

## Curriculum Vitae for Jeffrey W. Short

February 2007

Education	<p>Ph.D., Fisheries Biology, University of Alaska, 2005. Thesis Title: "Seasonal Variability of Pristane in Mussels (<i>Mytilus trossulus</i>) in Prince William Sound, Alaska"</p> <p>Master of Science, Physical Chemistry, University of California at Santa Cruz, 1982</p> <p>Bachelor of Science, Biochemistry and Philosophy, University of California at Riverside, 1973</p>
Current Position	<p>Research Chemist (since 1983), Auke Bay Laboratory, National Marine Fisheries Service, NOAA, 11305 Glacier Highway, Juneau, Alaska 99801-8626 Tel: 907.789.6065 Fax: 907.789.6094 email: Jeff.Short@noaa.gov</p>
Research Interests	<p>(1) Oil pollution source identification, fate, and effects; (2) Environmental contaminant transport processes; (3) Physiological constraints on thermal habitat requirements of fish; and (4) Effects of ocean acidification on shellfish</p>
Responsibilities	<p>(1) Established and manage a facility for hydrocarbon and lipid analysis in environmental samples, (2) Evaluate the long term impacts of the <i>Exxon Valdez</i> oil spill, (3) Establish a chemical and biological research facility for ocean acidification effects</p>
Professional Affiliations	<p>American Chemical Society, American Fisheries Society, Society of Environmental Toxicology and Chemistry, AAAS</p>
Recent Notable Discoveries and Achievements	<ul style="list-style-type: none"><li>- Performed the first fully quantitative estimate of oiled beach area and of remaining oil volume following a catastrophic scale oil spill</li><li>- Discovered (with colleagues) that crude oil disrupts development of fish eggs at part per billion exposure concentrations of polycyclic aromatic hydrocarbons, and described the toxicity syndrome</li><li>- Discovered the mechanism of pristane cycling in mussels of Prince William Sound</li></ul>
Languages	<p>Mandarin Chinese (Extended speaking fluency, read &amp; write) Russian (reading) French (reading)</p>

Awards	Bronze Medal, U. S. Department of Commerce, "For scientific research and publications describing the long-term, insidious effects of oil pollution on fish embryos at parts per billion levels".
Current Committees	- Alaska Regional Response Team's Science and Technology Committee - Lingering Oil Committee, Gulf Ecosystem Monitoring (GEM), Exxon Valdez Trustee Council
Reviewer for	- Exxon Valdez Trustee Council - Prince William Sound Regional Citizens' Advisory Council - Cook Inlet Regional Citizens' Advisory Council - National Research Council (USA) - Research Council of Norway - Arctic & Marine Oilspill Program Technical Seminars - Alaska Sea Grant - Environmental Science and Technology - Environmental Toxicology and Chemistry - Marine Environmental Research - National Wildlife Federation - San Francisco Bay Institute
Presentations at Scientific Meetings	American Academy of Forensic Sciences (annually) Arctic and Marine Oilspill Program Technical Seminar (annually) Exxon Valdez Trustee Council Annual Workshop (annually) Society for Environmental Toxicology and Chemistry (annually) Energex (2000) PICES (Vladivostok, 1999)
International Collaborations	Sakhalin Research Institute of Fisheries and Oceanography (Russia) Rogaland Research Institute (Norway) Queen's University (Canada)

#### Publication Record

Peer-reviewed journals, book chapters and proceedings:

**Short, J.W.** 2007. Application of polycyclic aromatic hydrocarbons (PAH) in chemical fingerprinting. Ch. 9 in Environmental Impact of Polynuclear Aromatic Hydrocarbons, C. Anyakora, (ed.) Research Signpost.

**Short, J.W.**, Kolak, J.J., Payne, J.R., Van Kooten, G.V. 2007. An evaluation of petrogenic hydrocarbons in northern Gulf of Alaska continental shelf sediments – the role of coastal seep inputs. Organic Geochemistry 38:643-670.

- Short, J.W.**, Irvine, G.V., Mann, D.H., Maselko, J.M., Pella, J.J., Lindeberg, M.R., Payne, J.R., Driskell, W.B., Rice, S.D. 2007. Slightly weathered Exxon Valdez oil persists in Gulf of Alaska beach sediments after 16 years. *Environmental Science & Technology* 41(4):1245-1250.
- Carls, M.G., **Short, J.W.**, Payne, J. 2006. Accumulation of polycyclic aromatic hydrocarbons by *Neocalanus* copepods in Port Valdez, Alaska. *Marine Environmental Research* 52:1480-1489.
- Short, J. W.**, Springman, K. R. 2006. Identification of hydrocarbons in biological samples for source determination. Ch. 12 in *Oil Spill Environmental Forensics - Fingerprinting and Source Identification*, Wang, Z and Stout, S. (eds) Elsevier.
- Short, J.W.**, Maselko, J.M., Lindeberg, M.R., Harris, P.M., Rice, S.D. 2006. Vertical Distribution and Probability of Encountering Intertidal Exxon Valdez Oil on Shorelines of Three Embayments within Prince William Sound, Alaska. *Environmental Science & Technology* 40(12):3723-3729.
- Irvine, G.V., Mann, D.H., **Short, J.W.** 2006. Persistence of 10-year old Exxon Valdez oil on Gulf of Alaska beaches: The importance of boulder armoring. *Marine Pollution Bulletin* 52:1011-1022.
- Barron, M.G., Carls, M.G., **Short, J.W.**, Rice, S.D., Heintz, R.A., Rau, M., Di Giulio, R. 2005. Assessment of the phototoxicity of weathered Alaska North Slope crude oil to juvenile pink salmon. *Chemosphere* 60:105-110.
- Short, J.W.**, S.D. Rice, M.R. Lindeberg, and M.G. Carls. 2005. Use of polyethylene membrane devices for monitoring diesel oil contamination on and within beaches. Proceedings of the 31<sup>st</sup> Annual Aquatic Toxicity Workshop, Charlestown, Prince Edward Island, Canada, Canadian Department of Fisheries and Oceans.
- Payne, J.R., Braddock, J.F., Bailey, J., Driskell W.B., **Short, J.W.**, Ka'aihue, L., Kuckertz, T.H. 2005. From tankers to tissues – tracking the degradation and fate of oil discharges in Port Valdez, Alaska. Proceedings of the Twenty-eighth Arctic and Marine Oilspill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, ON.
- Payne, J.R., W.B. Driskell, M.R. Lindeberg, W. Fournier, M.L. Larsen, **J.W. Short**, S.D. Rice, and D. Janka. 2005. Dissolved- and particulate-phase hydrocarbons in interstitial water from Prince William Sound intertidal beaches containing buried oil thirteen years after the Exxon Valdez Oil Spill. 2005 International Oil Spill Conference, American Petroleum Institute.
- Carls, M. G., Holland, L. G., **Short, J. W.**, Heintz, R. A., and Rice, S. D. 2004. Monitoring polynuclear aromatic hydrocarbons in aqueous environments with passive low-density polyethylene membrane devices. *Environmental Toxicology and Chemistry*, 23:1416-1424

- Clark, L., Khan, C. W., Akhtar, P., Hodson, P. V., Lee, K, Wang, Z., **Short, J.** 2004. Comparative toxicity of four crude oils to the early life stages of rainbow trout (*Oncorhynchus mykiss*). Proceedings of the Twentyseventh Arctic and Marine Oilspill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, Ont. pp. 785-792.
- Short, J. W.**, Lindeberg, M. R., Harris, P. M., Maselko, J. M., Pella, J. J., and Rice, S. D. 2004. An estimate of oil persisting on beaches of Prince William Sound, 12 years after the *Exxon Valdez* oil spill. *Environmental Science and Technology*, 38:19-26.
- Petersen, C. H., Rice, S. D., **Short, J. W.**, Esler, D., Bodkin, J. L., Ballachey, B. E., and Irons, D. B. 2003. Emergence of ecosystem based toxicology: Long term consequences of the Exxon Valdez oil spill. *Science*, 302:2082-2086.
- Rice, S.D., Carls, M.G., Heintz, R.A., **Short, J.W.** 2003. Comment regarding "Hydrocarbon composition and toxicity of sediments following the *Exxon Valdez* oil spill in Prince William Sound, Alaska, USA" by Page et al. *Environmental Toxicology and Chemistry* 22:2539-2540.
- Short, J. W.**, and R. A. Heintz. 2003. Normal Alkanes and the Unresolved Complex Mixture as Diagnostic Indicators of Hydrocarbon Source Contributions to Marine Sediments of the Northern Gulf of Alaska. Proceedings of the Twentysixth Arctic and Marine Oilspill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, Ont. pp. 155-168.
- Barron, M. G., Carls, M. G., **Short, J. W.**, and Rice, S. D. 2003. Photoenhanced toxicity of aqueous phase and chemically dispersed weathered Alaska North Slope crude oil to Pacific herring eggs and larvae. *Environmental Toxicology and Chemistry* 22:650-660.
- Short, J. W.**, Rice, S. D., Heintz, R. A., Carls, M. G., and Moles, A. 2003. Long-term effects of crude oil on developing fish: Lessons from the Exxon Valdez oil spill. *Energy Sources* 25:509-517.
- Moles, A., Holland, L, and **Short, J.** 2002. Effectiveness in the laboratory of Corexit 9527 and 9500 in dispersing fresh, weathered, and emulsion of Alaska North Slope crude oil under subarctic conditions. *Spill Science and Technology* 7:241-247.
- Duesterloh, S., **Short, J. W.**, and Barron, M. G. 2002. Photoenhanced toxicity of weathered Alaska North Slope crude oil to the calanoid copepods *Calanus marshallae* and *Metridia okhotensis*. *Environmental Science and Technology* 36:3953-3959.
- Short, J. W.** 2002. Oil identification based on a goodness-of-fit metric applied to hydrocarbon analysis results. *Environmental Forensics* 3:349-356.
- Van Kooten, G. W., **Short, J. W.**, and Kolak, J. J. 2002. Low maturity Kulthieth Formation coal: A possible source of polycyclic aromatic hydrocarbons in benthic sediment of the northern Gulf of Alaska. *Environmental Forensics* 3:227-242.

- Short, J. W.**, Lindeberg, M. R., Harris, P. M., Maselko, J. M., and Rice, S. D., 2002. Vertical oil distribution within the intertidal zone 12 years after the Exxon Valdez oil spill in Prince William Sound Alaska. Proceedings of the Twentyfifth Arctic and Marine Oilspill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, Ont. pp. 57-72.
- Carls, M. G., R. Heintz, A. Moles, S. D. Rice and **J. W. Short**. 2001. Long term biological damage...what do we know and how should it influence our decisions on response, assessment and restoration? pp. 399-403 *in*: Proceedings of the 2001 International Oil Spill Conference (Global Strategies for Prevention, Preparedness, Response, and Restoration). American Petroleum Institute Pub. 14710, American petroleum Institute, Washington DC.
- Rice, S. D., R. E. Thomas, M.G. Carls, R. A. Heintz, A. C. Wertheimer, M. L. Murphy, **J. W. Short**, and A. Moles. 2001. Impacts to pink salmon following the Exxon Valdez oil Spill: Persistence, toxicity, sensitivity, and controversy. *Rev. Fish. Sci.*9(3):165-211
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- Brodersen, C., **J. Short**, L. Holland, M. Carls, J. Pella, M. Larsen, and S. Rice. 1999. Evaluation of oil removal from beaches 8 years after the Exxon Valdez oil spill. Proceedings of the Twentysecond Arctic and Marine Oilspill Program (AMOP) Technical Seminar, Environment Canada, Ottawa, Ont. pp. 325-336.
- Heintz, R.A., **J.W. Short**, and S.D. Rice. 1999. Sensitivity of fish embryos to weathered crude oil: Part II. Incubating downstream from weathered Exxon Valdez crude oil caused increased mortality of pink salmon (*Oncorhynchus gorbuscha*) embryos. *Environ. Toxicol Chem* 18: 494-503

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- Short, J.W.**, K.A. Kvenvolden, P.R. Carlson, F.D. Hostettler, R.J. Rosenbauer, and B.A. Wright. 1999. The natural hydrocarbon background in benthic sediments of Prince William Sound, Alaska: oil vs. coal. *Environ. Sci. Tech.* 33: 34-42.
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- Short, J. W.** and Heintz, R. A. 1998. Letter to the editor re: Source of polynuclear aromatic hydrocarbons in Prince William Sound, Alaska USA subtidal sediments. *Environmental Toxicology and Chemistry* 17:1651
- Brown, E.D., B.L. Norcross, and **J.W. Short**. 1997. An introduction to studies on the effects of the *Exxon Valdez* oil spill on early life history stages of Pacific herring, *Clupea pallasii*, in Prince William Sound, Alaska. *Canadian Journal of Fisheries and Aquatic Sciences*. 53: 2337-2342.
- Marty, G. D., **J. W. Short**, D.M. Dambach, N.H. Willits, R.A. Heintz, S.D. Rice, J.J. Stegeman, and D.E. Hinton. 1997. Ascites, premature emergence, increased gonadal cell apoptosis, and cytochrome P4501A induction in pink salmon larvae continuously exposed to oil-contaminated gravel during development. *Canadian Journal of Zoology* 75: 989-1007.
- Short, J. W.** and R. A. Heintz. 1997. Identification of *Exxon Valdez* oil in sediments and tissues from Prince William Sound and the Northwestern Gulf of Alaska based on PAH weathering. *Environmental Science and Technology* 31: 2375-2384.
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- Carls, M.G., A.C. Wertheimer, **J.W. Short**, R.M. Smolowitz, and J. J. Stegeman. 1996. Contamination of juvenile pink and chum salmon by hydrocarbons in Prince William Sound after the *Exxon Valdez* oil spill. Pages 593-607 in Rice, S. D., R. B. Spies, D. A. Wolfe, and B. A. Wright (eds). *Proceedings of the Exxon Valdez Oil Spill Symposium*. American Fisheries Society Symposium 18. American Fisheries Society, Bethesda, Maryland.
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- Short, J.W.** and P.M. Harris. 1996. Petroleum hydrocarbons in caged mussels deployed in Prince William Sound after the *Exxon Valdez* oil spill. Pages 29-39 in Rice, S. D., R. B. Spies, D. A. Wolfe, and B. A. Wright (eds). Proceedings of the *Exxon Valdez* Oil Spill Symposium. American Fisheries Society Symposium 18. American Fisheries Society, Bethesda, Maryland.
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- Short, J.W.**, D.M. Sale, and J.C. Gibeaut. 1996. Nearshore transport of hydrocarbons and sediments after the *Exxon Valdez* oil spill. Pages 40-60 in Rice, S. D., R. B. Spies, D. A. Wolfe, and B. A. Wright (eds). Proceedings of the *Exxon Valdez* Oil Spill Symposium. American Fisheries Society Symposium 18. American Fisheries Society, Bethesda, Maryland.
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- Short, J.W.**, S.D. Rice, C.C. Brodersen, and W.B. Stickle. 1989. Occurrence of tri-n-butyltin caused imposex in the North Pacific marine snail *Nucella lima* in Auke Bay, Alaska. *Mar. Biol.* 102: 291-297
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- Short, J.W.** and F.P. Thrower. 1987. Toxicity of tri-n-butyltin to chinook salmon, *Oncorhynchus tshawytscha*, adapted to seawater. *Aquaculture* 61: 193-200. **Short, J.W.** and F.P. Thrower. 1986. Tri-n-butyltin caused mortality of chinook salmon, *Oncorhynchus tshawytscha*, on transfer to a TBT-treated marine net pen. Pages 1202-1205 in: Oceans 86 conference record. IEEE Service Center, 445 Hoes Lane, Piscataway, NJ.
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#### Monitoring Reports

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