

# Kristin Nielsen, Ph.D.

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## **EDUCATION**

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- 2018 Postdoctoral Research Fellowship in Aquatic Toxicology, University of North Texas, Denton, TX
- 2016 Ph.D. in Aquatic Toxicology, University of North Texas, Denton, TX
- Dissertation Topic: Maternal transfer of dietary methylmercury and implications for embryotoxicity in *Pimephales promelas*
- 2005 B.A. in Biology, English, Texas A&M University, College Station, TX

## **PROFESSIONAL EXPERIENCE**

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2020 – Present Assistant Professor; The University of Texas at Austin Marine Science Institute; Port Aransas, TX

Current Research: Dr. Nielsen is an aquatic toxicologist who uses a systems approach to investigate the developmental and reproductive toxicity of ubiquitous environmental contaminants to both freshwater and marine organisms. She is particularly interested in linking contaminant-mediated molecular initiating events to higher level adverse effects in fish models, from both an ecotoxicological and translational perspective. She has specific expertise in the toxicological effects of per- and polyfluoroalkyl substances (PFAS), heavy metals, select pharmaceuticals and their degradation products, as well as the photo-induced toxicity of oil spills to early life stage aquatic organisms. Dr. Nielsen also builds on her experience as a professional ecological and human health risk assessor in a research context, specifically as it pertains to subsistence fishing resources. As part of this work, Dr. Nielsen develops novel, multiple-lines-of-evidence risk assessment frameworks that consider the role of understudied qualitative determinants of risk (e.g., socio-economic, demographic, traditional, and location-specific environmental factors).

### Advising:

Kerri Ackerly, Postdoctoral Fellow

Tamara Rivera, PhD Student (Co-Advised by Dr. Simon Brandl)

Rachel Roday, PhD Student

Kathleen Roark, PhD Student

Lily DeCamp, Undergraduate Student

Mona Birgisson, Undergraduate Student

### Teaching:

MNS 354Q. *Marine Environmental Science*

MNS 193. *Aquatic Toxicology and Risk Assessment*

- 2019 – 2020 *Ecological and Human Health Risk Assessor and Toxicologist; Geosyntec Consultants; Anchorage, AK*
- 2018 – 2019 *State Toxicologist & Environmental Public Health Program Manager, Alaska Division of Public Health; Anchorage, AK*

2016 – 2018 Postdoctoral Research Fellow & Adjunct Faculty; University of North Texas; Denton, TX

Postdoctoral Research Topics:

Photo-induced toxicity of Gulf of Mexico oil to early life stage marine biota

Developmental toxicity of pharmaceutical compounds to non-target aquatic vertebrates

Courses Taught:

BIOL 4380. Fundamentals of Aquatic Toxicology

2008 – 2012 Department Chair and Science Teacher; Grand Prairie Independent School District; Grand Prairie, TX.

Courses Taught: Pre-AP Biology, Chemistry, Integrated Physics and Chemistry

2006 – 2008 Science Teacher and Coach; Pearsall Independent School District; Pearsall, TX.

Courses Taught: Biology, Chemistry, and Geology, Meteorology, and Oceanography

## **FUNDING**

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*Current* National Academies of Sciences, Engineering and Medicine (NASEM), (PI) \$76,000; 2022 – 2024. “Gulf Research Program 2022 Early-Career Research Fellowship.”

Coastal Bend Bays and Estuaries Program & Aransas County Navigation District, (Co-PI) \$58,000; 2022 – 2024. “Evaluating Ecological & Human Health Risks Related to Potential Contamination of Port Bay.”

Matagorda Bay Mitigation Trust, (PI) \$399,965; 2022 – 2025. “Assessing the threat of tire leachate and urban runoff on Matagorda Bay fish populations.”

Stengl-Weyer Endowment (PI) \$87,598; 2021-2023. “Danger Downstream? Investigating indirect mechanisms of urban runoff toxicity using a whole ecosystem approach.”

*Completed* Health Canada, Chemical Management Plan (Co-PI) \$148,000; 2019 - 2021. “Investigating Metformin’s Environmental Fate and Effects.”

Centers for Disease Control & Prevention (CDC), (PI) \$404,467; 2018 – 2019. “TSDR Partnership to Promote Local Efforts to Reduce Environmental Exposure.”

CDC, (PI) \$263,278; 2018 – 2019. “Childhood Lead Poisoning Prevention.”

*Pending* Prince William Sound Regional Advisory Council, (PI) \$170,133; 2023 – 2025. “Toxicity of Oxygenated Polycyclic Aromatic Hydrocarbons in Treated Ballast Water Effluent to Calanoid Copepods: Implications for Food Webs in PWS, Alaska.”

Matagorda Bay Mitigation Trust, (PI) \$396,691; 2023 – 2026. “Reproductive and developmental toxicity of “Forever Chemicals” to Matagorda Bay’s prey fishes.”

*In Preparation* NASEM Gulf Research Program (PI) \$1,500,000; 2023 – 2026. “Implications of climate change for dietary contaminant exposure in Alaskan subsistence fishing communities.”

National Oceanic and Atmospheric Administration (NOAA), DECORATE: Developing an Ecosystem-based Conservation framework for Oyster Reefs Across Texas Estuaries (Co-PI), \$1,908,340; 2023 – 2028

## ***HONORS, MEMBERSHIPS & AWARDS***

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Affiliate Faculty, Beaufort Lagoon Ecosystems Long Term Ecological Research Program (2022 – Present)

Early Career Fellow, National Academies of Sciences, Engineering and Medicine (2022)

Center for Molecular Carcinogenesis & Toxicology, College of Pharmacy, University of Texas at Austin (2022 – Present)

Interdisciplinary Environmental Chemicals Working Group, Center for Health and Environment: Education and Research, University of Texas at Austin (2022 – Present)

Affiliate Faculty, Alaska Pacific University (2019 - 2022)

Presidential Citation Award Recipient, SETAC North America (2018)

Outstanding Teaching Award, Department of Biological Sciences, University of North Texas (2015)

Beth Baird Scholarship, University of North Texas (2014 -2016)

## ***SERVICE TO THE FIELD***

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*Department*      PhD Committee – Hannah Rempel (Current)

PhD Committee – Xiangtao Jiang (Current)

PhD Committee – Kathryn Appler (Current)

MS Committee – JD Carlton (Current)

Center for Coastal Ocean Science Design Committee, Marine Science Institute, University of Texas at Austin (2022 – Present)

Abell Chair Faculty Recruitment Committee, Marine Science Institute, University of Texas at Austin (2022 – Present)

Analytical Core Committee, Department of Marine Science, University of Texas at Austin (2020 – Present)

Institutional Animal Care and Use Committee, Marine Science Institute, University of Texas at Austin (2020 – Present)

Graduate Record Examination Waiver Committee, Department of Marine Science, University of Texas at Austin (2021 – 2022)

Marine Science Institute Director and Department of Marine Science Chair Search Committee, College of Natural Science, University of Texas at Austin (2021 – Present)

*Scientific*            *Board and Committee Positions*

*Community*

Secretary, South Central Regional SETAC (2022 – Present)

Executive Board, South Central Regional SETAC (2021 – Present)

Development Committee, SETAC North America (2018-2020)

Early Career Committee (ECC), SETAC North America (2018 – 2020)

ECC Outreach & Media Sub-Committee Chair, SETAC North America (2018 – 2020)

Environmental Public Health Program Development Committee, Alaska Pacific University (2018 – 2019)

Conference Chair Positions

Session Chair, SETAC Europe 33<sup>rd</sup> Annual Meeting, Dublin, Ireland (2023)

Session Chair, American Physiological Society Intersociety Meeting in Comparative Physiology, San Diego, CA (2022)

Session Chair, SETAC North America 39th Annual Meeting, Sacramento, CA (2018)

Session Chair, SETAC North America 36th Annual Meeting, Salt Lake City, UT (2015)

Conference Planning Committees

National Academies and Alaska Sea Grant Oil Spill Science and Disaster Preparedness Workshop Steering Committee, Anchorage, AK (2019)

SETAC North America Early Career Scientist Planning Committee, Sacramento, CA (2018)

Journal, Conference, and Book Editing & Reviewing

Frontiers in Marine Science Editorial Board (Review Editor for Marine Pollution since 2022)

Environmental Science & Technology (Reviewer)

Environmental Science & Technology Letters (Reviewer)

Environmental Toxicology & Chemistry (Reviewer)

ACS Omega (Reviewer)

Ecotoxicology (Reviewer)

Aquatic Toxicology (Reviewer)

Environmental Pollution (Reviewer)

Journal of Hazardous Materials (Reviewer)

Comparative Biochemistry and Physiology (Reviewer)

British Journal of Nutrition (Reviewer)

Grant Proposal Reviewing

Texas Comprehensive Research Fund (2022)

NIH/NIEHS P42 Superfund Hazardous Substance Research and Training Program (2021)

NSF Major Research Instrumentation Program (2021)

## **PUBLICATIONS**

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**Nielsen, K;** DeCamp, L; Birgisson, M; Palace, V; Kidd, K; Parrott, J; McMaster, M; Ussery, E. (2022) Comparative effects of embryonic metformin exposure on wild, and laboratory-spawned fathead minnow (*Pimephales promelas*) populations. Environmental Science & Technology: 56 (14), 10193-10203

Ackerly, K; Roark, K; **Nielsen, K** (2022) Short term salinity stress during early development impacts the growth and survival of red drum (*Sciaenops ocellatus*). Estuaries & Coasts.

Conder, J; Arblaster, J; **Nielsen, K** (2022) AFFF PFAS Terrestrial Ecological Risk Model Tool (SERDP Project ER18-1614), Department of Defense Technical Information Center, <https://apps.dtic.mil/sti/citations/AD1160988>

Ussery, E; **Nielsen, K;** Simmons, D; Pandelides, Z; Mansfield, C; Holdway, D. (2021) An 'omics approach to investigate the growth effects of environmentally relevant concentrations of guanylurea exposure on Japanese medaka (*Oryzias latipes*), Aquatic Toxicology, 232, 105761

Conder, J; Arblaster, J; **Nielsen, K** (2021) AFFF PFAS Aquatic Ecological Risk Model Tool (SERDP Project ER18-1614), Department of Defense Technical Information Center, <https://apps.dtic.mil/sti/citations/AD1160985>

**Nielsen, K**; Furin C; Gerlach B. (2020) Subsistence fish consumption in rural Alaska: Using regional monitoring data to evaluate risk and bioavailability of dietary methylmercury. *Science of the Total Environment*: 736, 139676

**Nielsen, K**; Alloy MM; Damaré LM; Palmer I; Forth HP; Morris JM; Stoeckel J; Roberts, AP (2020) Planktonic fiddler crab (*Uca longisignalis*) are susceptible to photo-induced toxicity following developmental exposure to oiled terrestrial habitat. *Environmental Science & Technology*: 54 (10), 6254-6261

**Nielsen, K**; Curran TE; Magnuson JT; Barker A; Baxter D; Venables BJ (2019). Alterations to the vision-associated transcriptome of zebrafish (*Danio rerio*) following developmental norethindrone exposure. *Environmental Toxicology & Pharmacology*: 69, 137-142

Ussery EJ; **Nielsen, K**; Pandelides Z; Kirkwood AE; Bonetta D; Guchardi J; Holdway D (2019). Developmental and full life-cycle exposures to guanlyurea, and guanlyurea-metformin mixtures causes adverse effects in Japanese medaka (*Oryzias latipes*). *Environmental Toxicology & Chemistry*: 38(5), 1023-1028

**Nielsen, K**. (2019) Letter Health Consult: PFAS Exposure Assessment, Pioneer Farm and Alaskan Farm, North Pole, Alaska; State of Alaska Department of Health and Social Services, Anchorage, AK. 2019

Ussery EJ; **Nielsen, K**; Pandelides Z; Kirkwood AE; Bonetta D; Guchardi J; Holdway D (2018). Developmental effects of metformin on early life stages of Japanese medaka (*Oryzias latipes*). *Aquatic Toxicology*: 205: 58-65

**Nielsen, K**; Krasnec M; Magnuson JT; Morris JM; Gielazyn ML; Chavez R; Roberts AP. (2018) Influence of UV and PAH exposure duration on survival of red drum (*Sciaenops ocellatus*) larvae. *Environmental Toxicology & Chemistry*: 37(9), 2372- 2379

**Nielsen, K**; Zhang Y; Curran TE; Magnuson JT; Venables BJ; Durrer, KE, Allen M; Roberts AP. (2018). Alterations to the intestinal microbiome and metabolome of *Pimephales promelas* and *Mus musculus* following exposure to dietary methylmercury. *Environmental Science & Technology*: 52(15), 8774-8784

**Nielsen, K**; Lay CR; Alloy MM; Gielazyn ML; Morris JM; Forth HP; Takeshita R; Travers C; Oris JT; Roberts AP (2018). Estimating incident ultraviolet (UV) radiation exposure in the Northern Gulf of Mexico during the Deepwater Horizon Oil Spill. *Environmental Toxicology & Chemistry*: 37(6), 1679-1687

Damaré LM; **Nielsen, K**; Forth HP; Lay CR; Morris JM; Stoeckel J; Curran TE; Soulen BK; Alloy MM; Roberts AP (2018). Photo- induced toxicity in early lifestage fiddler crab (*Uca longisignalis*) following exposure to Deepwater Horizon spill oil. *Ecotoxicology*: 27(4), 440-447

**Nielsen, K**, Venables, B. and Roberts, A. (2017), Effects of dietary methylmercury on the dopaminergic system of adult fathead minnows and their offspring. *Environmental Toxicology & Chemistry*, 36: 1077-1084

Alloy MM; Garner TG; **Nielsen, K**; Mansfield CM; Carney M; Forth HP; Krasnec M; Lay CR; Takeshita R; Morris JM; Oris JT; Roberts AP (2017). Co-exposure to sunlight enhances the toxicity of naturally weathered Deepwater Horizon oil to early lifestage red drum (*Sciaenops ocellatus*) and speckled seatrout (*Cynoscion nebulosus*). *Environmental Toxicology & Chemistry*: 36(3), 780-785

**Nielsen, K**; Soulen B; Overturf C; Drevnick P; Roberts A (2016). Embryotoxicity of maternally transferred methylmercury to *Pimephales promelas*. *Environmental Toxicology & Chemistry*: 35(6), 1436-41

Lay CR; Morris JM; Takeshita R; Forth HP; Travers CL; Roberts AP; Alloy MM; Garner TR; **Nielsen, K** (2015) Incident Ultraviolet (UV) Radiation and Extinction Coefficients in the Northern Gulf of Mexico During the Deepwater Horizon Oil Spill. (TOX\_TR.06). Boulder, CO. DWH Toxicity NRDA Technical Working Group Report. <https://www.doi.gov/deepwaterhorizon/adminrecord>

Barst BD; **Nielsen, K**; Korbas M; Roberts AP; Van Kirk K; McNeel K; Drevnick PE (2015). The role of melano-macrophage aggregates in the storage of mercury and other metals: An example from yelloweye rockfish (*Sebastes ruberrimus*). Environmental Toxicology & Chemistry: 34(8), 1918-1925

#### Additional Publications in Preparation

Khursigara, A. J., Roark, K., Soulen, B. K., Condini, M. V., **Nielsen, K.**, Garcia, A., Hoeinghaus, D.; Roberts, AP (In Preparation) Dusky grouper (*Epinephelus marginatus*) mercury concentrations along the Southern Brazilian coast.

Ussery, E; **Nielsen, K**; Blandford, N; Parrott, J; Kidd, K; Palace, V; McMaster, M; Birceanu, O; Wilson, J (In preparation) Effects of experimentally added metformin on the aquatic food web in a boreal lake aquatic environment via in-lake mesocosm exposure.

Blandford, N; Parrott, J; Kidd, K; Palace, V; McMaster, M; Sumarah, M; Renaud, J; Alaei, M; **Nielsen, K**; Ussery, E (In Preparation). Fate and remediation of experimentally added metformin in a boreal lake ecosystem via in-lake mesocosm exposure.

Nichols, C., Khursigara, A; Garner, TR; Alloy, MM; **Nielsen, K**; Soulen, BK; Gnau, JL; Wormington, AM; Sweet, LE; Morris, JM; Roberts, AP. (Submitted) Factors Affecting Photo-Induced Toxicity in Mysid Shrimp (*Americamysis bahia*) Exposed to Weathered Crude Oil and Ultraviolet Radiation.

Alloy, MM; Garner, TR; Khursigara, AJ; Nichols, CLD; O'Shaughnessy, KA; **Nielsen, K.**, Van Aken, M., Chesney, EJ; Roberts, AP. (In Preparation) Photo-induced toxicity of crude oil to bay anchovy (*Anchoa mitchilli*) and red snapper (*Lutjanus campechanus*).

## **SELECT PRESENTATIONS**

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### Conference Presentations (Presenting author platforms only; \* denotes invited talks)

American Physiological Society (2022; San Diego, California) Using red drum as an indicator of the combined effects of toxicant exposure and climate change in estuarine systems. \*

Center for Molecular Toxicology and Carcinogenesis Annual Symposium (2022; Austin, TX) Developmental effects of understudied PFAS on estuarine-dependent fish. \*

International Congress on the Biology of Fish (2022; Montpellier, France) Comparative effects of developmental metformin exposure on embryolarval fishes.

SETAC North America (2021; Virtual) Metformin exposure impacts development of wild-spawned embryo-larval fish. \*

Assessing the Ecological Risks of Per- and Polyfluoroalkyl Substances (PFAS) at Aqueous Film Forming Foam Sites (2020; Westminster, CO) Emerging Contaminants Summit.

PFAS Toxicology and Risk Assessment: State of the Science (2020; Virtual) Geosyntec Global PFAS Technical Webinar.

SETAC North America, 40th Annual Meeting (2019; Toronto; Ontario; Canada) Subsistence Fish Consumption in Alaska: Using Regional Monitoring Data to Evaluate Risk and Bioavailability of Dietary Methylmercury. \*

SETAC North America, 39th Annual Meeting (2018; Sacramento, CA) Alterations to the intestinal microbiome and metabolome of *Pimephales promelas* and *Mus musculus* following exposure to dietary methylmercury. \*

SETAC Europe, 28th Annual Meeting (2018; Rome, Italy) Photoperiod, exposure duration, and latent mortality: Photo-induced toxicity effects in aquatic organisms.

SETAC Europe, 28th Annual Meeting (2018; Rome, Italy) Alterations to the intestinal microbiome and metabolome of *Pimephales promelas* and *Mus musculus* following exposure to dietary methylmercury.

Gulf of Mexico Oil Spill and Ecosystem Science Conference (2018; New Orleans; LA) Photoperiod, exposure duration, and latent mortality: Photo-induced toxicity effects in aquatic organisms.

SETAC North America 38th Annual Meeting (2017; Minneapolis, MN) Photoperiod, exposure duration, and latent mortality: Photo-induced toxicity effects in aquatic organisms.

International Conference on Environmental Pollution, Restoration, and Management (2017; Quy Nhon, Vietnam) The photo-induced toxicity of Australian northwest shelf crude oil to yellowtail kingfish (*Seriola lalandi*) and black bream (*Acanthopagrus butcheri*).

International Conference on Environmental Pollution, Restoration, and Management (2017; Quy Nhon, Vietnam) Effects of dietary methylmercury on the dopaminergic system in adult fathead minnows and their offspring.

SETAC North America 37th Annual Meeting (2016, Orlando, FL) Effects of dietary methylmercury on the dopaminergic system in adult fathead minnows and their offspring.

SETAC North America 36th Annual Meeting (2015; Salt Lake City, UT) Embryo-toxicity of maternally transferred methylmercury to fathead minnows (*Pimephales promelas*).

SETAC South Central Regional Meeting (2014; San Marcos, Texas) Effects of maternally derived methylmercury on fathead minnow (*Pimephales promelas*) reproductive metrics and embryonic development.

SETAC North America 34th Annual Meeting (2013; Nashville, TN) Effects of maternally derived methylmercury on fathead minnow (*Pimephales promelas*) reproductive metrics and embryonic development.

#### Invited Institutional Seminars

Baylor University, Department of Environmental Science (2022, Waco, TX) Comparative effects of metformin exposure on laboratory and wild spawned fishes.

University of Sydney, ARC Centre in Data Analytics for Resources and Environments (2022; Virtual) Potential ecological and human health risks of PFAS contamination in Australia.

University of Alaska Fairbanks, Water and Environmental Research Center (2022; Virtual) Potential ecological and human health risks of PFAS contamination in Alaska.

University of Texas at Austin, College of Pharmacy (2022; Austin, TX) Comparative effects of developmental metformin exposure on wild and laboratory-cultured fish populations.

Alaska Pacific University, Environmental Public Health Program (2020; Anchorage, AK) The Role of Toxicology and Risk Assessment in Environmental Public Health Practice.

University of Georgia, College of Forestry (2020; Athens, GA) Ecotoxicological Effects of Developmental Exposure to Ubiquitous Aquatic Contaminants Across Levels of Biological Organization.

University of North Carolina at Wilmington, Center for Marine Science (2020; Wilmington, NC) Ecotoxicological Effects of Developmental Exposure to Ubiquitous Aquatic Contaminants Across Levels of Biological Organization.

Alaska Pacific University, Environmental Public Health Program (2019; Anchorage, AK) Toxicology and Risk Assessment: Alaska Edition.

University of Alaska Southeast, Department of Biology and Marine Biology (2019; Juneau, AK) Photo-induced Toxicity of Oil Spills to Early Life Stage Marine Biota.

Alaska Pacific University, Environmental Health Program (2019; Anchorage, AK) Risk Assessment and Communication in Environmental Justice Communities in Rural Alaska.

Marshall University, Department of Biological Sciences (2017; Huntington, WV). Effects of maternally transferred methylmercury on development of early life stage fish.

Public Seminars and Select Media Appearances

Kiii Channel 3 News (2022; Corpus Christi, TX) [Area researchers conduct study to see if chemicals from tires are polluting Coastal Bend waters](#)

KRIS6 News (2021, Corpus Christi, TX) [Port Aransas Conservancy fighting to block Port of Corpus Christi desalination plant](#)

UTMSI Science Festival Public Lecture Series (2021; Virtual) [Examining Risks in Perspective: Subsistence Fishing](#)

Alaska Tribal Consortium on Environmental Management (2019; Anchorage, Alaska) An Overview of PFAS Concerns for Communities in Rural Alaska

Alaska Public Media: Talk of Alaska Radio Interview (2019; Anchorage, AK). [PFAS contamination in Alaska](#)

Alaska Public Media: Alaska Insight TV Interview (2019; Anchorage, AK). [How Dangerous are PFAS Chemicals and What's Being Done to Clean Them Up?](#)

Alaska Department of Health and Social Services, Section of Public Health Nursing (2019; Anchorage, AK) PFAS & Public Health for Nurses

Dillingham Public Meeting (2019; Dillingham, AK) Public Health Concerns related to PFAS Exposures

Utqiagvik Public Meeting (2019; Utqiagvik, AK) Public Health Concerns related to PFAS Exposures

Gustavus Public Meeting (2018; Gustavus, AK) Public Health Concerns related to PFAS Exposures.