

CAROLINE TRACY SHAW

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EDUCATION

1997 Master of Arts, Marine Biology, University of California, Santa Barbara
1988 Bachelor of Arts, Zoology, University of California, Davis

PROFESSIONAL EXPERIENCE

2016-present **Senior Biological Scientist**, College of Marine Science
University of South Florida, St. Petersburg, FL

2014-2015 **Research Associate**, Center for Biotechnology and Life Sciences
(lab moved to USF in 2016)
University of Rhode Island, Kingston, RI

2001-2013 **Senior Faculty Research Assistant**, Hatfield Marine Science Center
Oregon State University, Newport, OR

1993-2000 **Staff Research Associate**, Department of Ecology, Evolution, and Marine Biology
University of California Santa Barbara, Santa Barbara, CA

1991-1992 **Education Program Assistant**, Santa Barbara Museum of Natural History Sea
Center, Santa Barbara, CA (half time)

1989-1993 **Marine Education Program Coordinator**, Marine Science Institute
University of California Santa Barbara (half-time 1991-1993)

FIELD EXPERIENCE

RESEARCH CRUISE EXPERIENCE		
Location	Days	Description
Antarctica	285	Palmer Long-Term Ecological Research (PAL-LTER) (1993-2000)
Bering Sea	203	Bering Sea Ecosystem Study (BEST) (2008-2010)
Caribbean	43	Humpback whale field study, Silver Bank (1986)
Eastern Tropical Pacific	49	A metabolic index to predict the consequences of climate change for midwater ecosystems (2016-2017)
Gulf of California	27	Ocean Acidification: Oxygen-limited CO ₂ tolerance in squids (2015)
Gulf of Mexico	10	Pelagic Ecology courses at CMS (2017, 2019)
North Atlantic	62	Humpback whale field study, Gulf of Maine (1987)
Northeast Pacific	442	70+ oceanographic cruises, projects include LTOP, RISE, PaCOOS; Newport Hydrographic Line time series cruises n=122 (2001-2013)
Yellow Sea	18	Visiting Scientist, Korean Institute of Ocean Science and Technology (KIOST) (annual cruises in 2011, 2012, 2013)
FIELD STATION DEPLOYMENTS		
Palmer Station, Antarctica	352	Palmer LTER program (1995-2000, six field seasons) Krill Ocean Acidification Study (Jan-Mar 2015)

CERTIFICATIONS AND SKILLS

PADI Open Water SCUBA certification
Research diver SCUBA certification
Proficient in Spanish (spoken and written)

PUBLICATIONS

- Shaw, C.T. 1997. Effect of sea ice on physiological maturity of female Antarctic krill (*Euphausia superba* Dana) west of the Antarctic Peninsula. Master's Thesis, University of California at Santa Barbara, Department of Ecology, Evolution and Marine Biology.
- Feinberg, L.R., C.T. Shaw and W.T. Peterson. 2006. Larval development of *Euphausia pacifica* in the laboratory: variability in developmental pathways. *Mar. Ecol. Prog. Ser.* 316:127-137. doi: 10.3354/meps316127
- Gómez-Gutiérrez, J., L.R. Feinberg, C.T. Shaw and W.T. Peterson. 2006. Variability of brood size and female length of *Euphausia pacifica* Hansen among three populations in the North Pacific. *Mar. Ecol. Prog. Ser.* 323:185-194. doi: 10.3354/meps323185.
- Feinberg, L.R., C.T. Shaw and W.T. Peterson. 2007. Long-term laboratory observations of *Euphausia pacifica* fecundity: comparison of two geographic regions. *Mar. Ecol. Prog. Ser.* 341:141-152. doi: 10.3354/meps341141.
- Gómez-Gutiérrez, J., L.R. Feinberg, C.T. Shaw and W.T. Peterson. 2007. Interannual and geographical variability of the brood size of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* along the Oregon coast (1999-2004). *Deep-Sea Research I* 54:2145-2169. doi: 10.1016/j.dsr.2007.09.003.
- Shaw, C.T., L.R. Feinberg, and W.T. Peterson. 2009. Interannual variability in vital rates of copepods and euphausiids during the RISE study 2004-2006. *Journal of Geophysical Research Special Issue on the RISE Program* 114: C00B08, doi: 10.1029/2008JC004826.
- Shaw, C.T., W.T. Peterson and L.R. Feinberg. 2010. Growth of *Euphausia pacifica* in the upwelling zone off the Oregon coast. *Deep-Sea Research II Special Issue on Krill Biology and Ecology* 57(7-8):584-593. doi: 10.1016/j.dsr2.2009.10.008
- Feinberg, L.R., W.T. Peterson and C.T. Shaw. 2010. The timing and location of spawning for the euphausiid *Thysanoessa spinifera* off the Oregon coast, USA. *Deep-Sea Research II Special Issue on Krill Biology and Ecology* 57(7-8):572-583. doi: 10.1016/j.dsr2.2009.10.007
- Harvey, H.R., Se-J. Ju, W.-S. Kim, L.R. Feinberg, C.T. Shaw, and W.T. Peterson. 2010. The biochemical estimation of age in euphausiids: laboratory calibration and field comparisons. *Deep-Sea Research II Special Issue on Krill Biology and Ecology* 57(7-8):663-671. doi: 10.1016/j.dsr2.2009.10.015
- Holtcamp, W. 2010. Marine Science: the tiniest catch. (Photo credit: T. Shaw). *Nature* 468: 26-27. doi: 10.1038/468026a.
- Holtcamp, W. 2011. Rime of the Bering Sea Mariners. (Photo credit: T. Shaw). *BioScience* 61 (2): 99-104. doi.org/10.1525/bio.2011.61.2.3.
- Bi, H., L.R. Feinberg, C.T. Shaw, and W.T. Peterson. 2011. Estimated development times for stage-structured marine organisms are biased if based only on survivors. *J. Plankt. Res.* 33 (5):751-762. doi:10.1093/plankt/fbq138.
- Harvey, H.R., R.L. Pleuthner, E.J. Lessard, M.J. Bernhardt, and C.T. Shaw. 2012. Physical and biochemical properties of the euphausiids *Thysanoessa inermis*, *Thysanoessa raschii*, and *Thysanoessa longipes* in the eastern Bering Sea. *Deep-Sea Res. II* 65-70:173-183. doi:10.1016/j.dsr2.2012.02.007.
- Gómez-Gutiérrez, J., M. C. Strüder-Kypke, D. H. Lynn, T. C. Shaw [sic], M. J. Aguilar-Méndez, A. López-Cortés, S. Martínez-Gómez, C. J. Robinson. 2012. *Pseudocollinia brintoni* gen. nov., sp. nov. (Apostomatida: Colliniidae), a parasitoid ciliate infecting the euphausiid *Nyctiphanes simplex*. *Dis. Aquat. Org.* 99:57-78. doi: 10.3354/dao02450.
- Feinberg, L.R., C.T. Shaw, W.T. Peterson, M. Decima, Y. Okazaki, S.-J. Ju. 2013. *Euphausia pacifica* brood sizes: a North Pacific synthesis. *Journal of Plankton Research* 35(6): 1192-1206. doi: 10.1093/plankt/fbt064.
- Shaw, C.T., W.T. Peterson, and S. Sun (Eds.). 2013. Report of Working Group 23 on Comparative Ecology of Krill in Coastal and Oceanic Waters around the Pacific Rim. PICES Sci. Rep. No. 43, 100 pp.
- Lynn, D.H., J. Gómez-Gutiérrez, M.C. Strüder-Kypke, C.T. Shaw. 2014. Ciliate species diversity and host-parasitoid codiversification in the apostome genus *Pseudocollinia* (Ciliophora, Apostomatia, Pseudocolliniidae) that infect krill, with description of *Pseudocollinia similis* n. sp., a parasitoid of the krill *Thysanoessa spinifera*. *Dis. Aquat. Org.* 112: 89-102. doi: 10.3354/dao02796

PUBLICATIONS continued

Ross, R.M., L.B. Quetin, T. Frazer, S. Oakes, C.T. Shaw. 2014. Trends, cycles or interannual variability: Three zooplankton species west of the Antarctic Peninsula 1993-2008. *Mar. Ecol. Prog. Ser.* 515: 11–32. doi: 10.3354/meps10965

Pleuthner, R.L., C.T. Shaw, M.J. Bernhardt, E.J. Lessard, H.R. Harvey. 2016. Individual lipid markers of diet history and their retention in the Bering Sea euphausiid *Thysanoessa raschii*. *Deep-Sea Res. II (BEST Special Issue)* 134:190-203. doi: 10.1016/j.dsr2.2015.08.003.

Kobari, T., S. Miyake, W.T. Peterson, J. Peterson, and C.T. Shaw. 2017. Nucleic acid ratio as a proxy for starvation of coastal and pelagic copepods in the North Pacific Ocean. *Plankton Benthos Res.* 12(1): 25–33. doi: 10.3800/pbr.12.25

Peterson, W. T., J. L. Fisher, P. T. Strub, X. Du, C. Risien, J. Peterson, and C. T. Shaw. 2017. The pelagic ecosystem in the Northern California Current off Oregon during the 2014–2016 warm anomalies within the context of the past 20 years. *J. Geophys. Res. Oceans*: 122. doi: 10.1002/2017JC012952.

Wishner, K.F., B. A. Seibel, C. Roman, C. Deutsch, D. Outram, C. T. Shaw, M. A. Birk, K. A. S. Mislán, T. J. Adams, D. Moore, S. Riley. 2018. Ocean deoxygenation and zooplankton: Very small oxygen differences matter. *Sci Adv* 4 (12). doi: 10.1126/sciadv.aau5180. Received “Paper of the Year” award from the Deep-Sea Biology Society.

Fisher, J.L., J. Menkel, L. Copeman, C.T. Shaw, L.R. Feinberg, and W.T. Peterson. 2020. Comparison of body condition, elemental composition, and lipid and fatty acid composition between *Euphausia pacifica* and *Thysanoessa spinifera* in the northern California Current, USA. *Prog. Oceanog.* 188: 102417. doi: 10.1016/j.pocean.2020.102417

Shaw, C.T., H. Bi, L.R. Feinberg, and W.T. Peterson. 2021. Cohort analysis of *Euphausia pacifica* from the Northeast Pacific population using a Gaussian mixture model. *Prog. Oceanog.* doi: 10.1016/j.pocean.2020.102495.

Seibel, B.A., A. Andres, M.A. Birk, A.L. Burns, C.T. Shaw, A.W. Timpe, and C.J. Welsh. 2021. Oxygen supply capacity breathes new life into the critical oxygen partial pressure (P_{crit}). *Journal of Experimental Biology*. doi: 10.1242/jeb.242210

Saba, G.K., A.B. Bockus, C.T. Shaw, and B.A. Seibel. 2021. Combined effects of ocean acidification and elevated temperature on physiological processes of Antarctic krill (*Euphausia superba*). *Marine Ecology Progress Series* 665:1–18. doi:10.3354/meps13715. Feature Article.

Shaw, C.T., J.L. Fisher, and W.T. Peterson. In revision. Population dynamics of three species of euphausiids (*Euphausia pacifica*, *Thysanoessa spinifera*, *T. inspinata*) in relation to climate variability during a long-term study (2001-2016) off of Newport, Oregon, USA. *Prog. Oceanog.*

Cass, C.J., E.P. Bjorkstedt, and C.T. Shaw. In revision. Seasonal and latitudinal variability in protein, lipid, and calorie content of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* in the Northern California Current. *Prog. Oceanog.*

PRESENTATIONS

Shaw, C.T., R.M. Ross and L.B. Quetin. Effect of sea ice conditions on physiological maturity of female Antarctic krill (*Euphausia superba* Dana) west of the Antarctic Peninsula. LTER Site Visit, UC Santa Barbara, 8/1998. Poster.

Shaw, T; Lamb, J; Feinberg, L; Peterson, WT. A Comparison of Euphausiids and Copepods as Producers and Consumers off Newport, Oregon. *EOS Trans. Am. Geophys. Union*. Vol. 82, suppl., 2001.

Shaw, C.T., L.R. Feinberg and W.T. Peterson. Variability in developmental pathways of individual larval *Euphausia pacifica*. GLOBEC SI meeting, Oregon State University, 11/2001. Poster.

Shaw, C.T., L.R. Feinberg, J. Gómez-Gutiérrez and W.T. Peterson. Moulting and growth of *Euphausia pacifica* and *Thysanoessa spinifera* in the Northern California Current. GLOBEC SI Meeting, Oregon State University, 11/2002. Poster.

Gómez-Gutiérrez, J., L.R. Feinberg, C.T. Shaw, W.T. Peterson. Brood size and egg production rates for *Euphausia pacifica* with a comparison of laboratory and field estimates of fecundity. GLOBEC SI Meeting, Oregon State University, 11/2002. Poster.

PRESENTATIONS continued

Shaw, C.T., J. Lamb, L.R. Feinberg and W.T. Peterson. A comparison of euphausiids and copepods as producers and consumers off Newport, Oregon. AGU Ocean Sciences Meeting, Portland, OR, 1/2004. Poster.

Shaw, C.T., L.R. Feinberg and W.T. Peterson. Molting and growth rates of two species of euphausiids off the Oregon coast. ASLO Meeting, Honolulu, HI, 2/2004. Oral presentation.

Ju, S.-J., H.R. Harvey, W.T. Peterson, L.R. Feinberg and C.T. Shaw. Understanding the nutritional status, diet, and demographic structure of *Euphausia pacifica* through multiple organic markers. PICES XIV, Vladivostok, Russia. 10/2005. Invited oral presentation.

Feinberg, L.R., W.T. Peterson, C.T. Shaw and J. Gómez-Gutiérrez. Euphausiid reproduction off the Oregon Coast, USA. PICES XIV, Vladivostok, Russia. 10/2005. Oral presentation.

Shaw, C.T., L.R. Feinberg and W.T. Peterson. Seasonal variations in intermolt period and growth of *Euphausia pacifica* and *Thysanoessa spinifera* in the coastal Pacific Northwest. PICES XIV, Vladivostok, Russia. 10/2005. Invited oral presentation.

Shaw, C.T., H. Bi and W.T. Peterson. Euphausiid growth off the Oregon Coast: a comparison of methodologies. Ocean Sciences Meeting, Honolulu, HI, 2/2006. Poster.

Batchelder, H.P., E. Curchitser, L.R. Feinberg, C.T. Shaw and W.T. Peterson. Influence of currents, topography and behavior in controlling euphausiid distributions in the northern California Current. PICES Symposium, Honolulu, HI. 4/2006. Oral presentation.

Shaw, C.T., L.R. Feinberg, W.T. Peterson, A. Pinchuk, W. Sydeman, H. Sugisaki, I. Bragina, S.-J. Ju and J. Gómez-Gutiérrez. A pan-Pacific comparison of the biology of *Euphausia pacifica*. PICES Symposium, Honolulu, HI. 4/2006. Oral presentation.

Shaw, C.T., L.R. Feinberg, H. Bi, and W.T. Peterson. Analysis of key recruitment processes for *Euphausia pacifica* off the Oregon coast. PICES XV, Yokohama, Japan. 10/2006. Oral presentation.

Shaw, C.T., L.R. Feinberg, H. Bi, and W.T. Peterson. Molting and growth of euphausiids off the Oregon Coast. Seminar for College of Ocean and Atmospheric Sciences, Oregon State University. 11/7/2006.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Growth of *Euphausia pacifica* and *Thysanoessa spinifera* in the coastal NE Pacific. 4th International Zooplankton Production Symposium, Hiroshima, Japan. 5/2007. Poster.

Feinberg, L.R., C.T. Shaw and W.T. Peterson. The timing and location of spawning for the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off the Oregon coast, USA. 4th International Zooplankton Production Symposium, Hiroshima, Japan. 5/2007. Poster.

Shaw, C.T., L.R. Feinberg, J. Gómez-Gutiérrez, and W.T. Peterson. Review of life history and ecology of *Euphausia pacifica* off Newport, OR, USA. 4th International Zooplankton Production Symposium, Hiroshima, Japan. 5/2007. Oral presentation.

Ju, S.-J., W.-S. Kim, W.T. Peterson, L.R. Feinberg, C.T. Shaw, and H.R. Harvey. The biochemical estimation of age in krill: laboratory calibration and field comparisons. 4th International Zooplankton Production Symposium, Hiroshima, Japan. 5/2007. Oral presentation.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Interannual variability in abundance, growth and spawning of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA. PICES XVI, Victoria, British Columbia, Canada. 10/2007. Oral presentation.

Peterson, W.T., L.R. Feinberg, C.T. Shaw, J.L. Menkel, and J. Peterson. Phenology of coastal copepod species: Implications for productivity at various trophic levels in the Oregon upwelling zone. PICES XVI, Victoria, British Columbia, Canada. 10/2007. Oral presentation.

PRESENTATIONS continued

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Euphausiid population dynamics in the coastal upwelling zone off the Oregon Coast, USA. Eastern Boundary Upwelling Ecosystems meeting, Las Palmas de Gran Canaria. June 2-6, 2008. Poster.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. An overview of US-based euphausiid research efforts in Alaska, Washington, Oregon, and California. PICES Working Group 23 Inaugural Meeting. Dalian, China. Oct. 24, 2008. Oral presentation.

Shaw, C.T., L.R. Feinberg, H. Bi, and W.T. Peterson. Upwelling conditions and cohort analysis of the euphausiid *Euphausia pacifica* off Newport, OR, USA. PICES XVII Annual Meeting, Dalian, China. Oct. 31, 2008. Oral presentation.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Population dynamics of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA in relation to environmental conditions. PICES XVIII Annual Meeting, Jeju Island, Korea. Oct. 30, 2009. Oral presentation.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Population dynamics of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA in relation to environmental conditions. PICES International Symposium on Climate Change Effects on Fish and Fisheries. April 25-29, 2010, Sendai, Japan. Workshop 6: Examining the linkages between physics and fish: how do zooplankton and krill data sets improve our understanding of the impacts of climate change on fisheries? Oral presentation.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Abundance of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA, in relation to environmental conditions. PICES International Symposium on Climate Change Effects on Fish and Fisheries. April 25-29, 2010, Sendai, Japan. Poster.

Pleuthner, R L; Lessard, E; Bernhardt, M J; Shaw, C T; Harvey, H R. Euphausiid Responses to Changing Food Resources: Lipids as Molecular Tracers of Diet History in the Bering Sea. Proceedings from the 2010 AGU Ocean Sciences Meeting. 22-26 Feb 2010, Portland, OR. Poster.

Lessard, E; Shaw, C T; Bernhardt, M J; Engel, V L; Foy, M S. Euphausiid Feeding and Growth in the Eastern Bering Sea. Proceedings from the 2010 AGU Ocean Sciences Meeting. 22-26 Feb 2010, Portland, OR. Poster.

Shaw, C.T., L.R. Feinberg, H. Bi, W.T. Peterson. Cohort data for the euphausiid *Euphausia pacifica* based on biweekly sampling off Newport, OR, USA. PICES XIX Annual Meeting, Portland Oregon. Oct. 28, 2010. Oral presentation.

Du, X., W.T. Peterson, C.T. Shaw. Feeding rates of adult *Euphausia pacifica* on natural particle assemblages in the coastal upwelling zone off Oregon, USA. PICES XIX Annual Meeting, Portland Oregon. Oct. 28, 2010. Oral presentation.

Feinberg, L.R., C.T. Shaw, W.T. Peterson, and H. Bi. Life history of *Euphausia pacifica* in the northern California current: What can be learned by contrasting field and laboratory studies. 5th International Zooplankton Production Symposium, Pucón, Chile. March 14, 2011. Oral presentation.

Shaw, C.T., R.M. Ross, and L.B. Quetin. Effect of sea ice conditions on physiological maturity of female Antarctic krill (*Euphausia superba*) west of the Antarctic Peninsula. 5th International Zooplankton Production Symposium, Pucón, Chile. March 14, 2011. Oral presentation (last minute substitution for Japanese scientist affected by the tsunami) and poster.

Gómez-Gutiérrez, J., M.C. Strüder-Kypke, D.H. Lynn, C.T. Shaw, A. López-Cortés, M.J. Aguilar-Méndez, and C.J. Robinson. Genetic evidence of distinct new *Collinia* species, parasitoids of krill from the Bering Sea to the Baja California peninsula region. 5th International Zooplankton Production Symposium, Pucón, Chile. March 16, 2011. Oral presentation

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Population dynamics of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* in the upwelling region off Newport, OR, USA. 5th International Zooplankton Production Symposium, Pucón, Chile. March 17, 2011. Oral presentation.

Lessard, E.J., M. Schatz, C.T. Shaw, and M. Foy. Seasonal and interannual patterns in euphausiid diets and feeding rates in the eastern Bering Sea: Three years of BEST observations. 2nd ESSAS Open Science Meeting, Seattle, WA, USA. May 23, 2011. Oral presentation.

PRESENTATIONS continued

Shaw, C.T., L.R. Feinberg, H. Bi, and W.T. Peterson. Possible effects of climate variability on the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA. 2nd ESSAS Open Science Meeting, Seattle, WA, USA. May 22, 2011. Oral presentation.

Shaw, C.T., W.T. Peterson, C.A. Morgan, and L.R. Feinberg. Recent high variability in hydrography and lower trophic levels in the upwelling region off Newport, Oregon, USA. PICES Annual Meeting, Khabarovsk, Russia. October 20, 2011. Oral presentation.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Possible effects of climate variability on the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA. Second International Symposium on Effects of Climate Change on the World's Oceans, Yeosu, Korea. May 17, 2012. Oral presentation.

Shaw, C.T., L.R. Feinberg, and W.T. Peterson. Possible effects of climate variability on the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* off Newport, OR, USA. PICES Annual Meeting, Hiroshima, Japan. October 18, 2012. Oral presentation.

Shaw, C.T., L.R. Feinberg, J.L. Fisher, and W.T. Peterson. Interannual variations in the abundance of krill derived from a 13 year time series of biweekly sampling off central Oregon. Predators and the California Current Preyscape Workshop, Point Blue Conservation Science, Petaluma, CA. September 10, 2013. Oral presentation.

Shaw, C.T., L.R. Feinberg, J.L. Fisher, and W.T. Peterson. A tale of two krill: who, when, where, and how many? The euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* in the coastal upwelling zone off the Oregon Coast, USA. PICES Annual Meeting, Nanaimo, B.C., Canada. October 17, 2013. Oral presentation.

McLean, E.L., B.A. Seibel, and C.T. Shaw. The response of molting juvenile American lobster (*Homarus americanus*) to future ocean acidification projections. National Shellfisheries Association Annual Meeting, Monterey, CA, USA. March 22-26, 2015. Poster presentation.

Shaw, C.T. and W.T. Peterson. The euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* in the coastal upwelling zone off the Oregon Coast, USA. (Alt title: The Euphausiids vs The Warm Blob). PICES Annual Meeting, Qingdao, China. October 20, 2015. Oral presentation.

Shaw, C.T. Euphausiids and Climate Variability: Studies in Antarctica and the Northeast Pacific. Ocean University of China, Qingdao, China. October 20, 2015. Invited seminar.

Seibel, B.A., J. Schneider, S. Kaartvedt, K. Wishner, K. Daly, and C.T. Shaw. Hypoxia tolerance in oxygen minimum zone euphausiids. PICES Annual Meeting, Qingdao, China. October 22, 2015. Poster presentation.

Shaw, C.T. and W.T. Peterson. Euphausiid responses to recent warming events in the coastal upwelling zone off the Oregon Coast, USA. PICES Annual Meeting, San Diego, California, USA. November 10, 2016. Oral presentation.

Shaw, C.T., K.F. Wishner, D.M. Outram, C.R. Roman, K.A.S. Mislán and B.A. Seibel. Euphausiid distribution in relation to low-oxygen features in the Eastern Tropical Pacific. Ocean Sciences Meeting, Portland, Oregon, USA. February 13, 2018. Oral presentation.

Shaw, C.T. and J.L. Fisher. Population dynamics of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera*, with notes on *Thysanoessa inspinata*, off of Newport, Oregon, USA. PICES Annual Meeting, Victoria, BC, Canada. October 25, 2019. Oral presentation.

TECHNICAL REPORTS

Shaw, C.T. L.R. Feinberg and W.T. Peterson. 2005. Protocols for measuring molting rate and egg production of live euphausiids. Published to PICES website (<http://www.pices.int/projects/Euphasiid/euphasiid.aspx>).

PROFESSIONAL ACTIVITIES

PICES Working Group 23: Comparative ecology of krill in coastal and oceanic waters around the Pacific Rim. 2008-2012. Working group member. Lead editor of final report.