine and terrestrial avian species from northwest Greenland. *Polar Biology*, 41: 1475-1491.
37. **Chumchal, M.M.**, R.W. Drenner, M.N. Hall**, D.K. Polk**, E.B. Williams*, C.L. Ortega-Rodriguez*, J.H. Kennedy. 2018. Seasonality of dipteran-mediated methyl mercury flux from ponds, *Environmental Toxicology and Chemistry* 37: 1846-1851.
38. Korstian, J.M.*, **M.M. Chumchal**, V.J. Bennett, A.M. Hale. 2018. Mercury contamination in bats from the central United States, *Environmental Toxicology and Chemistry* 37:160-165.

Book Chapters

1. Ginat, J. and **M.M. Chumchal**. 2005. Postscript: Focusing on peace – Building trust and understanding. In: *Water in the Jordan Valley: Technical Solutions & Regional Cooperation*. K.D. Hambright, F.J. Ragep, and J. Ginat, eds. University of Oklahoma Press.
 2. **Chumchal, M.M.** and R.W. Drenner. Ecological Factors Controlling Insect-Mediated Methylmercury Flux from Aquatic to Terrestrial Ecosystems: Lessons Learned from Experimental Studies in Mesocosms and Ponds. In: *Contaminants and Ecological Subsidies at the Land-Water Interface*. J.M. Kraus, D.M. Walters and M.A. Mills, eds. Springer. *In revision*.
- b. Non-Refereed Publications
1. **Chumchal, M.M.** and K.D. Hambright. 2003. Working groups to study water resources and usage in the Middle East, Pano Platres, Cyprus (27-29 June 2003). Report to the US Department of State.
 2. **Chumchal, M.M.** 2005. Working groups to study water resources and usage in the Middle East, Amman, Jordan (17-18 December 2004). Report to the US Department of State.
 3. **Chumchal, M.M.**, T. Rainwater, G. Cobb, P. Smith, and F. Bailey. 2008. Assessment of mercury contamination and biomagnification in the food web of Caddo Lake. Report to the Caddo Lake Institute.

4. **Chumchal, M.M.** and R.W. Drenner. 2009. Review of mercury concentrations in largemouth bass from Texas. Report to the Caddo Lake Institute.
 5. **Chumchal, M.M.**, K. Jobe*, A. Jacobsen** and M.R.J. Forstner. 2011. Survey of mercury contamination in three species of Texas turtles and development of a non-lethal sampling technique. Report to the Texas Parks and Wildlife Department.
- c. Papers Presented at Scholarly Meetings
1. **Chumchal, M.M.** and S.L. Fabritius. 1999. Possible fitness advantages for large female *Xanthopimpla Stemmator*. Annual Meeting of the Texas Academy of Science, Seguin, Texas.
 2. **Chumchal, M.M.**, R.W. Drenner, S.E. Mann, and W.H. Nowlin. 2000. Biomass-dependent effects of common carp on shallow ponds. Annual Meeting of the Texas Academy of Science, Kingsville, Texas.
 3. Drenner, R.W., J.L. Smith, S.E. Mann, **M.M. Chumchal**, J. Fennell, W.H. Nowlin, and C.M. Edwards. 2000. Estimating the densities of common carp and their biomass-dependent effects on ponds. American Fisheries Society Joint Meeting of the Arkansas, Louisiana, and Texas Chapters, Bossier City, Louisiana.
 4. Nowlin, W.H., R.W. Drenner, **M.M. Chumchal**, and S.E. Mann. 2000. Biomass-dependent effects of common carp on water quality: Implications for biomanipulation of Texas reservoirs. American Society of Limnology and Oceanography Aquatic Sciences Meeting, Copenhagen, Denmark.
 5. **Chumchal, M.M.** and S.L. Fabritius. 2001. Bigger is Better: Fitness advantages for large female *Xanthopimpla Stemmator*. Annual Meeting of the Texas Academy of Science, San Marcos, Texas.
 6. Fabritius, S.L. and **M.M. Chumchal**. 2001. Does sex ratio manipulation pay for the solitary endoparasitoid, *Xanthopimpla stemmator*? Annual Meeting of the Animal Behavior Society, Corvallis, Oregon.
 7. **Chumchal, M.M.** and R.W. Drenner. 2002. Interrelationships between nutrients, fish and supplemental feeding in the regulation of phytoplankton biomass. American Society of Limnology and Oceanography Annual Meeting, Victoria, Canada.
 8. **Chumchal, M.M.**, R.W. Drenner, D.H. Marshall, J.L. Owens, and M.R. Ernst. 2004. Improvements in water quality following renovation of a water supply reservoir. Southwestern Association of Naturalists Annual Meeting, San Antonio, Texas.
 9. **Chumchal, M.M.**, R.W. Drenner, D.H. Marshall, J.L. Owens, and M.R. Ernst. 2004. Improvements in water quality following renovation of a water supply reservoir. Texas Academy of Science Annual Meeting, Kerrville, Texas.
 10. Drenner, R.W., **M.M. Chumchal**, D.H. Marshall, J.L. Owens, and M.R. Ernst. 2004. Improvements in water quality following renovation of a water supply reservoir. International Congress of Limnology, Helsinki, Finland.
 11. McClain, W.C., **M.M. Chumchal**, R.W. Drenner, and L. Newland. 2004. Bioaccumulation of mercury in fish from Lake Meredith, Texas. Great Plains Limnology Society. Annual Meeting, Springfield, Missouri.
 12. **Chumchal, M.M.**, K.D. Hambright, W.C. McClain, R.W. Drenner, and D. Cross. 2005. Do fish advisories accurately convey risk?: Effect of small sample size and species specific advisories. Texas Chapter of the American Fisheries Society Annual Meeting, Grapevine, Texas.

13. **Chumchal, M.M.**, K.D. Hambright, W.C. McClain, R.W. Drenner, and D.Cross. 2005. Do fish advisories accurately convey risk?: Effect of small sample size and species specific advisories. Texas Academy of Science Annual Meeting, Edinburg, Texas.
14. **Chumchal, M.M.**, W.C. McClain, A. Davis, R.W. Drenner, K.D. Hambright, and L. Newland. 2005. Effect of sample size and non-random samples on the issuance of fish advisories. Texas River and Reservoir Management Society Annual Meeting, Waco, Texas.
15. **Chumchal, M.M.**, R.W. Drenner, B. Fry, D.J. Lutz-Carrillo, K.D. Hambright, W.C. McClain, and L. Newland. 2005. Mercury concentrations in fish from Caddo Lake, Texas. Joint Meeting of the Oklahoma-Texas Aquatic Research Group and Texas River and Reservoir Management Society, University of Oklahoma Biological Station.
16. McClain, W.C., **M.M. Chumchal**, R.W. Drenner, and L. Newland. 2005. Bioaccumulation of mercury in fish from two Texas lakes. Texas Chapter of the American Fisheries Society Annual Meeting, Grapevine, Texas.
17. McClain, W.C., **M.M. Chumchal** R.W. Drenner, and L. Newland. 2005. Bioaccumulation of mercury in fish from two Texas lakes. Texas Academy of Science Annual Meeting, Edinburg, Texas.
18. **Chumchal, M.M.**, R.W. Drenner, B. Fry, D.J. Lutz-Carrillo, K.D. Hambright, W.C. McClain, and L. Newland. 2006. Mercury concentrations in fish from Caddo Lake, Texas. Joint Meeting of the Southern Division and Texas Chapter of the American Fisheries Society. San Antonio, Texas.
19. **Chumchal, M.M.**, R.W. Drenner, B. Fry, D.J. Lutz-Carrillo, K.D. Hambright, W.C. McClain, and L. Newland. 2006. Mercury concentrations in fish from Caddo Lake, Texas. Texas Academy of Science Annual Meeting, Beaumont, Texas.
20. **Chumchal, M.M.**, R.W. Drenner, B. Fry, D.J. Lutz-Carrillo, K.D. Hambright, W.C. McClain, and L. Newland. 2006. Mercury concentrations in fish from Caddo Lake, Texas. Eighth International Conference on Mercury as a Global Pollutant. Madison, Wisconsin.
21. **Chumchal, M.M.**, R.W. Drenner, L. Newland. B. Fry, and K.D. Hambright. 2007. Habitat-specific differences in mercury concentrations of largemouth bass from Caddo Lake. Joint Meeting of the South Central Society of Environmental Toxicology and Chemistry and the Texas River and Reservoir Management Society. Nacogdoches, Texas.
22. **Chumchal, M.M.**, M.C. Slattery, R.W. Drenner, S.M. Drenner** and L. Newland. 2007. How will new coal burning power plants in Texas affect mercury contamination in fish? Texas Chapter of the American Fisheries Society Annual Meeting, Lake Jackson, Texas.
23. Hill, J.J.* , R.W. Drenner, J.E. Pinder, and **M.M. Chumchal**. 2007. Use of preserved museum fish to evaluate mercury contamination in two Oklahoma rivers. Texas Chapter of the American Fisheries Society Annual Meeting, Lake Jackson, Texas.
24. Drenner, S.M.** , R.W. Drenner, L. Newland, M. Stone*, and **M.M. Chumchal**. 2007. Mercury concentrations in largemouth bass from six north Texas reservoirs. Texas Chapter of the American Fisheries Society Annual Meeting, Lake Jackson, Texas.

25. Becker, J.C.*, A.W. Groeger, **M.M. Chumchal**, D. Hahn, and W.H. Nowlin. 2008. Distribution and Bioaccumulation of Mercury in a Subtropical Reservoir System: Amistad International Reservoir, Texas, USA. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Houston, Texas.
26. Becker, J.C.*, A.W. Groeger, **M.M. Chumchal**, D. Hahn, and W.H. Nowlin. 2008. Distribution and Bioaccumulation of Mercury in a Subtropical Reservoir System: Amistad International Reservoir, Texas, USA. Joint Meeting of the Great Plains Limnology Conference and the Texas-Oklahoma Aquatic Research Group, University of Oklahoma Biological Station.
27. **Chumchal, M.M.**, R.W. Drenner, and K.D. Hambright. 2008. Species-specific differences in mercury concentrations and trophic position of planktivorous fish from Caddo Lake, Texas. American Fisheries Society Annual Meeting, Ottawa, Canada.
28. **Chumchal, M.M.**, R.W. Drenner, and K.D. Hambright. 2008. Species-specific differences in mercury concentrations and trophic position of planktivorous fish from Caddo Lake, Texas. Joint Meeting of the Great Plains Limnology Conference and the Texas-Oklahoma Aquatic Research Group, University of Oklahoma Biological Station.
29. **Chumchal, M.M.**, R.W. Drenner, and K.D. Hambright. 2008. Mercury concentrations of three species of non-game fish from Caddo Lake, Texas. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Houston, Texas.
30. **Chumchal, M.M.**, R.W. Drenner, and K.D. Hambright. 2008. Mercury concentrations of three species of non-game fish from Caddo Lake, Texas. Texas Chapter of the American Fisheries Society Annual Meeting, Junction, Texas.
31. Drenner, R.W. and **M.M. Chumchal**. 2008. Mercury contamination of largemouth bass from Texas, Louisiana, and Arkansas. Joint Meeting of the Great Plains Limnology Conference and the Texas-Oklahoma Aquatic Research Group, University of Oklahoma Biological Station.
32. Gevertz, A.***, A. Roberts, M. Chumchal, P. Drevnick, T. Rainwater, and R. Drenner. 2008. Mercury-Associated Liver Damage in Fish Populations from Isle Royale National Park (MI, USA) and Caddo Lake (TX/LA, USA). Society of Environmental Toxicology and Chemistry Annual Meeting, Tampa, Florida.
33. Peterson, V.R.***, R.W. Drenner, J.E. Pinder III, and **M.M. Chumchal**. 2008. Comparison of Mercury Concentration in Three Brands of Albacore and Light Tuna. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Houston, Texas.
34. Sawey, M.R.*, **M.M. Chumchal**, R.W. Drenner, and J.E. Pinder III. 2008. Habitat-specific differences in mercury concentrations of Mississippi grass shrimp from Caddo Lake, Texas. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Houston, Texas.
35. Smith, A.*, W.H. Nowlin, and **M.M. Chumchal**. 2008. Mercury Concentrations of the Rio Grande Fish Community: Spatial Variation and Influence of Food Web Structure. Society of Environmental Toxicology and Chemistry Annual Meeting, Tampa, Florida.

36. Smith, A.*, W.H. Nowlin, and **M.M. Chumchal**. 2008. Mercury Concentrations of the Rio Grande Fish Community: Spatial Variation and Influence of Food Web Structure. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Houston, Texas.
37. Smith, A.*, W.H. Nowlin, and **M.M. Chumchal**. 2008. Mercury Concentrations of the Rio Grande Fish Community: Spatial Variation and Influence of Food Web Structure. Joint Meeting of the Great Plains Limnology Conference and the Texas-Oklahoma Aquatic Research Group, University of Oklahoma Biological Station.
38. Barst, B.*, **M.M. Chumchal**, P. Drevnick, A. Gevertz**, and A. Roberts. 2009. The Role of Oxidative Stress in the Hepatotoxicity of Methylmercury to Fish. Society of Environmental Toxicology and Chemistry Annual Meeting, New Orleans, Louisiana.
39. Becker, J.C.*, A.W. Groeger, **M.M. Chumchal**, W.H. Nowlin, and D. Hahn. 2009. Distribution and bioaccumulation of mercury in a subtropical reservoir system. Society of Environmental Toxicology and Chemistry Annual Meeting, New Orleans, Louisiana.
40. Burks, R.L. and **M.M. Chumchal**. 2009. Who's on First? How to write, publish and negotiate issues of authorship with undergraduate students. Vision and change in undergraduate biology education: A view for the 21st century, American Association for the Advancement of Science, Washington, D.C.
41. **Chumchal, M.M.**, R.W. Drenner, D. Cross, K.D. Hambright. 2009. Species-specific differences in mercury concentration and trophic position of planktivorous fish from Caddo Lake, Texas, USA. 9th International Conference on Mercury as a Global Pollutant, Guiyang, Guizhou, China.
42. Chumchal M.M., T.R. Rainwater, S.C. Osborn**, G.P. Cobb, P.N. Smith, F.C. Bailey. 2009. Assessment of mercury biomagnification in a subtropical freshwater ecosystem (Caddo Lake, Texas/Louisiana, USA). 9th International Conference on Mercury as a Global Pollutant, Guiyang, Guizhou, China.
43. Chumchal M.M., T.R. Rainwater, S.C. Osborn**, G.P. Cobb, P.N. Smith, F.C. Bailey. 2009. Assessment of mercury biomagnification in Caddo Lake, Texas/Louisiana. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, San Marcos, Texas.
44. Chumchal M.M., T.R. Rainwater, S.C. Osborn**, G.P. Cobb, P.N. Smith, F.C. Bailey. 2009. Assessment of mercury biomagnification in Caddo Lake, Texas/Louisiana. Texas Academy of Science Annual Meeting, Junction, Texas.
45. Drenner, R.W. and **M.M. Chumchal**. 2009. Mercury Contamination of Fish in a Three-State Region. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, San Marcos, Texas.
46. Drenner, R.W., **M.M. Chumchal**, M. Davis*, S.M. Drenner**, P.W. Mitchell** and N.A. Long**. 2009. Coal-Fired Power Plants and Spatial Variation in Mercury Contamination of Largemouth Bass in Texas, USA. 9th International Conference on Mercury as a Global Pollutant, Guiyang, Guizhou, China.
47. Drenner, R.W., **M.M. Chumchal**, M. Davis*, S.M. Drenner**, P.W. Mitchell** and N.A. Long**. 2009. Coal-Fired Power Plants and Spatial Variation in Mercury Contamination of Largemouth Bass in Texas. Texas Chapter of the American Fisheries Society Annual Meeting, Fort Worth, Texas.

48. Fry, B and **M.M. Chumchal**. 2009. Do Fish Stay at Home? Coastal and Estuarine Research Federation 20th Biennial Conference, Portland, Oregon.
49. Kiester, B.L.** , **M.M. Chumchal**, K. M. Boswell, M. Zapp*, J.H. Cowan Jr., R. J. D. Wells. 2009. Mercury concentrations in red snapper (*Lutjanus campechanus*), a reef fish from the Gulf of Mexico, USA. 9th International Conference on Mercury as a Global Pollutant, Guiyang, Guizhou, China.
50. Kiester, B.L.** , **M.M. Chumchal**, K.M. Boswell, M. Zapp*, J.H. Cowan Jr., and R. J. D. Wells. 2009. Mercury concentrations in red snapper (*Lutjanus campechanus*) from the northern Gulf of Mexico. Texas Chapter of the American Fisheries Society Annual Meeting, Fort Worth, Texas.
51. Kiester, B.L.** , **M.M. Chumchal**, K.M. Boswell, M. Zapp*, J.H. Cowan Jr., and R. J. D. Wells. 2009. Mercury concentrations in red snapper (*Lutjanus campechanus*) from the northern Gulf of Mexico. Texas Academy of Science Annual Meeting, Junction, Texas.
52. Smith, A.* , W.H. Nowlin, **M.M. Chumchal**, and A. Abuzeineh*. 2009. Mercury contamination of the Rio Grande/Rio Bravo del Norte fish community: spatial variation and influence of environmental gradients. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, San Marcos, Texas.
53. Wells R.J.D, **M.M. Chumchal**, and J.H. Cowan, Jr. 2009. Effect of trawling and habitat on mercury concentration in juvenile red snapper, *Lutjanus campechanus*, for the northern Gulf of Mexico. Texas Chapter of the American Fisheries Society Annual Meeting, Fort Worth, Texas.
54. Barst, B.* , **M.M. Chumchal**, P. Drevnick, A. Gevertz**, and A. Roberts. 2010. The role of oxidative stress in the hepatotoxicity of methylmercury to fish. Society of Environmental Toxicology and Chemistry-Europe Annual Meeting, Seville, Spain.
55. Barst, B.* , **M.M. Chumchal**, P. Drevnick, A. Gevertz**, and A. Roberts. 2010. The role of oxidative stress in the hepatotoxicity of methylmercury to fish. Society of Environmental Toxicology and Chemistry-North America Annual Meeting, Portland, Oregon.
56. Becker, J.C.* , A.W. Groeger, **M.M. Chumchal**, W.H. Nowlin, and D. Hahn. 2010. Distribution and bioaccumulation of mercury in a subtropical reservoir system. Texas Chapter of the American Fisheries Society Annual Meeting, Athens, Texas.
57. **Chumchal, M.M.**, T.R. Rainwater, S.C. Osborn**, A.P. Roberts, M.T. Abel, G.P. Cobb, P.N. Smith, and F.C. Bailey. 2010. Assessment of mercury biomagnification in Caddo Lake, Texas/Louisiana. Joint Meeting of the American Society of Limnology and Oceanography and North American Benthological Society, Santa Fe, New Mexico.
58. **Chumchal, M.M.**, T.R. Rainwater, S.C. Osborn**, A.P. Roberts, M.T. Abel, G.P. Cobb, P.N. Smith, and F.C. Bailey. 2010. Assessment of mercury biomagnification in Caddo Lake, Texas/Louisiana. North American Lake Management Society Annual Meeting, Oklahoma City, Oklahoma.
59. **Chumchal, M.M.**, T.R. Rainwater, S.C. Osborn**, G.P. Cobb, P.N. Smith, and F.C. Bailey. 2010. Assessment of mercury biomagnification in Caddo Lake, Texas/Louisiana. Southwestern Association of Naturalists Annual Meeting, Junction, Texas.

60. Drenner, R.W., **M.M. Chumchal**, S.P. Wente. 2010. Mercury contamination of largemouth bass in Texas. Joint Meeting of the American Society of Limnology and Oceanography and North American Benthological Society, Santa Fe, New Mexico.
61. Drenner, R.W., **M.M. Chumchal**, S.P. Wente M. Davis*, and S.M. Drenner**. 2010. Mercury contamination of largemouth bass in Texas. North American Lake Management Society Annual Meeting, Oklahoma City, Oklahoma.
62. Henderson, B.L.* , **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2010. Mercury contamination of macroinvertebrates from ponds with and without fish at the LBJ National Grassland, Texas. Joint Meeting of the American Society of Limnology and Oceanography and North American Benthological Society, Santa Fe, New Mexico.
63. Henderson, B.L.* , **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2010. Mercury contamination of macroinvertebrates from ponds with and without fish at the LBJ National Grassland, Texas. Southwestern Association of Naturalists Annual Meeting, Junction, Texas.
64. Henderson, B.L.* , **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2010. Mercury contamination of macroinvertebrates from ponds with and without fish at the LBJ National Grassland, Texas. Texas Academy of Science Annual Meeting, Stephenville, Texas.
65. Park, A. J.** , M.R. Sawey*, **M.M. Chumchal**, R.W. Drenner, Y. Deng**, and J. Wadlington*, W.H. Nowlin. 2010. Biomagnification of mercury within the macroinvertebrate community of Caddo Lake. Texas Academy of Science Annual Meeting, Stephenville, Texas.
66. Schulwitz, S.* , **M.M. Chumchal**, R. Williams**, K. Steigman, and J. Johnson. 2010. Quantifying the levels of mercury in birds at various trophic levels at Caddo Lake, TX. Texas Society for Ecological Restoration Annual Meeting, Tyler, Texas.
67. Smith, A.* , W.H. Nowlin, **M.M. Chumchal**, and A. Abuzeineh*. 2010. Mercury contamination of the Rio Grande/Rio Bravo del Norte fish community: spatial variation and influence of environmental gradients. Texas Chapter of the American Fisheries Society Annual Meeting, Athens, Texas.
68. Abuzeineh A.A.* , J.R. Troy, **M.M. Chumchal**, M.C. Green, W.H. Nowlin. 2011. Transfer of Mercury Across Ecosystem Boundaries in Arid Streams Society of Environmental Toxicology and Chemistry – North America Annual Meeting, Boston, Massachusetts.
69. Barst B.D.* , C.R. Hammerschmidt, **M.M. Chumchal**, J.D. Smith*, T.R. Rainwater, and P.E. Drevnick. 2011. Determination of Inorganic Mercury in Fish Liver Using a Direct Mercury Analyzer-80. 10th International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, Canada.
70. Barst B.D.* , C.R. Hammerschmidt, **M.M. Chumchal**, J.D. Smith*, T.R. Rainwater, and P.E. Drevnick. 2011. Determination of Inorganic Mercury in Fish Liver Using a Direct Mercury Analyzer-80. Society of Environmental Toxicology and Chemistry – North America Annual Meeting, Boston, Massachusetts.
71. Barst, B.D.* , A.K. Gevertz**, **M.M. Chumchal**, J.D. Smith*, T.R. Rainwater, P.E. Drevnick, K.E. Hudelson*, G.F. Verbeck, A.Hart, and A.P. Roberts. 2011. Mercury accumulates in melanomacrophage aggregates in wild fish livers: Evidence of link between mercury exposure and negative effects on the health of wild fish. South

- Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Denton, Texas.
72. Campbell L., **M.M. Chumchal**, K. Kidd, T. Jardine, and R. Lavoie*
Biomagnification rate of mercury in aquatic food webs: a worldwide meta-analysis. 10th International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, Canada.
 73. **Chumchal, M.M.**, A. Hale, K. Karsten. Mercury concentrations in birds and bats collected in north Texas. 2011. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Denton, Texas.
 74. Drenner, R.W., **M.M. Chumchal** and S.P. Wentz. 2011. Landscape-level patterns of mercury contamination of fish in the South Central United States. Ecological Society of America Annual Meeting, Austin, Texas.
 75. Drenner, R.W. **M.M. Chumchal**, S.P. Wentz, M. McGuire*, and S.M. Drenner**. 2011. Landscape-level patterns of mercury contamination of fish in North Texas. 10th International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, Canada.
 76. Henderson, B.L.*, **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2011. Mercury contamination of macroinvertebrates from ponds with and without fish. Ecological Society of America Annual Meeting, Austin, Texas.
 77. Henderson, B.L.*, **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2011. Effects of fish on mercury contamination of macroinvertebrate communities of grassland ponds. Joint Meeting of the Oklahoma-Texas Aquatics Research Group and the Great Plain's Limnology Society, University of Oklahoma Biological Station, Oklahoma.
 78. Henderson, B.L.*, **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2011. Mercury contamination of macroinvertebrates from ponds with and without fish at the LBJ National Grassland, Texas. 10th International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, Canada.
 79. Henderson, B.L.*, **M.M. Chumchal**, R.W. Drenner, P. Diaz*, Y. Deng**, and W.H. Nowlin. 2011. Mercury contamination of macroinvertebrates from ponds with and without fish at the LBJ National Grassland, Texas. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Denton, Texas.
 80. Horwath Burnham, J. K.K. Burnham, **M M. Chumchal**, J. Johnson. 2011. Quantification and Spatial Distribution of Methyl Mercury in Avian Species of Northwest Greenland. 2011. Association of American Geographers Annual Meeting Seattle, Washington.
 81. Jones T.***, **M.M. Chumchal**, M. Zapp Sluiss*, K.M. Boswell, J.H. Cowan Jr., and R. J. David Wells. 2011. Mercury concentrations in four species of snapper (*Lutjanus* spp.) from the Northern Gulf of Mexico. Texas Academy of Science Annual Meeting, Austin, Texas.
 82. Jones T.A.*, **M.M. Chumchal**, and R.W. Drenner. 2011. High nutrient conditions promote faster mercury reduction in the tissues of green sunfish (*Lepomis cyanellus*) transplanted from a high- to a low-mercury environment. Texas Academy of Science Annual Meeting, Austin, Texas.

83. Matherne, B.W.*, D.J. Hoeninghaus, A.A. Agostinho, L.C. Gomes, P.M. Holt**, M. **M.M. Chumchal** and A.P. Roberts. 2011. Distributions of mercury in fish of the Paraná River, Brazil. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Denton, Texas.
84. Matherne, B.W.*, P.M. Holt**, **M.M. Chumchal**, A.P. Roberts, D.J. Hoeninghaus, A.A. Agostinho and L.C. Gomes. 2011. Distributions of mercury in fish of the Paraná River, Brazil. Ecological Society of America Annual Meeting, Austin, Texas.
85. Matherne, B.W.*, P.M. Holt**, **M.M. Chumchal**, A.P. Roberts, D.J. Hoeninghaus, A.A. Agostinho and L.C. Gomes. 2011. Distributions of mercury in fish of the Paraná River, Brazil. Society of Environmental Toxicology and Chemistry – North America Annual Meeting, Boston, Massachusetts.
86. Park, A. J.**, M.R. Sawey*, **M.M. Chumchal**, R.W. Drenner, Y. Deng**, and W.H. Nowlin. 2011. Biomagnification of mercury within the macroinvertebrate community of Caddo Lake. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Denton, Texas.
87. Roberts, A.P., Barst, B.D.*, A.K. Gevertz**, **M.M. Chumchal**, J.D. Smith*, T.R. Rainwater, P.E. Drevnick, K.E. Hudelson*, G.F. Verbeck and A.Hart. 2011. Laser-ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) imaging of mercury distribution in fish liver macrophage centers. 10th International Conference on Mercury as a Global Pollutant, Halifax, Nova Scotia, Canada.
88. Schulwitz, S.E.*, **M.M. Chumchal**, J. Burnham, K. Burnham and J.A. Johnson. 2011. Comparison of mercury in birds at temperate, sub-Antarctic and Arctic locations. Ecological Society of America Annual Meeting, Austin, Texas.
89. Smith, J.*, **M.M. Chumchal**, J. Schulmeier, G. Verbeck, B.W. Matherne*, B. Barst*, A. Roberts. 2011. Comparison of Mercury Localization, Speciation, and Histology in Multiple Fish Species from Caddo Lake, a Fresh Water Wetland. Society of Environmental Toxicology and Chemistry – North America Annual Meeting, Boston, Massachusetts.
90. Smith, J.F.*, B.D. Barst*, **M.M. Chumchal**, A. Gevertz**, A. Hart, G. Verbeck, P.E. Drevnick, A.P. Roberts. 2011. Laser-Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) Imaging of Mercury Distribution in Fish Liver Tissue Canadian Chemistry Conference Canadian Chemistry Conference and Exhibition Annual Meeting, Montréal, Quebec, Canada.
91. Wadlington, J.M.* and **M.M. Chumchal**. 2011. Survey of Mercury Concentrations in Largemouth Bass (*Micropterus salmoides*), White Bass (*Morone chrysops*), and White Crappie (*Pomoxis annularis*) from Six Dallas-Fort Worth Area Reservoirs. Texas Academy of Science Annual Meeting, Austin, Texas.
92. Wadlington, J.M.* and **M.M. Chumchal**. 2011. Survey of Mercury Concentrations in Largemouth Bass (*Micropterus salmoides*), White Bass (*Morone chrysops*), and White Crappie (*Pomoxis annularis*) from Six Dallas-Fort Worth Area Reservoirs. South Central Regional Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Denton, Texas.
93. Wadlington, J.M.* and **M.M. Chumchal**. 2011. Survey of Mercury Concentrations in Largemouth Bass (*Micropterus salmoides*), White Bass (*Morone chrysops*), and White Crappie (*Pomoxis annularis*) from Six Dallas-Fort Worth Area

- Reservoirs. Texas Chapter of the American Fisheries Society Annual Meeting, San Marcos, Texas. ‘
94. **Chumchal, M.M.**, T.A. Jones*, R.W. Drenner, G.N. Timmins, and W.H. Nowlin. 2012. Bottom-up and top-down impacts on mercury flux from aquatic ecosystems. Society for Environmental Toxicology and Chemistry North America Meeting. Long Beach, California.
 95. **Chumchal, M.M.**, T.A. Jones*, R.W. Drenner, G.N. Timmins, and W.H. Nowlin. 2012. Bottom-up and top-down impacts on contaminant flux from aquatic ecosystems. Society for Freshwater Science Annual Meeting. Louisville, Kentucky.
 96. **Chumchal, M.M.**, T.A. Jones*, R.W. Drenner, G.N. Timmins, and W.H. Nowlin. 2012. Bottom-up and top-down impacts on contaminant flux from aquatic ecosystems. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Waco, Texas.
 97. **Chumchal, M.M.**, T.A. Jones*, R.W. Drenner, G.N. Timmins, and W.H. Nowlin. 2012. Bottom-up and top-down impacts on contaminant flux from aquatic ecosystems. Texas Chapter of the American Fisheries Society Annual Meeting. Galveston, Texas.
 98. Drenner, R.W., **M.M. Chumchal**, S.P. Wentz, C. Jones* and D. Donato. 2012. Landscape-level Patterns of Mercury Contamination of Fish in the South Central United States. Association of American Geographers Annual Meeting, New York City, New York.
 99. Drenner, R.W., **M.M. Chumchal**, C. Jones*, C. Lehmann, D. Gay and D. Donato. 2012. Landscape-level patterns of mercury contamination in the South Central United States. Eighth National Monitoring Conference, Portland, Oregon.
 100. Drenner, R.W., **M.M. Chumchal**, C. Jones*, C. Lehmann, D. Gay and D. Donato. 2012. Landscape-level patterns of mercury contamination in the South Central United States. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Waco, Texas.
 101. Lavoie, R.A.* , K. Kidd, T. Jardine, **M.M. Chumchal**, L. Campbell. 2012. Mercury biomagnification rate in aquatic food webs worldwide. Society for Environmental Toxicology and Chemistry North America Meeting. Long Beach, California.
 102. Moore, B., N. Cook, H. Rushing, J. Cooper, E. Brinkman, A. Roberts, J. Smith, G. Verbeck, and **M.M. Chumchal**. 2012. Mercury bioaccumulation and associated liver pathologies in spotted gar. Gordon Research Conferences: Environmental Endocrine Disruptors. West Dover, Vermont.
 103. Park, A*, **M.M. Chumchal**, R. Drenner and T. Morgan. 2012. Effect of watershed land cover on mercury contamination in Big Cypress Watershed. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Waco, Texas.
 104. Roberts, A., **M.M. Chumchal**, P. Drevnick, K. Kidd, B. Moore, D.H. Adams, B. Barst*, J. Smith*, K. Batchelar*. 2012. Macrophage Centers: A Synthesis of Their Implications for Mercury Fate and Toxicity in Fish. Society for Environmental Toxicology and Chemistry North America Meeting. Long Beach, California.
 105. Tweedy, B.*, R.W. Drenner, **M.M. Chumchal**, and J. Kennedy. 2012. Effects of Fish on Insect Emergence and Transport of Methyl Mercury from Ponds Society of

- Environmental Toxicology and Chemistry-South-Central Regional Chapter. Waco, Texas.
106. Christian, J.* , B.W. Matherne* , P.M. Holt** , **M.M. Chumchal**, A.P. Roberts, D.J. Hoeninghaus, A.A. Agostinho, L.C. Gomes. 2013. Effects of body size, trophic position and ecosystem type on mercury in fishes of the Upper Paraná River basin, Brazil. Texas A&M University Ecological Integration Symposium, College Station, Texas.
 107. **Chumchal, M.M.**, R. Drenner, B. Blackwell* , B. Henderson* , T. Jones* , B. Tweedy* . 2013. Emergent bugs, small ponds, big problem: A synthesis of recent studies examining MeHg contamination of aquatic macroinvertebrates and insect-mediated flux of MeHg from small ponds to terrestrial ecosystems. 11th International Conference on Mercury as a Global Pollutant, Edinburgh. Scotland.
 108. **Chumchal, M.M.**, R. Drenner, B. Blackwell* , G. Cocke* , B. Henderson* , T. Jones* , W. Nowlin and B.Tweedy* . 2013. Bottom-Up Nutrient and Top-Down Fish Impacts on Methylmercury Flux from Aquatic Ecosystems: A Synthesis of Recent Studies. American Fisheries Society Annual Meeting, Little Rock, Arkansas.
***Invited presentation*
 109. Drenner, R.W., **M.M. Chumchal** , C.M. Jones* , Christopher M. B. Lehmann, David A.Gay, David I. Donato. 2013. Effects of mercury deposition and coniferous forests on the mercury contamination of fish in the south central United States. 11th International Conference on Mercury as a Global Pollutant, Edinburgh. Scotland.
 110. Drenner, R.W., **M.M. Chumchal** , C.M. Jones* , Christopher M. B. Lehmann, David A.Gay, David I. Donato. 2013. Effects of mercury deposition and coniferous forests on the mercury contamination of fish in the south central United States. American Fisheries Society Annual Meeting, Little Rock, Arkansas.
 111. Lavoie, R.A.* , T. Jardine, **M.M. Chumchal**, K. Kidd, L. Campbell. 2013. A Global Comparison of Mercury Biomagnification in Aquatic Ecosystems. Society for Environmental Toxicology and Chemistry Europe Meeting. Glasgow, Scotland.
 112. Rainwater, T.R., **M.M. Chumchal**, L.J. Guillette, Jr., J. W. Gibbons, M.E. Dorcas. 2013. Circulating Mercury Concentrations in Diamondback Terrapins (*Malaclemys terrapin*) from Coastal South Carolina. 6th Symposium on the Ecology, Status & Conservation of Diamondback Terrapins. Seabrook Island, South Carolina.
 113. Tweedy, B. N.* , R.W. Drenner, **M.M. Chumchal**, J.H. Kennedy. 2013. Effects of fish on emergent insect-mediated flux of methyl mercury across a gradient of contamination. Society for Freshwater Science Annual Meeting. Louisville, Kentucky.
 114. Tweedy, B. N.* , R.W. Drenner, **M.M. Chumchal**, J.H. Kennedy. 2013. MeHg concentrations in a terrestrial spider, the long-jawed orb weaver (*Tetragnatha* sp.) are correlated with MeHg flux in emergent insects. 11th International Conference on Mercury as a Global Pollutant, Edinburgh. Scotland.
 115. Adams, K.* , R.W. Drenner and **M.M. Chumchal**. 2014. Do fish consumption advisories for mercury adequately protect the public? Texas Academy of Science Annual Meeting, Galveston, Texas.
 116. Adams, K.* , R.W. Drenner and **M.M. Chumchal**. 2014. Do fish consumption advisories for mercury adequately protect the public? Joint Aquatic Sciences Meeting. Portland, Oregon.

117. **Chumchal, M.M.** and R.W. Drenner. 2014. Small farm ponds in the Great Plains and the contamination of terrestrial food chains with mercury. Texas Academy of Science Annual Meeting, Galveston, Texas.
118. **Chumchal, M.M.** and R.W. Drenner. 2014. Small farm ponds in the Great Plains and the contamination of terrestrial food chains with mercury. Joint Aquatic Sciences Meeting. Portland, Oregon.
119. Drenner, R.W., **M.M. Chumchal**, K. Adams*. 2014. Effects of mercury deposition, coniferous forests, and fish size on mercury contamination of game fish in the south central U.S. Texas Academy of Science Annual Meeting, Galveston, Texas.
120. Drenner, R.W., **M.M. Chumchal**, K. Adams*. 2014. Effects of mercury deposition, coniferous forests, and fish size on mercury contamination of game fish in the south central U.S. Joint Aquatic Sciences Meeting. Portland, Oregon.
121. Gann, G.*, C. Powell*, **M.M. Chumchal**, R. Drenner. 2014. Mercury-contaminated terrestrial spiders pose a potential health risk to songbirds at Caddo Lake, TX/LA. Texas Academy of Science Annual Meeting, Galveston, Texas.
122. Gann, G.*, C. Powell*, **M.M. Chumchal**, R. Drenner. 2014. Mercury-contaminated terrestrial spiders pose a potential health risk to songbirds at Caddo Lake, TX/LA. Joint Aquatic Sciences Meeting. Portland, Oregon.
123. Powell, C.*, G. Gann*, **M.M. Chumchal**, R.W. Drenner. 2014. Hg contaminated riparian spiders along three east Texas rivers pose a potential risk to song birds. Texas Academy of Science Annual Meeting, Galveston, Texas.
124. Soulen, B.*, D. Adams, B. Barst*, J. Smith*, P. Drevnick, **M.M. Chumchal** and A.P. Roberts. 2014. Mercury Accumulation and Speciation in the Livers of Marine and Freshwater Fish Species. Society for Environmental Toxicology and Chemistry North America Meeting. Victoria, British Columbia, Canada.
125. Speir, S.***, **M.M. Chumchal**, R.W. Drenner, G. Cocke*, M. Lewis**, H. Whitt**. 2014. Use of Methyl Mercury as a Tracer of Aquatic Carbon Flux to Terrestrial Consumers. Texas Academy of Science Annual Meeting, Galveston, Texas.
126. Speir, S.***, **M.M. Chumchal**, R.W. Drenner, G. Cocke*, M. Lewis**, H. Whitt**. 2014. Use of Methyl Mercury as a Tracer of Aquatic Carbon Flux to Terrestrial Consumers. Joint Aquatic Sciences Meeting. Portland, Oregon.
127. Barst, B.D*, M. Rosabal, P.G.C. Campbell, K. Bridges*, M. Korbas, A.P. Roberts, **M.M. Chumchal**, J.D. Smith*, P.E. Drevnick. 2015. Mercury speciation in fish liver at the organ, tissue, and sub-cellular levels: Implications for toxicity. 12th International Conference on Mercury as a Global Pollutant, Jeju, Korea.
128. **Chumchal, M.M.**, K. Adams*, R. Drenner, D. Donato. 2015. Disparity Between Local Government Fish Consumption Advisory Systems For Methyl Mercury And Federal Government Recommendations: A Case Study Of The South Central U.S. 12th International Conference on Mercury as a Global Pollutant, Jeju, Korea.
***Invited presentation
129. **Chumchal, M.M.** and R.W. Drenner. 2015. A conceptual model of the transfer of methyl mercury from small man-made ponds to terrestrial food webs via emergent insects. 12th International Conference on Mercury as a Global Pollutant, Jeju, Korea.
130. Gann, G.*, C. Powell*, **M.M. Chumchal**, Ray W. Drenner. 2015. Mercury-contaminated terrestrial spiders pose a potential risk to songbirds at Caddo Lake

- (Texas/Louisiana, USA). 12th International Conference on Mercury as a Global Pollutant, Jeju, Korea.
131. Speir, S.***, **M.M. Chumchal**, R.W. Drenner, W.G. Cocks*, M. Lewis**, H. Whitt**. 2015. Methyl mercury and stable isotopes of nitrogen reveal that a terrestrial spider has a diet of emergent aquatic insects. 12th International Conference on Mercury as a Global Pollutant, Jeju, Korea.
 132. Soulen, B.*, D. Adams, B. Barst*, J. Smith*, P. Drevnick, **M.M. Chumchal** and A.P. Roberts. 2015. Mercury Accumulation and Speciation in the Livers of Marine and Freshwater Fish Species. Indian River Lagoon Symposium, Boca Raton, Florida.
 133. Becker, J. *, W. Nowlin and **M.M. Chumchal**. 2015. Spatial and temporal variability in fish mercury concentrations from a large river system. Society for Environmental Toxicology and Chemistry North America Meeting. Salt Lake City, Utah.
 134. Adams, K. J.*, R.W. Drenner, **M.M. Chumchal**, and D.I. Donato. 2016. Disparity between state fish consumption advisory systems for methyl mercury and U.S. Environmental Protection Agency recommendations: a case study of the south central U.S. Texas Chapter of the American Fisheries Society Annual Meeting, Kerrville, Texas.
 135. Adams, K. J.*, R.W. Drenner, **M.M. Chumchal**, and D.I. Donato. 2016. Disparity between state fish consumption advisory systems for methyl mercury and U.S. Environmental Protection Agency recommendations: a case study of the south central U.S. South. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Fort Worth, Texas.
 136. **Chumchal, M.M.**, R.W. Drenner, K.J. Adams*, F. Greenhill*, C. Gober**, A. Courville** and L. Lossau**. 2016. Effect of pond permanence on aquatic insect-mediated flux of methyl mercury to terrestrial ecosystems. Society for Freshwater Science Annual Meeting, Sacramento, California.
 137. **Chumchal, M.M.**, R.W. Drenner, K.J. Adams*, F. Greenhill*, C. Gober**, A. Courville** and L. Lossau**. 2016. Effect of pond permanence on aquatic insect-mediated flux of methyl mercury to terrestrial ecosystems. Texas Chapter of the American Fisheries Society Annual Meeting, Kerrville, Texas.
 138. **Chumchal, M.M.**, R.W. Drenner, K.J. Adams*, F. Greenhill*, C. Gober**, A. Courville** and L. Lossau**. 2016. Effect of pond permanence on aquatic insect-mediated flux of methyl mercury to terrestrial ecosystems. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Fort Worth, Texas.
 139. Cochran, C.**, **M. M. Chumchal**, M. Thomé Souza, J. Cowan. 2016. Mercury contamination of fish from the Gulf of Mexico. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Fort Worth, Texas.
 140. Drenner, R.W., **M.M. Chumchal** and K. Adams*. 2016. Predicting mercury contamination in game fish in the south central U.S.: interactions between mercury deposition, fish trophic position and fish size. Society for Freshwater Science Annual Meeting. Sacramento, California.
 141. Drenner, R.W., **M.M. Chumchal** and K. Adams*. 2016. Predicting mercury contamination in game fish in the south central U.S.: interactions between mercury deposition, fish trophic position and fish size. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Fort Worth, Texas.

142. Drenner, R.W., **M.M. Chumchal** and K. Adams*. 2016. Predicting mercury contamination in game fish in the south central U.S.: interactions between mercury deposition, fish trophic position and fish size. Texas Chapter of the American Fisheries Society Annual Meeting, Kerrville, Texas.
143. Korstian, J.M.*, **M.M. Chumchal** and A.M. Hale. 2016. Mercury contamination in bats from the central United States. Texas Tech Annual Biological Sciences Symposium, Lubbock, Texas.
144. Lauck, K.**, C. Ortega-Rodriguez*, **M.M. Chumchal**, R.W. Drenner, J. Kennedy. 2016. Mercury concentrations in shoreline spiders. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Fort Worth, Texas.
145. Williams, E.*, **M.M. Chumchal**, R.W. Drenner, J. Kennedy. 2016. Effects of fish on Odonate-mediated methyl mercury flux from experimental ponds. Society for Freshwater Science, Sacramento, California.
146. Williams, E.*, **M.M. Chumchal**, R.W. Drenner, J. Kennedy. 2016. Effects of fish on Odonate-mediated methyl mercury flux from experimental ponds. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Fort Worth, Texas.
147. Kidd, K., L. Campbell, **M.M. Chumchal**, T. Jardine, R.A. Lavoie. 2016. Trophic magnification of mercury in aquatic food webs: worldwide patterns and drivers. Society for Environmental Toxicology and Chemistry North America Meeting and World Congress. Orlando, Florida.
148. Burnham, J., K. Burnham, **M. Chumchal**, J. Johnson, and J. Welker. 2017. Status of Mercury Concentration in Twenty-five Bird Species in Northwest Greenland. North Water Polynya Conference, Copenhagen, Denmark.
149. Biffi, D.*, A. Lopez-Mobilia, D.A. Williams, **M.M. Chumchal**, and M. Weinburgh. Mercury content and mislabeling in sharks from markets in Lima and Tumbes. 1st Peruvian Shark Symposium. Lima, Peru.
150. **Chumchal, M.M.**, R.W. Drenner, F. Greenhill*, C. Gober**, A. Courville** and L. Lossau**. 2017. Recovery of aquatic insect-mediated methylmercury flux from ponds following drying disturbance. International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
151. **Chumchal, M.M.** and R.W. Drenner. 2017. Ecological factors controlling insect-mediated methylmercury flux from aquatic to terrestrial ecosystems: lessons learned from experimental studies in mesocosms and ponds. International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
152. Drenner, R.W., **M.M. Chumchal**, K.J. Adams, D. Gay. 2017. Mercury contamination of largemouth bass in the Southeastern United States. International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
153. Drenner, R.W., **M.M. Chumchal**, K.J. Adams, D. Gay. 2017. Effects of mercury deposition, fish species and fish length category on mercury contamination of game fish in the south central United States. International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
154. Hannappel**, M., R.W. Drenner, **M.M. Chumchal**, J. Kennedy. 2017. Mercury in Mud Dauber Nests along the Trinity River in Fort Worth, TX. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Houston, Texas.

155. Korstian, J.M.*, **M.M. Chumchal**, V.J. Bennett, A.M. Hale. 2017. Mercury contamination in bats from the central United States, International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
156. Lavoie, R.A., M. Amyot, L. Campbell, **M.M. Chumchal**, T. Jardine, K. Kidd. 2017. Mercury biomagnification in aquatic food webs on a global scale. International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
157. Ortega-Rodriguez*, C., **M.M. Chumchal**, R.W. Drenner, J. Kennedy, M. Hall, K. Lauck, K. Polk, E. Williams. 2017. Mercury contamination of seven families of shoreline spiders and possible risk to arachnivoracious songbirds. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Houston, Texas.
158. Ortega-Rodriguez*, C., **M.M. Chumchal**, R.W. Drenner, J. Kennedy, M. Hall, K. Lauck, K. Polk, E. Williams, B. Barst, A. Santa Rio, N. Basu. 2017. Mercury contamination of seven families of shoreline spiders and possible risk to arachnivoracious songbirds. International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
159. Williams, E.*, **M.M. Chumchal**, R.W. Drenner, J. Kennedy. 2017. Seasonality of odonate-mediated methyl mercury flux from permanent and semi-permanent ponds and potential risk to red-winged blackbirds (*Agelaius phoeniceus*). International Conference on Mercury as a Global Pollutant. Providence, Rhode Island.
160. **Chumchal, M.M.** and R.W. Drenner. 2018. Ecological factors controlling insect-mediated methylmercury flux from aquatic to terrestrial ecosystems. Society for Freshwater Science Annual Meeting, Detroit, Michigan.
161. Drenner, R., **M.M. Chumchal**, M. Hannappel*, S. Weinstein*, and C. Gerstle*. 2018. Mercury risk to fish in the south-central U.S.: effects of mercury deposition, fish trophic position and fish length. Society for Freshwater Science Annual Meeting, Detroit, Michigan.
162. Gerstle, C. T.*, R. Drenner, and **M.M. Chumchal**. 2018. Mercury risk to piscivorous Great Blue Herons in the South Central United States. Texas Chapter of the American Fisheries Society Annual Meeting. College Station, Texas.
163. Hannappel, M.*, **M.M. Chumchal**, R. Drenner, S. Weinstein*, and C. Gerstle*. 2018. Mercury risk to fish in the south-central U.S.: effects of mercury deposition, fish trophic position and fish length. Texas Chapter of the American Fisheries Society Annual Meeting. College Station, Texas.
164. Khan, A.***, G. Wallace**, **M.M. Chumchal**, R.W.Drenner. 2018. Methylmercury contamination of terrestrial spiders living along the Trinity River. Society of Environmental Toxicology and Chemistry-South-Central Regional Chapter. Junction, Texas.
165. Khan, A.***, G. Wallace**, **M.M. Chumchal**, R.W.Drenner. 2018. Methylmercury contamination of terrestrial spiders living along the Trinity River. Collin College Undergraduate Interdisciplinary Student Research Conference, Plano, Texas.
166. Kidd, K., R.A. Lavoie, L. Campbell, **M.M. Chumchal**, T. Jardine. 2018. Mercury biomagnification in aquatic food webs on a global scale. Society for Freshwater Science Annual Meeting, Detroit, Michigan.

d. Invited Seminars***Research Seminars***

1. Effect of sample size and non-random samples on the issuance of fish advisories. 2005. Louisiana State University, Baton Rouge, LA.
2. Mercury in fish: An unnatural problem in Texas' only natural lake. 2006. Texas State University: Departmental Seminar, San Marcos, TX.
3. Mercury contamination of Texas fisheries. 2007. Texas Commission on Environmental Quality: Water Quality Annual Training, Arlington, Texas.
4. Mercury in the food web of Caddo Lake: Unnatural problem in Texas' only natural lake. 2008. Southwestern University, Georgetown, Texas.
5. Mercury in the food web of Caddo Lake. 2008. North East Texas Regional Water Planning Group Meeting, Gilmer, Texas.
6. Mercury in the Caddo Lake food web: bioaccumulation, biomagnification, and toxicological significance. 2008. Caddo Lake Watershed Protection Plan Meeting, Jefferson, Texas.
7. Mercury contamination of Texas fisheries. 2008. Austin College, Sherman, Texas.
8. Patterns of Hg Contamination in Food Webs of the South Central US: Potential Causes and Consequences. 2009. Louisiana State University, Baton Rouge, Louisiana.
9. Patterns of Hg Contamination in Food Webs of the South Central US: Potential Causes and Consequences. 2009. Sam Houston State University, Huntsville, Texas.
10. Mercury Contamination in Region 6. 2009. EPA Region 6 Headquarters, Dallas, Texas.
11. Mercury in the food web of Caddo Lake: Unnatural problem in Texas' only natural lake. 2009. University of North Texas, Denton, Texas.
12. Mercury in the food web of Caddo Lake: Unnatural problem in Texas' only natural lake. 2009. University of Texas at Arlington, Arlington, Texas.
13. Patterns, Causes and Consequences of Hg Contamination of Food Webs in the South Central US. 2011. Baylor University, Waco, Texas.
14. Hg Contamination in the South Central US. 2012. Augustana College, Rock Island, Illinois.
15. Transport of MeHg from aquatic to terrestrial food webs via emergent insects – a big problem with small ponds. 2013. University of South Dakota, Vermillion, South Dakota.
16. Mercury contamination in the South Central United States: Patterns, causes and consequences. 2014. University of Texas-Tyler, Tyler, Texas.
17. Mercury contamination in the South Central United States: Patterns, causes and consequences. 2014. Texas Commission on Environmental Quality – Surface Water Quality Monitoring Workshop, Bandera, Texas.
18. Mercury contamination in the South Central United States: Patterns, causes and consequences. 2014. United States Geology Survey, Reston, Virginia.
19. An environmental problem hidden in plain sight: small man-made ponds, emergent insects and mercury contamination of biota in the Great Plains. 2016. University of Oklahoma, Norman, Oklahoma.

20. Mercury contamination in the south central US: Patterns, causes and consequences. 2016. University of Oklahoma, Norman, Oklahoma.
21. Mercury contamination in the south central US: Patterns, causes and consequences. 2017. Savannah River Ecology Laboratory (University of Georgia), Aiken, South Carolina.
22. Mercury contamination in the south central US: Patterns, causes and consequences. 2017. Texas Tech Annual Biological Sciences Symposium (Plenary Lecture), Lubbock, Texas.

Mentoring and Pedagogy Seminars

1. Research with Undergraduates. 2010. Koehler Center Teaching and Learning Conversation, Texas Christian University, Fort Worth, Texas.
2. Academic jobs: Preparation of an application and the interview process (or how not to lose a job before you even get one). 2011. Graduate Student Career Workshop, Joint Meeting of the Oklahoma-Texas Aquatics Research Group and the Great Plain's Limnology Society, University of Oklahoma Biological Station, Oklahoma.

Pre-Health Institute Seminars

1. State of the Pre-Health Professions Institute. 2014. State of TCU update for Washington D.C. area alumni, Washington, D.C.
2. State of the Pre-Health Professions Institute. 2014. State of TCU update for the Fort Worth Congressional Delegation, Fort Worth, Texas.
3. Pre-Health Professions Institute by the Numbers. 2015. Chancellor's Cabinet. Fort Worth, Texas.
4. Overview of the Pre-Health Professions Institute. 2015. College of Science and Engineering External Advisory Board. Fort Worth, Texas.
5. Why TCU? 2016. Destination TCU (prospective student program), Fort Worth, Texas.

e. Workshop Participation

Middle East Water Working Group, US Department of State and University of Oklahoma International Programs Center. Pano Platres, Cyprus, June 2003 and Amman, Jordan, December 2004. Workshop participant and rapporteur.

Editorship, Consultantships, and Applied Professional Activities

Content Specialist on grant: "Environmental Systems Emphasizing Sustainable Education [ESESE]", Texas Higher Education Coordinating Board, Teacher Quality Enhancement, Co-PI: Molly Weinburgh and Mark Bloom, \$285,003.00. May 2009 – May, 2011.

Ad-hoc referee for the following journals/organizations/funding agencies:

ACS Omega; Ambio; Biological Invasions; Bulletin of Environmental Contamination and Toxicology; Canadian Journal of Fisheries and Aquatic Sciences; Connecticut Sea Grant Program; CRC Press; Ecotoxicology; Environmental Monitoring and Assessment; Environmental Pollution; Environmental Science: Processes & Impacts; Environmental Science and Pollution Research; Environmental Science and Technology; Environmental Toxicology and Chemistry; Fundamental and Applied Limnology (formerly Archiv Für

Hydrobiologie); FACETS; Global Change Student Research Grant Competition; Integrated Environmental Monitoring and Assessment; Journal of Environmental Sciences; Journal of Visualized Experiments (JoVE); National Science Foundation; Science of the Total Environment; The Texas Journal of Science; Texas Academy of Science Student Grant Competition; Transactions of the American Fisheries Society; The Southwestern Naturalist; United States Geological Survey; Water, Air and Soil Pollution; Woods Hole Sea Grant Program

Editorial Board *Environmental Toxicology and Chemistry* 2015-present (current term expires 2020)

Academic Advising Activities

2008: 14 appointments
2009: 86 appointments
2010: 81 appointments
2011: 109 appointments
2012: 171 appointments
2013: 277 appointments
2014: 294 appointments
2015: 217 appointments (Spring semester sabbatical)
2016: 375 appointments
2017: 477 appointments

Departmental Service

Library Liaison, 2007-2014
Ad Hoc Curriculum Review Committee - Chair of committee tasked with comparing departmental curriculum to a major biology text, 2007
Monday at TCU – Coordinator for Biology Department, 2007-2012
Committee on Graduate Students – Member, 2008-2014
Tenure-Track Microbiologist Search Committee, 2009
Developed a promotional video for the Biology Department shown at TCU Basketball home games (<http://www.youtube.com/watch?v=6T4FQ92XeEw&feature=youtu.be>)
Tenure-Track Physiologist Search Committee Chair, 2012
Biology Instructor Search Committee Chair, 2014-2015
Undergraduate Research Committee, 2017

College Service

Ad Hoc Environmental Studies Institute Advisory Committee – Member, 2008
College of Science and Engineering Dean Search Committee – Member, 2008-2009
Ad Hoc Tenure and Promotion Procedures Committee – Member, 2009
College of Science and Engineering Dean Search Committee – Member, 2012-2013
Health Professions Advisory Committee

- Member, 2008-2012
- Associate Chair, 2012-2013
- Chair, 2013-Present

Alpha Epsilon Delta National Pre-Health Honor Society, Texas Zeta Chapter Co-Advisor
(with Jill Fritchen and Shauna McGillivray), 2012-Present

University Service

Board of Trustees of Southwestern University – 2001-2003 (elected by student body to
serve two year term)

TCU Institutional Animal Care and Use Committee – Member, 2007-2012

TCU Library Committee – Member, 2008-2010

TCU-UNTHSC MD School Steering Committee, 2015

TCU-UNTHSC MD School Inaugural Dean Search Committee, 2015-2016

TCU-UNTHSC MD School Admissions and Recruitment Committee, 2015-2016

John V. Roach Honor's College History and Philosophy of Science Faculty Search
Committee, 2015-2016

Advising Software Selection Committee – Member, 2016

John V. Roach Honor's College Director of Advising Search Committee, 2017

Texas Joint Admissions Medical Program, TCU Faculty Advisor, 2013-Present

TCU Vision in Action: Lead On Strategic Planning, Academic Profile and Reputation
Committee – Sub-committee “convener” 2017-2018

Community Service and Outreach

“What is a scientist?” Presentation to 18 Middle School Students in *College Bound*
program, 2009

“Using Ponds to Teach about Food Webs and Contaminants in the Environment”, Half-
Day Workshop for Middle and High School Teachers, 5 participants, 2009

“Mercury contamination in Texas” Presentation to Keep Fort Worth Beautiful, 2010

“Biodiversity” Presentation to Fort Worth ISD AP Science Teachers Professional
Develop Workshop, 2011

“Science Major for a Day” Organized half-day program for 100 4th grade students from
Sycamore Elementary, a Crowley ISD Title 1 school, 2012

“How Texas politics shape public education in the United States” Organized screening of
the documentary *The Revisionaries* and discussion with the director along with
faculty colleagues from the Departments of Education, History & Geography,
Physics & Astronomy, and Religion, 2013.

“Ambassadors for Science” Dinner speaker at TCU Chemistry Club banquet, 2016

“Mercury in the South Central US” Chemistry Club meeting, 2017

<https://themercurysite.com/> , Developed website with Ray Drenner and Kim Adams to
help the general public understand some of the key issues surrounding mercury in
the environment. The website also contains a tool to help people inform themselves
of about levels of mercury in fish in their region, 2017.

Memberships and Service to Professional Organizations

Research-oriented societies

American Fisheries Society

Texas Chapter – Awards Committee Member, 2008

Texas Chapter – Awards Committee Chair, 2009-2012

Society of Environmental Toxicology and Chemistry

South Central Region Chapter Board of Directors, 2008-2013
South Central Region Chapter Annual Meeting Plenary Session Chair, Texas
State University, San Marcos, Texas, 2009
South Central Region Chapter Webmaster, 2009-2015
South Central Region Chapter Annual Meeting Co-Chair (with Ray Drenner and
Marlo Jeffries), Texas Christian University, Fort Worth, Texas, 2016
Society for Freshwater Science
Texas Academy of Science
Freshwater Science Section Chair, 2008-2010
Strategic Planning Committee – Membership, 2011

Advising and Pedagogy-oriented societies

National Association of Advisors for the Health Professions
Texas Association of Advisors for the Health Professions
Member at Large, 2017-2019
Consortium of Universities for Global Health
Alpha Epsilon Delta Pre-Health Honor Society
Region 4 Director, 2018-2020

Research Honors and Awards

2nd Place, Student Presentation Competition, Texas Academy of Science Annual
Meeting, 2000
Honorable Mention, Student Presentation Competition, Texas Academy of Science
Annual Meeting, 2001
Texas Chapter of the American Fisheries Society Scholarship, 2002
American Society of Limnology and Oceanography Travel Award, 2002
Outstanding Graduate Student of the Year, TCU Department of Biology, 2003
Best Student Oral Presentation Award, Texas Chapter of the American Fisheries Society
Annual Meeting, 2006
Best Student Oral Presentation Award, Texas Chapter of the American Fisheries Society
Annual Meeting, 2007
Best Professional Oral Presentation Award, Texas Chapter of the American Fisheries
Society Annual Meeting, 2008
Texas Academy of Science Fellow, elected 2010
The Dow Chemical Company Award for Innovation in Mercury Science, International
Conference on Mercury as a Global Pollutant, Awarded for the presentation: Effects
of mercury deposition and coniferous forests on the mercury contamination of fish in
the south central United States, Drenner, R.W., **M.M. Chumchal**, C.M. Jones,
Christopher M. B. Lehmann, David A. Gay, David I. Donato. 2013
Highly cited paper recognition - Thomas Reuters Essential Science Indicators Lavoie, R.,
T. Jardine, **M.M. Chumchal**, K. Kidd, L. Campbell. 2013. Biomagnification of
mercury in aquatic food webs: a worldwide meta-analysis. Environmental Science
and Technology, 47: 13385–13394. This highly cited paper received enough citations
to place it in the top 1% of its academic field based on a highly cited threshold for the
field and publication year. May/June 2015

Best Professional Oral Presentation Award, Texas Chapter of the American Fisheries Society Annual Meeting, 2016
Best Professional Poster Presentation Award, Texas Chapter of the American Fisheries Society Annual Meeting, 2016
Dr. T.W. Adams Distinguished Alumni Lecture Program Speaker for the University of Oklahoma College of Arts and Sciences, 2016.
Outstanding Reviewer for Environmental Toxicology and Chemistry Recognition (top 5% of 800 reviewers), 2017

Teaching and Mentoring Honors and Awards

Graduate Teaching Assistant of the Year, Texas Christian University, Department of Biology, 2002 & 2003
James N. Thompson Jr. Award for Graduate Teaching, University of Oklahoma, Department of Zoology, 2007
Outstanding Fisheries Educator of the Year, Texas Chapter of the American Fisheries Society, 2017
TCU Student Government Association, College of Science and Engineering Faculty Member of the Year, 2016 & 2017
Wassenich Award for Mentoring in the TCU Community Nominee, 2011, 2015, 2017
TCU Senior Class Legacy Honoree, 2009-2011, 2013-2017
TCU Last Lecture Nominee (nominated by member of the senior class), 2014, 2017
TCU John V. Roach Honor's College Professor of the Year Finalist, 2017

Research Honors and Awards Received by TCU Student Collaborators

Michael Sawey, 2nd Place Student Poster Presentation Competition, South Central Chapter of the Society for Environmental Toxicology and Chemistry Annual Meeting, 2008
Michael Sawey, Best Graduate Presentation in Environmental Science, TCU College of Science and Engineering Student Research Symposium, 2008
Steve Osborne, Best Undergraduate Presentation in Environmental Science, TCU College of Science and Engineering Student Research Symposium, 2009
Brienne Kiestler, Best Abstract Award – Marine Science Section, Texas Academy of Science Annual Meeting, 2009
Brienne Kiestler, Best Student Poster Award, Texas Chapter of the American Fisheries Society Annual Meeting, 2009
Alden Park, Best Undergraduate Presentation in Biology, TCU College of Science and Engineering Student Research Symposium, 2010
Jacob Wadlington, 2nd Place Student Poster Award, South Central Chapter of the Society for Environmental Toxicology and Chemistry Annual Meeting, 2011
Taylor Jones, Best Graduate Presentation in Biology, TCU College of Science and Engineering Student Research Symposium, 2011
Jacob Wadlington, Best Student Poster Award, Texas Chapter of the American Fisheries Society Annual Meeting, 2011
Brent Tweedy, 2nd Place Student Presentation Competition, South Central Chapter of the Society for Environmental Toxicology and Chemistry Annual Meeting, 2012

Jack O'Brien, Boller Award Competition Finalist (award for best Honors Thesis presentation), TCU Honors College, 2012
Gretchen Gann, Honorable Mention Graduate Student Presentation Competition, Texas Academy of Science Annual Meeting, 2014
Shannon Speir, Boller Award Competition Finalist (award for best Honors Thesis presentation), TCU Honors College, 2014
Shannon Speir, Honorable Mention Undergraduate Student Presentation Competition, Texas Academy of Science Annual Meeting, 2014
Jenny Korstian, 2nd Place Oral Presentations in Toxicology, Texas Tech Association of Biologists Symposium, 2016
Eddie Williams, 2nd Place Platform Presentation by a Graduate Student, South Central Chapter of the Society for Environmental Toxicology and Chemistry, 2016
Celeste Ortega, 1st place TCU 3MT (three minute thesis) competition, 2017
Celeste Ortega, 2nd Place Platform Presentation, South Central Chapter of the Society for Environmental Toxicology and Chemistry, 2017
Maddie Hannappel, 1st Place Poster Presentation, South Central Chapter of the Society for Environmental Toxicology and Chemistry, 2017
Chris Gerstle, Best Graduate Presentation in Biology, TCU College of Science and Engineering Student Research Symposium, 2018

Media Coverage

2008

Shrimp trawling may boost mercury in red snapper, study suggests Article on EurekAlert! On mercury research. November 2008.
http://www.eurekalert.org/pub_releases/2008-11/djc-stm112608.php

2011

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