

Thomas L. Deardorff, Ph.D.
Senior Managing Scientist

Professional Profile

Dr. Thomas L. Deardorff possesses a broad scope of experience commensurate with previous employment in academia, the U.S. Food and Drug Administration (FDA), and private industry. Among Dr. Deardorff's areas of expertise are: constructed wetlands for industrial effluent treatment; wetlands restoration; calculating loss of value and subsequent reestablishment costs for forest and agricultural lands damaged by wildland fires; environmental contamination associated with large fires; water quality and industrial wastewater treatment; environmental impacts to aquatic ecosystems; investigations on the source, transport, fate, and effects of chemicals in the environment with particular expertise in contaminants such as dioxins and furans, PCBs, PAHs, and chlorinated phenols; oil spill investigations; and litigation support.

For over 15 years, Dr. Deardorff worked in the pulp and paper industry as a Human and Environmental Health Advisor. Dr. Deardorff understands the various paper mill processes and the potential impacts process changes have on the quality of wastewater released by the mills. He also served as a customer advocate for environmental issues with the industry such as paper recycling and sustainable forestry practices. The use of constructed wetlands for the treatment of industry wastewater has also been a focus for Dr. Deardorff in recent years. He has built several large treatment wetlands in the US, which have kept facilities in compliance with permits, saved clients millions of dollars, and enhanced the surrounding environment. His constructed wetland projects include capping of contaminated soils, beneficial reuse of solid-waste streams, landfill leachate treatment, habitat development, and wastewater treatment. Dr. Deardorff also chaired the Health Effects committee of the U.S. Forest & Paper Association in Washington, DC for over a decade leading its research efforts in areas such as worker exposures, epidemiology, the U.S. EPA's dioxin reassessment, forestry-related issues and endocrine disruption. Dr. Deardorff was also involved in the associated State, Federal, and Global regulatory interactions. Dr. Deardorff's Ph.D. research addressed the risks to humans for infections with parasitic diseases while ingesting raw or inadequately cooked fresh or marine foods, such as sushi and sashimi. He worked with parasitic diseases in humans at the University of Hawaii's School of Medicine and the University of South Alabama's School of Medicine, chemical and parasitic contaminants in fishes while at the U.S. FDA, and worked on issues involving medical entomology, including bedbug infestations.

Projects of significance since joining Exponent include involvement in wetland restoration and mitigation projects in the US, participation on teams advising the Iraq Ministry of the Environment of achieving the best management practices of wetland restoration of the lower reaches of the Tigris and Euphrates Rivers; participation on an oil spill cleanup in a river in the upper Amazon Basin (Ecuador); involvement of defending environmental claims in wildland fires in southern California; and assistance on a two-country (Uruguay and Argentina) dispute on the environmental impacts and Best Management Practices for Uruguay paper mill, which

was heard at the International Court of Justice (The Hague). Dr. Deardorff is extensively published.

Academic Credentials and Professional Honors

Ph.D., Biology, University of Southern Mississippi, 1980

M.A., Zoology, University of Northern Colorado, 1975

B.A., Science, University of Denver, 1969

Publications

Deardorff TL, Flowers T, Hamilton D. Stemming the tide: Lessons learned from the loss and restoration efforts of the Iraqi wetlands with comparisons with San Francisco Bay. Proceedings, World Environmental & Water Resources Congress, Vol. 414, 2011.

Deardorff TL, Menzie C, Pryke D. Uruguay's Orion Mill wins landmark environmental case before the World Court. Paper 360° 2011; 40–42.

Deardorff TL, Flowers T, Hamilton D, Cattarossi A, Lecollinet J. The value of a constructed wetland in southern Iraq to sustainably enhance water quality. Proceedings, World Environmental & Water Resources Congress, Vol. 414, 2011.

Deardorff TL, Karch NJ, Holm SE. Dioxin levels in ash and soil generated in Southern California fires. *Organohalogen Compd* 2010; 70:2284–2288.

Golden R, Holm SE, Deardorff TL, Kelly CR, Jones W. The consequences of sample preparation methods on the derivation of environmentally relevant ecotoxicology data for two complex mixtures. *Bullet Environ Contam Toxicol* 2008, in press.

Hall TJ, Fisher RP, Rodgers Jr JH, Minshall GW, Landis WG, Kovacs T, Firth BK, Dube MG, Deardorff TL. A long-term multi-trophic level study to assess pulp and paper mill effluent discharges on aquatic communities in 4 U.S. receiving waters: Background and status. *Integr Environ Assess Manage* 2009; 5(2):189–198.

Hall TJ, Fisher RP, Rodgers Jr JH, Minshall GW, Landis WG, Kovacs T, Firth BK, Dube MG, Flinders CA, Deardorff TL, Borton DL. A long-term multi-trophic level study to assess pulp and paper mill effluent discharges on aquatic communities in 4 U.S. receiving waters: Lessons learned. *Integr Environ Assess Manage* 2009; 5(2):283–290.

Mesard PM, Deardorff TL. Stormwater management during construction—A technical perspective. Proceedings, American Bar Association's Toxic Tort Environmental Law Section, Scottsdale, AZ, 2008.

Kelly CR, Golden R, Holm SE, Deardorff TL, Festa JL. Toxicity investigations associated with *Daphnia magna* and *Pimephales promelas* exposed to spent pulping liquor from an elemental-

chlorine-free kraft mill. pp. 304–309. In: Pulp & Paper Mill Effluent Environmental Fate & Effects. Borton DL, Hall TJ, Fisher RP, Thomas JF (eds), DEStech Publications, Inc., 2004.

Deardorff TL, Rodgers, Jr., JH, Felder DP, D’Surney SJ. A multifaceted investigation of the aquatic ecosystems near a bleached and unbleached kraft mill. In: Environmental Impacts of Pulp and Paper Waste Streams. Proceedings, 3rd International Conference on Environmental Fate and Effects of Pulp and Paper Mill Effluents. Stuthridge TR, Van den Heuvel MR, Marvin NA, Slade AH, Gifford J (eds), 2003.

Mastin BJ, Rodgers Jr. JH, Deardorff TL. Risk evaluation of Cyanobacteria-dominated algal “blooms” in a North Louisiana reservoir. J Aquat Ecosystem Stress Recovery 2002; 9:103–114.

D’Surney SJ, Eddy LP, Felder DP, Rodgers, JR., JH, Deardorff TL. Assessment of the impact of a bleached kraft mill effluent on a south-central USA river. Environ Toxicol 2000; 15:28–39.

Rigby MC, Adamson ML, Deardorff TL. *Camallanus carangis* Olsen, 1954 (Nematoda: Camallanidae) reported from French Polynesia and Hawai’i with a redescription of the species. J Parasitol 1998; 84(1):158–162.

Felder DP, D’Surney SJ, Rodgers, Jr., JH, Deardorff TL. A comprehensive environmental assessment of a receiving aquatic system near an unbleached kraft mill. Ecotoxicology 1998; 7:313–324.

Deardorff TL, Renard JJ, Phillips RB. An environmental assessment before and after conversion of a bleached draft mill to elemental-chlorine-free bleaching. pp. 143–150. In: Chlorine and Chlorine Compounds in the Paper Industry. Turosky V (ed). Ann Arbor Press, Inc., Chelsea, MI, 1997.

Middaugh DP, Beckham N, Fournie JW, Deardorff TL. Evaluation of bleached kraft mill process water using Microtox, *Ceriodaphnia dubia* and *Menidia beryllina* toxicity tests. Arch Environ Contam Toxicol 1997; 32(4):367–375.

Rigby MC, Font WF, Deardorff TL. Redescription of *Camallanus cotti* Fujita. 1927 (Nematoda: Camallanidae) from Hawai’i. J Parasitol 1997; 83(6):1161–1164.

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Rakocinski CF, Milligan MR, Heard RW, Deardorff TL. Comparative evaluation of macrobenthic assemblages from the Sulphur River, Arkansas, in relation to pulp mill effluent. pp. 533–547. In: Environmental Fate and Effects of Pulp Mill Effluents. Servos MR,

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Deardorff TL, Renard JJ, Phillips RB. Elemental-chlorine-free bleaching: an environmental assessment in the mill and adjacent aquatic ecosystem. pp. 50–53. In: Proceedings, Pacific Paper '95 conference. Vancouver, BC, October 15–18, 1995.

Deardorff TL, Willhelm RR, Nonni AJ, Renard JJ, Phillips RB. Formation of polychlorinated phenolic compounds during high chlorine dioxide substitution bleaching. Part 3. Mill trial results. Tappi J 1994; 77(8):163–168.

Deardorff TL, Jones RE, Kayes SG. Adherence of eosinophils to the epicuticle of infective juveniles of *Anisakis simplex* (Nematoda: Anisakidae). J Helminth Soc WA 1991; 58:131–137.

Deardorff TL, Fukumura T, Kayes SG. Human anisakiasis transmitted by marine food products. Hawaii Med J 1991; 50:9–16.

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Jones RE, Deardorff TL, Kayes SG. *Anisakis simplex*: Histopathological changes in experimentally infected CBA/J mice. Exper Parasitol 1990; 70:305–313.

Harrell LW, Deardorff TL. Human nanophyietiasis: transmission by handling naturally infected coho salmon (*Oncorhynchus kisutch*). J Infect Dis 1990; 161:146–148.

Deardorff TL. Response of the calico scallop, *Argopecten gibbus*, in infection with larval *Sulcascaris sulcata* (Nematoda: Anisakidae). J Helminth Soc WA 1989; 56:82–85.

Deardorff TL, Kent ML. Prevalence of larval *Anisakis simplex* in pen-reared and wild-caught salmon (Salmonidae) from Puget Sound, Washington. J Wildl Dis 1989; 25:416–419.

Deardorff TL. Parasites that are transmitted from marine food products to humans. In: Scientific Summary on Seafood. J Food Technol 1989.

Brooks DR, Deardorff TL. *Rhinebothrium devaneyi* n. sp. (Eucestoda: Tetraphyllidea) and *Echinocephalus overstreeti* Deardorff and Ko, 1983 (Nematoda: Gnathostomatidae) in a thorny

back ray, *Urogymnus asperrimus*, from Enewetak Atoll, with phylogenetic analysis of both species groups. *J Parasitol* 1988; 74:459–465.

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Deardorff TL, Raybourne RB, Desowitz RS. Behavior and viability of third-stage larvae of *Terranova* sp. (type HA) and *Anisakis simplex* (type I) under coolant conditions. J Food Protect 1984; 47:49–52.

Deardorff TL, Raybourne RB, Mattis TE. Infections with trypanorhynch plerocerci (Cestoda) in Hawaiian fishes of commercial importance. Sea Grant Quarterly 1984; 6(3):1–6.

Deardorff TL, Raybourne RB, Desowitz RS. Description of a third-stage larva, *Terranova* type Hawaii A (Nematoda: Anisakinae), from Hawaiian fishes. J Parasitol 1984; 70:829–831.

Deardorff TL, Kliks MM, Desowitz RS. Histopathology induced by larval *Terranova* (type HA) (Nematoda: Anisakinae) in experimentally infected rats. J Parasitol 1983; 69:191–195.

Deardorff TL, Ko RC. *Echinocephalus overstreeti* sp. n. (Nematoda: Gnathostomatidae) in the stingray, *Taeniura melanophilos* Bleeker, from the Marquesas Islands, with comments on *E. sinensis* Ko, 1975. J Helminth Soc WA 1983; 50:285–293.

Deardorff TL, Stanton RG. Nematode-induced abdominal distention in the Hawaiian puffer fish, *Canthigaster jactator* (Jenkins). Pac Sci 1983; 37:45–47.

Raybourne RB, Desowitz RS, Kliks MM, Deardorff TL. *Anisakis simplex* and *Terranova* sp.: Inhibition by larval excretory-secretory products of mitogen induced rodent lymphoblast proliferation. Exper Parasitol 1983; 55:289–298.

Rychlinski RA, Deardorff TL. *Spirocamallanus*: A potential fish health problem. Freshwater Marine Aquarium 1982; 5:22–23, 79, 84.

Deardorff TL, Overstreet RM. *Hysterothylacium pelagicum* sp. n. and *H. cornutum* from marine fishes. J Helminth Soc WA 1982; 49:246–251.

Deardorff TL.. Abnormal morphology in *Contracecum* sp. n. (Anisakidae: Anisakinae). J Helminth Soc WA 1982; 49:325–326.

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Deardorff TL, Brooks DR, Thorson TB. Two species of *Echinocephalus* (Nematoda: Gnathostomidae) from neotropical stingrays with comments on *E. diazi*. J Parasitol 1981; 67:433–439.

Deardorff TL, Overstreet RM. *Raphidascaris camura* sp. n., *Hysterothylacium eurycheilum* (Olsen) comb. n., and comments on *Heterotyphlum* Spaul (Nematoda: Ascaridoidea) in marine fishes. J Parasitol 1981; 67:426–432.

Deardorff TL, Overstreet RM. *Terranova ceticola* sp. n. (Nematoda: Anisakidae) from the dwarf sperm whale, *Kogia simus*, from Mississippi. System Parasitol 1981; 3:25–29.

Deardorff TL, Overstreet RM. Larval *Hysterothylacium* (= *Thynnascaris*) (Nematoda: Anisakidae) from fishes and invertebrates in the Gulf of Mexico. J Helminth Soc WA 1981; 48:113–126.

Deardorff TL. Adult ascaridoid nematodes from fishes of the northern Gulf of Mexico with notes on some larval forms. Dissertation. University of Southern Mississippi, Hattiesburg, MS, 1980.

Brooks DR, Deardorff TL. Three proteocephalid cestodes from Colombian siluriform fishes, including *Nominoscolex alovarius* sp. n. (Monticelliidae: Zygobothriinae). J Helminth Soc WA 1980; 47:15–21.

Deardorff TL, Overstreet RM. Taxonomy and biology of North American species of *Goezia* (Nematoda: Anisakidae) from fishes, including three new species. J Helminth Soc WA 1980; 47:192–217.

Deardorff TL, Overstreet RM. Review of *Hysterothylacium* and *Iheringascaris* (both previously = *Thynnascaris*) (Nematoda: Anisakidae) from the northern Gulf of Mexico. Proceedings, Biological Society of Washington 1980; 93:1035–1079.

Deardorff TL, Overstreet RM. *Contracaecum multipapillatum* (synonym = *C. robustum*) from fishes and birds in the northern Gulf of Mexico. J Parasitol 1980; 66:853–856.

Deardorff TL, Overstreet RM. *Goezia lacerticola* sp. n. (Nematoda: Anisakidae) in *Alligator mississippiensis* from Florida. J Helminthol 1979; 53:317–320.

Deardorff TL, Schmidt GD, Kuntz RE. *Allohymenolepis palawanensis* sp. n. (Cyclophyllidea: Hymenolepididae) from the Philippine bird, *Nectarinia jugularis* (Tweeddale 1878). J Helminthol 1978; 52:211–213.

Deardorff TL, Brooks DR. *Passerilepis schmidti* sp.n. (Cestoidea: Hymenolepididae) from the blue jay, *Cyanocitta cristata* L. in Nebraska. J Helminth Soc WA 1978; 45:190–192.

Deardorff TL, Overstreet RM. *Thynnascaris rhacodes* sp. n. (Nematoda: Ascaridoidea) in fishes from the Israeli Mediterranean coast. Annales de Parasitologie (Paris) 1978; 53:519–525.

Deardorff TL, Schmidt GD, Kuntz RE. Tapeworms from Philippine birds, with three new species of *Raillietina* (*Raillietina*). *J Helminthol* 1976; 50:133–142.

Recent Abstracts

Deardorff TL, Flowers T, Hamilton D, Cattarossi A, Lecollinet J. The value of a constructed wetland in southern Iraq to sustainably enhance water quality. *World Environmental & Water Resources Congress*, Palm Springs, CA, May 2011.

Deardorff TL, Flowers T, Hamilton D. Stemming the tide: Lessons learned from the loss and restoration efforts of the Iraqi wetlands with comparisons with San Francisco Bay. *Proceedings, World Environmental & Water Resources Congress*, Vol. 414, Palm Springs, CA, May 2011.

Holm SE, Gross TS, Deardorff TL. Dioxin in fish caught in the lower St. John's River Basin: an evaluation of pulp and paper process modifications from 1995–2009. *Society for Environmental Toxicology and Chemistry North America 30th Annual Meeting*, New Orleans, LA, 2009.

Deardorff TL, Holm SE. Heavy metals and other elements found in ash and soil samples following the 2007 Southern California fires. *Society for Environmental Toxicology and Chemistry North America 29th Annual Meeting*, Tampa, FL, 2008.

Holm SE, Deardorff TL, Karch NJ. The contribution of forest fires to the generation of dioxins and furans in ash and soil. *Society for Environmental Toxicology and Chemistry North America 29th Annual Meeting*, Tampa, FL, 2008.

Mesard PM, Deardorff TL. Stormwater management during construction—A technical perspective. *American Bar Association meeting*, Phoenix, AZ, 2008.

Deardorff TL, Karch NJ, Holm SE. Dioxin levels in ash and soil following the Southern California fires. *28th International Symposium on Halogenated Persistent Organic Pollutants*, Birmingham, England, 2008.

Flowers T, Deardorff TL. The role of wetlands as a viable treatment technology for developing nations. *World Environmental & Water Resources Congress*, Honolulu, HI, May 12–16, 2008.

Catarossi A, Lecollinet J, Hamilton D, Deardorff TL. The Iraqi wetlands: Ecological stress and hydrological potential for restoration. *SETAC Europe 17th Annual Meeting*, Porto, Portugal, May 20–24, 2007.

Deardorff T. The feasibility of using a microcosm-scaled wetland for treating wastewater from a pulp and paper mill. *SETAC Europe 17th Annual Meeting*, Porto, Portugal, May 20–24, 2007.

Deardorff TL, Flowers T, Hamilton D, Cattarossi A, Lecollinet J. Development of a constructed wetland in Southern Iraq. SETAC Europe 17th Annual Meeting, Porto, Portugal, May 20–24, 2007.

Deardorff TL. The efficacy of a constructed wetland for the pulp and paper industry: From the laboratory to a full-scale trial. SETAC North America 27th Annual Meeting, Montréal, Québec, November 5–9, 2006.

Kelly CR, Holm SE, Golden R, Deardorff TL. Rosin and tall oil fatty acids (TOFA) do not exhibit acute toxicity to aquatic organisms using OECD recommended methodology. SETAC Europe, 2005.

Kelly CR, Holm SE, Golden R, Deardorff TL. Environmentally relevant ecotoxicology data for two complex mixtures. SETAC North America 25th Annual Meeting, Salt Lake City, UT, November 14–18, 2004.

Advisory Boards/Panels

- External Scientific Advisory Committee, the Institute of Environ Toxicology and the Department of Environmental Toxicology, Clemson University, SC.
- External Scientific Advisory Panel, the National Council of the Paper Industry for Air and Stream Improvement’s project entitled, “Integrated Long-term Receiving Water Studies to Assess Pulp and Paper Mill Effluent Effects.”
- Health Environmental Studies Task Group, the National Council of the Paper Industry for Air and Stream Improvement.

Prior Experience

International Paper Company

Manufacturing Solutions Leadership Team, 2004–2005

Fiberline & Environmental Manufacturing Solutions, 2003–2004

Environmental Health and Safety Lead Team, 2001–2003

Environmental Business Services, 2001–2003

Research & Development Fellow, 1997–2005

Manager, Environmental Technology, 1996–1997

Manager, Pulp Manufacturing Technology, 1994–1996

Principle Scientist, Pulp Manufacturing Technology, 1994

Senior Research Scientist, Pulp Manufacturing Technology, 1993–1994

Research Scientist, Pulp Manufacturing Technology, 1990–1993

Other Professional Positions

Faculty (Adjunct), Dept of Biology, University of Mississippi, 1997–1999

Assistant Professor of Structural and Cellular Biology (Adjunct), College of Medicine,
University of South Alabama, 1987–1991

United States Food and Drug Administration, Division of Contaminants Chemistry, 1985–1990

Faculty, Department of Tropical Medicine and Medical Microbiology, School of Medicine,
Leahi Hospital, University of Hawaii, 1980–1985

Research Scientist, Pacific Gamefish Foundation, 1982–1985

Research Faculty, Hawaii Institute of Marine Biology, 1982–1984

Postdoctoral Awardee, Gulf Coast Research Laboratory, 1979–1980