

Christopher Bassett

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Education

2013 **Ph.D.** Mechanical Engineering, University of Washington
2010 **M.S.** Mechanical Engineering, University of Washington
2007 **B.S.** Mechanical Engineering, University of Minnesota

Professional Experience

2019-pres. Research Scientist/Senior Mechanical Engineer
Ocean Engineering Dept., Applied Physics Laboratory, University of Washington
2016-2019 Ocean Acoustics Engineer
Resource Assessment and Conversation Engineering Division
Alaska Fisheries Science Center, National Marine Fisheries Service (NOAA)
2015-2016 Postdoctoral Research Associate
Joint Institute for the Study of the Atmosphere and Ocean
Acoustics Dept., Applied Physics Laboratory, University of Washington
Alaska Fisheries Science Center, National Oceanic and Atmospheric Administration
2013-2015 Post-doctoral Scholar Fellow, Dept. of Applied Ocean Physics & Engineering
Woods Hole Oceanographic Institution
2009-2013 Graduate Research Assistant, Mechanical Engineering/Applied Physics Laboratory
University of Washington
2008-2009 Teaching Assistant, Department of Physics, University of Washington

Peer-Reviewed Publications

- J.1 **Bassett, C.**, T. Lyons, A.C. Lavery, J. Wilkinson, and T. Maksym. Direct inference of first-year ice thickness using broadband acoustic backscattering, (submitted to *Journal of the Acoustical Society of America*).
- J.2 Cotter, E., P. Murphy, **C. Bassett**, B. Williamson, and B. Polagye (2019). Acoustic characterization of sensors for marine environmental monitoring, *Marine Pollution Bulletin*, 144, 205-215.
- J.3 De Robertis, A., **C. Bassett***, L.N. Andersen, I. Wangen, S. Furnish, and M. Levine (2019). Amplifier linearity accounts for discrepancies in echo-integration measurements from two widely used echosounders, *ICES Journal of Marine Science*.
*Denotes equal contributions to the manuscript were made by the first two authors.
- J.4 Loranger, S. **C. Bassett**, J.P. Cole, B. Boyle, and T. Weber (2018). Acoustically relevant properties of four crude oils at oceanographic temperatures and pressures, *Journal of the Acoustical Society of America*, 144(5), 2926-2936.

- J.5 **Bassett, C.**, A. De Robertis, and C. Wilson (2018). Broadband echosounder measurements of the frequency response of fishes and euphausiids in the Gulf of Alaska, *ICES Journal of Marine Science*, 75(3), 1131-1142.
- J.6 Lavery, A.C., **C. Bassett**, M. Jech, and G. Lawson (2017). Exploiting signal processing approaches for broadband echosounders, *ICES Journal of Marine Science*, 75(8), 2262-2275.
- J.7 Demer, D.A., R. Korneliussen, L.N. Andersen, **C. Bassett**, L. Berger, D. Chu, J. Condiotty, G.R. Cutter Jr., *et al.* (2017). 2016 USA-Norway EK80 Workshop Report: Evaluation of a wideband echosounder for fisheries and marine ecosystem science, *ICES Cooperative Research Report No. 336*.
- J.8 **Bassett, C.**, A.C. Lavery, T. Maksym, and J. Wilkinson (2016). Broadband acoustic backscatter from crude oil under laboratory-grown sea ice. *Journal of the Acoustical Society of America*, 140(4), 2274-2287.
- J.9 **Bassett, C.**, A.C. Lavery, T. Maksym, and J. Wilkinson (2015). Laboratory measurements of high-frequency, acoustic broadband backscattering from sea ice and crude oil. *Journal of the Acoustical Society of America*, 137(1), EL32-EL38.
- J.10 **Bassett, C.**, J. Thomson, P. Dahl and B. Polayge (2014). Flow-noise and turbulence in two tidal channels. *Journal of the Acoustical Society of America*, 135(4), 1764-1774.
- J.11 **Bassett, C.**, J. Thomson, and B. Polayge (2013). Ambient noise and bed stress in a tidal channel. *Journal of Geophysical Research – Oceans*, 118, 1-17.
- J.12 **Bassett, C.**, B. Polayge, J. Thomson, and M. Holt (2012). A vessel noise budget for Admiralty Inlet, Puget Sound, WA (USA). *Journal of the Acoustical Society of America*, 132(6), 3706-3719.

Conference Proceedings

- C.1 W.S. Pegau, J. Garron, L. Zabilansky, **C. Bassett**, J. Bello, J. Bradford, R. Carns, Z. Courville, H. Eicken, B. Elder, P. Eriksen, A. Lavery, B. Light, T. Maksym, H.P. Marshall, M. Oggier, D. Perovich, P. Pocwiardowski, H. Singh, D. Tang, C. Wiggins, and J. Wilkinson. Detection of oil in and under ice. *International Oil Spill Conference Proceedings*. Long Beach, CA. May 15-18, 2017.
- C.2 Wilkinson, J. T. Maksym, **C. Bassett**, A.C. Lavery, H. Singh, D. Chayes, P. Elosegui, P. Wadhams, K. Ulrich-Evers, and P. Jochmann. Experiments on the detection and movement of oil spilled under sea ice. *Proceedings of the HYDRALAB IV Joint User Meeting*. Lisbon, Portugal. July 2-4, 2014.
- C.3 **Bassett, C.**, A.C. Lavery, and T. Maksym. Laboratory measurements of high-frequency, broadband acoustic scattering of growing sea ice and oil beneath sea ice. *Proceedings of Meetings on Acoustics*. Providence, RI. May 5-9, 2014.
- C.4 **Bassett, C.**, B. Polayge, and J. Thomson, and K. Rhinefrank. Underwater noise measurements of a 1/7th scale wave energy converter. *MTS/IEEE Oceans*. Kona, HI. September 18-22, 2011.

- C.5 **Bassett, C.**, J. Thomson, and B. Polagye. Characteristics of underwater ambient noise at a proposed tidal energy site in Puget Sound. *MTS/IEEE Oceans*. Seattle, WA. September 21-23, 2010.

Technical Reports

- T.1 W.S. Pegau, J. Garron, L. Zabilansky, **C. Bassett**, J. Bello, J. Bradford, R. Carns, Z. Courville, H. Eicken, B. Elder, P. Eriksen, A. Lavery, B. Light, T. Maksym, H.P. Marshall, M. Oggier, D. Perovich, P. Pocwiardowski, H. Singh, D. Tang, C. Wiggins, and J. Wilkinson (2016). Detection of oil on-in-and-under ice. Technical Report to Joint Industry Programme on oil spill detection and mapping in low visibility and ice: Experimental results.
- T.2 Maksym, T., H. Singh, **C. Bassett**, A. Lavery, L. Freitag, and F. Sonnichse (2014). Oil spill detection and mapping under arctic sea ice using autonomous underwater vehicles. BSEE Contract E12PC00053.
- T.3 Cagua, E.F., **C. Bassett**, R. Kayanda, J. Rubens, and H. Machano (2014). Acoustic Monitoring of Blast Fishing: Pilot Study - Dar es Salaam. Report CN 94 to WWF Tanzania Country Office: Marine Programme.

Conference Abstracts

- A.1 Cotter, E., **C. Bassett**, and B. Polagye. Target Detection and Classification Capabilities of Two Multibeam Sonars. *American Geophysical Union Ocean Science Meeting*, San Diego, CA, February 16-21, 2020.
- A.2 (Invited) **Bassett, C.**, A. Lavery, and, T. Stanton. Broadband measurements of the acoustic target strength of mesopelagic fishes. *Meeting of the Acoustical Society of America*, San Diego, CA, December 2-6, 2019.
- A.3 Deemer, G., T. Lyons, **C. Bassett**, and R. Levine. Characterizing the high-frequency acoustic response from sea ice over one season of natural environmental forcing in the Chukchi Sea. UACE 2019, Hersonissos, Greece 30 June - 5 July, 2019.
- A.4 De Robertis, A., **C. Bassett**, L. Nonboe Andersen, I. Wangen, S. Furnish, and M. Levine. A comparison of echo-integration measurements from two echosounders widely used in acoustic-trawl surveys. *ICES WGFAS*T, Galway, Ireland, April 29-May 2, 2019.
- A.5 De Robertis, A., **C. Bassett**, and S. Furnish. Using EK80 echosounders in narrowband mode: Does $S_{v,EK80} = S_{v,EK80}$? *ICES WGFAS*T, Seattle, WA, March 20-23, 2018.
- A.6 Chu, D. and **C. Bassett**. Characterization of backscattering by walleye pollock. *ICES WGFAS*T, Seattle, WA, March 20-23, 2018.
- A.7 Loranger, S. J.P. Cole, **C. Bassett**, and T. Weber. The acoustic properties of three crude oils at oceanographically relevant temperatures and pressures. *Meeting of the Acoustical Society of America*, New Orleans, LA, 4-8 Dec., 2017.
- A.8 Loranger, S. **C. Bassett**, and T. Weber. Measurements of the acoustic properties of crude oil. *Meeting of the Acoustical Society of America*, Honolulu, HI, 27 Nov. - 2 Dec. 2016.

- A.9 **Bassett, C.**, T. Weber, C. Wilson, and A. De Robertis. Potential for broadband acoustics to improve stock assessment surveys of midwater fishes. *Meeting of the Acoustical Society of America*, Honolulu, HI, 27 Nov. - 2 Dec. 2016.
- A.10 **Bassett, C.**, C. Wilson, and A. De Robertis. Species discrimination using wideband acoustic backscattering measurements from a basin-wide acoustic-trawl survey of the Gulf of Alaska. *ICES WGFASST*, Vigo, Spain, Apr. 19-22, 2016.
- A.11 **Bassett, C.**, A.C. Lavery, T. Maksym, J. Wilkinson, and D. Tang. Development of Remote Sensing Techniques for Sea Ice, Oil under Sea Ice, and Oil Encapsulated in Sea Ice. *Meeting of the Acoustical Society of America*, Jacksonville, FL, Nov. 2-6, 2015.
- A.12 **Bassett, C.** and A.C. Lavery. Laboratory Measurements of High-Frequency Broadband Acoustic Backscatter from Sea Ice, Oil under Sea Ice, and Oil Encapsulated in Sea Ice. *Meeting of the Acoustical Society of America*, Jacksonville, FL, Nov. 2-6, 2015.
- A.13 Tang, D., D. R. Jackson, **C. Bassett**, and A.C. Lavery. Modeling High-Frequency Acoustic Backscatter for Remote Sensing of Oil under Sea Ice and Oil Encapsulated in Sea Ice. *Meeting of the Acoustical Society of America*, Jacksonville, FL, Nov. 2-6, 2015.
- A.14 **Bassett, C.**, A.C. Lavery, T. C. Weber, G. Lawson, M. Jech, G. Macaulay, R. Korneliussen, and E. Ona. Application of broadband echosounders for detection and characterization of targets near boundaries. *ICES Symposium on Marine Ecosystem Acoustics*, Nantes, France, May 25-28, 2015.
- A.15 M. Jech, A.C. Lavery, G. Lawson, and **C. Bassett**. Acoustic observations of fish and zooplankton over a wide frequency band (15-400 kHz). *ICES Symposium on Marine Ecosystem Acoustics*, Nantes, France, May 25-28, 2015.
- A.16 **Bassett, C.**, A.C. Lavery, and T. Maksym. Laboratory measurements of high-frequency, broadband acoustic scattering of growing sea ice and oil beneath sea ice. *Meeting of the Acoustical Society of America*, Providence, RI, May 5-9, 2014.
- A.17 **Bassett, C.**, J. Thomson, B. Polagye, and J. Wood. Shifting gravel and the acoustic detection range of killer whales. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 3-7, 2012.
- A.18 **Bassett, C.**, J. Thomson, and B. Polagye. Course-grained sediment mobilization as a source of ambient noise. *American Geophysical Union Ocean Sciences Meeting*. Salt Lake City, UT. February 20-24, 2012.
- A.19 **Bassett, C.**, B. Polagye, and J. Thomson, and K. Rhinefrank. Underwater noise measurements of a 1/7th scale wave energy converter. *MTS/IEEE Oceans*. Kona, HI. September 18-22, 2011.
- A.20 **Bassett, C.**, B. Polagye. and J. Thomson. Approaches to ambient noise characterization at tidal energy sites. *Meeting of the American Fisheries Society*, Seattle, WA, September 23-27, 2011.
- A.21 **Bassett, C.**, J. Thomson, and B. Polagye. Estimating the acoustic impact of a tidal energy project, *Meeting of the Acoustical Society of America*, Seattle, WA, May 23-27, 2011.

- A.22 Polagye, B., J. Wood, **C. Bassett**, D. Tollit, and J. Thomson, Behavioral response of harbor porpoises to vessel noise in a tidal strait, *Meeting of the Acoustical Society of America*, Seattle, WA, May 23-27, 2011.
- A.23 (Invited) Polagye, B., J. Thomson, **C. Bassett**, and J. Epler. Comprehensive characterization of a tidal energy site. *American Geophysical Union Fall Meeting*. San Francisco, CA. December 13-17, 2010.
- A.24 (Invited) **Bassett, C.**, B. Polagye, and J. Thomson. Passive acoustics. *Renewable Ocean Energy and the Marine Environment*. Palm Beach Gardens, FL. November 4-6, 2010.

Other Presentations

- P.1 **Bassett, C.** and A. De Robertis. So what's the deal with these fancy new echosounders? *Alaska Fisheries Science Center Seminar Series* Seattle, WA. March, 2019.
- P.2 **Bassett, C.** What are broadband echosounders and can they be used to improve AFSC acoustic-trawl surveys? *Alaska Fisheries Science Center Seminar Series* Seattle, WA. May, 2018.
- P.3 **Bassett, C.** Passive and Active Acoustic Techniques for Measuring, Modeling, and Mitigating Anthropogenic Impacts in Ocean Environments. *University of New Hampshire, Department of Mechanical Engineering Seminar*. Durham, NH. May, 2015.
- P.4 **Bassett, C.** and Polagye, B. Underwater Sound from MHK Converters. *MHK Regulator Workshop*. Washington DC. May, 2015.
- P.5 **Bassett, C.** Active and Passive Acoustic Techniques for Measuring, Modeling, and Mitigating Anthropogenic Impacts in Ocean Environments. *Woods Hole Oceanographic Institution, Department of Applied Ocean Physics and Engineering Seminar*. Woods Hole, MA. March, 2015.
- P.6 Polagye, B. and **C. Bassett** (joint presentation). Underwater Sound from Marine Hydrokinetic Converters: Primer and Synthesis. *DOE Marine and Hydrokinetic Workshop for State and Federal Regulators*. Portland, OR. Sept., 2014.
- P.7 **Bassett, C.** Sediment-generated noise. *Coastal & Ocean Fluid Dynamics Laboratory Seminar, Woods Hole Oceanographic Institution*. Woods Hole, MA. Jan., 2014.
- P.8 **Bassett, C.** Ambient Noise in an Urbanized Tidal Channel. *Departmental Seminar, Applied Physics Lab., Univ. of Washington*. Seattle, WA. July., 2014.
- P.9 Polagye, B. and **C. Bassett** (joint presentation). Underwater Sound: Tidal Turbines and Marine Mammals. *Marine Renewables Seminar, Mechanical Engineering, Univ. of Washington* Seattle, WA. Sept., 2013.
- P.10 **Bassett, C.** Sediment-Generated Noise in a Tidal Channel. *Departmental Seminar, Applied Physics Lab., Univ. of Washington*. Seattle, WA. Oct., 2012.
- P.11 **Bassett, C.**, J. Thomson, and B. Polagye. Characterizing a Tidal Energy Site. *Departmental Seminar, Civil Engineering, Univ. Catolica de Chile*. Santiago, Chile. Aug., 2013.
- P.12 **Bassett, C.**, J. Thomson, B. Polagye, and K. Rhinefrank. Underwater noise measurements of a 1/7th scale wave energy converter. *DOE MHK Environmental Webinar Series*. Dec., 2011.

- P.13 Polagye, B. and **C. Bassett** (joint presentation). Ambient and Turbine Noise. *Northwest Fisheries Science Center*. Seattle, WA. Apr., 2011.
- P.14 (Invited) **Bassett, C.**, B. Polagye and, J. Thomson. Passive acoustic monitoring for tidal energy projects. *Advanced Marine Renewable Energy Instrumentation Experts Workshop*, Broomfield, CO, Apr., 2011.

Honors and Awards

Acoustical Society of American Young Investigator Travel Grant (2019)
 Woods Hole Oceanographic Institution Postdoctoral Scholar Fellowship (2013)
 University of Washington Graduate School Medal (2013)
 National Science Foundation Graduate Research Fellowship Program (2010)
 University of Minnesota Institute of Technology Dean's List (2006-2007)
 S & V Jacobsen Scholarship (2006-2007)

Workshops and Courses Attended

ICES/CIEM - Principles and Methods of Broadband/Wideband Technologies (2016)
 Joint U.S.-Norway EK80 Workshop, San Diego, CA (2016)
 Acoustical Society of America - ASA School (2014)
 University of Washington, Friday Harbor Labs "Marine Bioacoustics" course (2011)

Professional Activities

Journal Peer Reviews

- *Aquaculture, European Wave and Tidal Energy Conference, Hydrobiologia, ICES Journal of Marine Science, Journal of the Acoustical Society of America, Journal of Great Lakes Research, Limnology and Oceanography: Methods, Marine Energy Technology Symposium, Marine Pollution Bulletin, Methods in Oceanography, Progress in Oceanography*

U.S. Shadow Committee Chair

- IEC TC 114 PT 62600-40. Technical committee to establish a standardized approach for measuring, analyzing, and reporting the sound produced by the operation of marine renewable energy devices (2015 – 2019)

Acoustical Oceanography Technical Committee Member

- Acoustical Society of America (2014 –)

Seminars and Special Sessions

- Co-organizer. Alaska Fisheries Science Center Seminar Series (2018)
 - Session Co-chair, "Acoustic Scattering from Hydrocarbons and Hydrothermal Vents," Meeting of the Acoustical Society of America, New Orleans, LA (2017)

Student Paper Judge

- 170th Meeting of the Acoustical Society of America, Jacksonville, FL (2015)
 - 167th Meeting of the Acoustical Society of America, Providence, RI (2014)

Workshop Participant

- Instrumentation for Monitoring around Marine Renewable Energy Devices (2013)

Funding Review Panels

- NOAA Office of Ocean Exploration and Research
- UW Royalty Research Fund
- Environmental Stewardship for Renewable Energy Technologies: MHK Environmental and Resource Characterization Instrumentation
- Instrumentation for Monitoring Around Marine Renewable Energy Devices (DOE)

Professional Affiliations

Acoustical Society of America
American Geophysical Union
American National Standards Institute

Outreach

Volunteer: NOAA Open House (2017)

Invited Speaker:

- American Cetacean Society Speaker Series, Puget Sound Chapter (2013)
- Emerald Sea Diving Club (2013)
- Marker Buoy Dive Club (2013)

Exhibitor: Seattle Science EXPO (2012-2013)

Presenter: UW College of Engineering Discovery Days (2010-2013)

Volunteer: National Ocean Science Bowl - Orca Bowl (2012)

Guest Instructor: Robinson Center Summer Challenge (2013)

Volunteer/Instructor: Ocean Inquiry Project (2010-2011)

Exhibit Design/Exhibitor: Windustry at the Minnesota State Fair (2008)

Organizer/Instructor: Building Resources and Innovative Designs for Global Energy (BRIDGE); student organization at the University of Minnesota (2007-2008)

Assistant Director/Tutor: Santo Rosario Grupo de Jovenes, Minneapolis, MN (2005)