

Stanley D. Rice

Retired, 30 Nov 2012, From:

NOAA Fisheries, Alaska Fisheries Science Center
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Research Expertise:

Toxicology: Oil effects, oil chemistry, embryo toxicology, chemical and biological biomarkers, pollutants in Alaska (PAH, TBT), Risk and oil development in the Arctic;

Spills: Ixtoc, Exxon Valdez, Kuroshima, Selendang Ayu, Deep Water Horizon spill in Gulf of Mexico.

Biology: Forage fish biology, herring biology, humpback whale predation on herring, energetics of forage fish, comparative physiology, salmon biology, sea otter and killer whale biology.

130 peer reviewed publications are listed in the bibliography

Management Expertise:

Program Management: 30 plus years of program management, including integration of chemistry, biology, budgets, personnel, team building. Outside funding sources include for program include, but not limited to: OCSEAP, EVOS, Gulf Watch, Integrated Herring Program, North Pacific Research Board, Dept. of Interior (BOEM), and Prince William Sound Regional Citizens Advisory Council.

EDUCATION

B.S. 1966, Biological Science; Chico State University, Chico, California
Secondary Teaching Credential, Chico State University, Chico, Calif (Lifetime)
M.S., 1968, Biological Science; Chico State University, Chico, California
Ph.D., 1971, Physiology; Kent State University, Kent, Ohio

PROFESSIONAL EXPERIENCE

Marine Biologist/Toxicologist at Auke Bay Laboratory, Juneau Alaska, 1971-Nov 2012

Program Manager, Habitat and Marine Chemistry at the Auke Bay Laboratory, NOAA Fisheries Alaska Fisheries Science Center, 1986- Nov 2012

- *Program Leader*, Habitat Alaska Fisheries Science Center:
Oversee tasks ranging from ShoreZone habitat mapping of nearshore to long term impact studies of natural environmental change, ecosystem change through energetics, to energetics of prey and marine mammal response to changes in forage, to contaminant impacts on species and ecosystems; Genetics task.
- *Principal Investigator* for Specific Tasks on the Exxon Valdez:

Damage assessment studies in the early years of the spill, on herring and pink salmon, and intertidal zone. Long term studies tracking oil persistence, and connecting persistence with chronic effects to intertidal zone fauna, pink salmon, herring, sea otters, and harlequin ducks.

- *Principal Investigator* on OCSEAP studies in the 1970-early 1980s, dealing with toxicity research themes.
- *Principal Investigator* for Environmental Impact Statement on TransAlaska Pipeline in early 1970s; Drafted parts of EIS.
- *Lead Drafter*, of Herring Restoration Plan for EVOS, Herring steering committee for EVOS.
- *Lead NOAA scientist* in proposing two long-term ecosystem studies (20 years, in 5 year blocks) to EVOS Trustee Council, which began in 2012. I continue to consult on both studies (ecosystem monitoring; herring program).

Affiliate Professor, University of Alaska Fairbanks, Juneau Center, School of Fisheries and Ocean Sciences 1975-present. Currently on one Master Thesis committee, defending May 2104. Fall 2013: Taught Marine Pollution Biology course at UAS.

Board Member, served on the Science Board for the Oil Spill Recovery Institute in Cordova (funded organization through the Oil Spill Pollution Act of 1990) 1990- 2014.

Speaker, testified at State and National Legislative levels of various contaminant legislation issues, such as: Kachemak buy back, double hull tankers, Tri-butyl tin restrictions, OPA 90, water quality implementation, OPA 90 renewal, and EVOS “re-opener” resolutions; Testified in British Columbia on potential oil development impacts in Dixon Entrance. 1974-present.

Lead Editor, organizing and publishing the first Trustee sponsored symposium proceedings of Exxon Valdez effects, 1993-96.

Committee member on several thesis at UAF, LSU, and Simon Fraser; Masters and Ph.D. level.

ACITIVITES AND HONORS

Honors:

NOAA Best Practices Management Award, 1998

NOAA Bronze Award, 2002

NOAA Distinguished Career Award, 2012

Activities:

Dept. of Justice Expert Witness, on oil toxicity and effects, for the trial of U.S. v. BP on the Deepwater Horizon 2010 oil spill in the Gulf of Mexico, 2014-2015

5 years on the Southeast Boy Scout Council Board of Directors

35 years of coaching football in Juneau, Alaska; 7 at youth levels, 26 at high school level

Head Coach of Juneau High School football program in 1988 and 1989

Currently- Head Coach, Thunder Mountain High School, 2013 and 2014

Volunteer Fireman at Lynn Canal station (Juneau, Alaska) 1980-84

Acting Fire Chief at Lynn Canal station, 1981-82

Bibliography- Stanley D. Rice

(About 130 peer reviewed publications)

- Incardona, J.P., M.G.Carls, L. Holland, T.L. Linbo, D.H. Baldwin, M.S. Myers, K.A. Peck, M. Tagal, S.D. Rice, & N. L. Scholz; 2015. Very low embryonic crude oil exposures cause lasting cardiac defects in salmon and herring. *Scientific Reports* 5; Article # 13499; Macmillan Publishers Limited.
<http://www.nature.com/articles/srep13499#supplementary-information>
- Ballachey, Brenda E., James L Bodkin, Dan Esler, Stanley D. Rice. 2014. Lessons from the 1989 Exxon Valdez oil spill: a biological perspective. In "Impacts of oil spill disasters on marine habitat and fisheries in North America", J. Brian Alford, Mark S. Peterson, Christopher C. Green, Eds. CRC Marine Biological Series. Pages 181-197.
- Bodkin, J.L. D. Esler, S.D Rice, and B.E. Ballachey: 2014. THE EFFECTS OF SPILLED OIL ON COASTAL ECOSYSTEMS: LESSONS FROM THE *EXXON VALDEZ* SPILL. *Progress in Ecology*
- Hicken CE, Linbo TL, Baldwin DH, Willis ML, Myers MS, Holland L, Larsen M, Stekoll MS, Rice SD, Collier TK, Scholz NL, Incardona JP. (2011) Sublethal exposure to crude oil during embryonic development alters cardiac morphology and reduces aerobic capacity in adult fish. *Proceedings of the National Academy of Sciences U.S.A.* 108:7086-7090.
- Blanc, A.M., L.G. Holland, S.D.Rice, and C.J.Kennedy. 2010. Anthropogenically sourced low concentrations of PAHS: in situ bioavailability to juvenile Pacific salmon. *Ecotox. & Environ. Safety.* 73:849-857.
- Rice, Stanley D. 2009. Persistence, Toxicity, and long term environmental impacts of the Exxon Valdez Oil spill. *Univ. St. Thomas Law School Journal* 7: 55-67.
- Matkin, D.O., E.L., Saulities, G.M. Ellis, and S.D. Rice. 2008 Population level impacts on killer whale eighteen years following the Exxon Valdez Oil Spill. *Marine Ecology Progress Series* 356:269-281.
- Springman, K. R., J. W. Short, M. Lindeberg, and S. D. Rice. 2008. Evaluation of bioavailable hydrocarbon sources and their induction potential in Prince William Sound, Alaska. *Marine Environmental Research* 66:218-220. (FY09)
- Springman, K. R., J. W. Short, M. R. Lindeberg, J. M. Maselko, C. Khan, P. V. Hodson, and S. D. Rice. 2008. Semipermeable membrane devices link site-specific contaminants to effects: Part 1 – Induction of CYP1A in rainbow trout from contaminants in Prince William Sound, Alaska. *Marine Environmental Research* 66: 477-486. (FY09)
- Short, J.W., K. R. Springman, M. R. Lindeberg, L. G. Holland, M. L. Larsen, C. A. Sloan, C. Khan, P. V. Hodson and S. D. Rice, "Semipermeable membrane devices link site-specific

contaminants to effects: PART II – A comparison of lingering *Exxon Valdez* oil with other potential sources of CYP1A inducers in Prince William Sound, Alaska" (2008) 66 Marine Environmental Research 487-498.

Rice, Stanley D., Jeffrey W. Short, Mark G. Carls, Adam Moles, and Robert B. Spies. 2007. The Exxon Valdez oil spill. Chapter 5. pp. 413-514 In: R. B. Spies, T. Cooney, A.M. Springer, T. Weingartner, and G. Kruse (eds.), Long-term Ecological Change in the Northern Gulf of Alaska. Elsevier Publications, Amsterdam.

Thomas, R. E., M. Lindeberg, P. M. Harris, and S. D. Rice. 2007. Induction of DNA strand breaks in the mussel (*Mytilus trossulus*) and clam (*Protothaca staminea*) following chronic field exposure to polycyclic aromatic hydrocarbons from the Exxon Valdez spill. Mar. Poll Bull. 54: 726-732.

Short, J. W., G. V. Irvine, D. H. Mann, J. M. Maselko, J. J. Pella, M. R. Lindeberg, J. R. Payne, W. B. Driskell, and S. D. Rice. 2007. Slightly weathered *Exxon Valdez* oil persists in Gulf of Alaska beach sediments after 16 years. Environ. Sci. Technol. 41:1245-1250.

Carls MG, Rice SD. 2007. Fish embryo sensitivity and PAH toxicity. In: Anyakora C (ed), "Environmental impact of polynuclear aromatic hydrocarbons," Research Signpost, Kerala, India, pp. 159-190.

Rice, Stanley D., Larry Holland, and Adam Moles. 2006. Seasonal increases in polycyclic aromatic hydrocarbons related to two-stroke engine use in a small Alaskan lake. Journal of Lake and Reservoir Management

Rice, Stanley and Adam Moles. 2006. Assessing the potential for remote delivery of persistent organic pollutants to the Kenai River in Alaska. Alaska Fishery Research Bulletin 12(1): 142-146.

Short, J.W., J. M. Maselko, M. R. Lindeberg, P. M. Harris and S. D. Rice, "Vertical distribution and probability of encountering intertidal Exxon Valdez oil on shorelines of three embayments within Prince William Sound, Alaska" (2006) 40 Environmental Science & Technology 3723-3729

Carls, M.G., R.A. Heintz, G.D. Marty, and S.D. Rice. 2005. Cytochrome P4501A induction in oil-exposed pink salmon *Oncorhynchus gorbuscha* embryos predicts reduced survival potential. Marine Ecology Progress Series 301: 253-265.

Barron. M.G., M.G. Carls, R.A. Heintz, and S.D. Rice. 2004. Evaluation of fish early life-stage toxicity models of chronic embryonic exposures to complex polycyclic aromatic hydrocarbon mixtures. Toxicological Sciences 78: 60-67.

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weathered crude oil: assessing effects on ova. *Environ. Toxicol Chem.* 19(6):

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- Carls, M.G., G.D. Marty, T.R. Meyers, R.E. Thomas, and S.D. Rice. 1998. Expression of viral hemorrhagic septicemia virus in pre-spawning Pacific herring (*Clupea pallasii*) exposed to weathered crude oil. *Can. J. Fish. Aquatic Sci.* 55: 2300-2309.
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- and cytochrome P4501A induction in pink salmon larvae continuously exposed to oil-contaminated gravel during development. *Canadian Journal of Zoology* 75: 989-1007.
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Maryland.

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