

Neil S Banas

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Currently

2021– Ecological Modeller, Atlantic Salmon Trust / Missing Salmon Alliance
 2017– Reader, Dept of Mathematics and Statistics, Univ of Strathclyde

Previously

2015–17 Senior Lecturer, Dept of Mathematics and Statistics, Univ of Strathclyde
 2012–15 Senior Research Scientist, Joint Institute for the Study of the Atmosphere and Ocean, Univ of Washington
 2008–12 Oceanographer, Applied Physics Laboratory, Univ of Washington
 2005–08 Postdoctoral Research Associate, Univ of Washington
 2005 PhD, Oceanography, Univ of Washington
 2001 MS, Oceanography, Univ of Washington
 1998 MA, Religious Studies, Univ of Colorado, Boulder, CO, USA
 1995 BA with Distinction, Physics and Religion, Swarthmore College, Swarthmore, PA, USA

Research interests

- Climate change impacts on marine ecosystems
- Dynamical models of plankton and their predators (individuals, populations, communities)
- Biophysical interactions in estuaries, coasts, and Arctic seas
- Intersections between science, environmental humanities, and the arts

Publications — Journal articles († = shared first authorship)

Forthcoming

47. Connan-McGinty S, Banas NS, Berge J, Cottier F, Grant S, Johnsen G, Kopec T, Porter M, McKee D (2022) Midnight Sun to Polar Night: A model of seasonal light in the Barents Sea. *Journal of Advances in Modeling Earth Systems*, submitted.
46. Stone HB, Banas NS, MacCready P, Trainer VL, Ayres DL, Hunter MV (2022) Assessing a model of Pacific Northwest harmful algal bloom transport as a decision-support tool. *Harmful Algae*, submitted.

Published

45. Olin AB, Banas NS, Johns DG, Heath MR, Wright PJ, Nager RG (2022) Spatio-temporal variation in the zooplankton prey of lesser sandeels: Species and community trait patterns from the Continuous Plankton Recorder. *ICES J Mar Sci*, 79:1649-1661, 10.1093/icesjms/fsac101.
44. González-Gil R, Banas N, Bresnan E, Heath M (2022) The onset of the spring phytoplankton bloom in the coastal North Sea supports the Disturbance Recovery Hypothesis. *Biogeosci*, 19:2417–2426.
43. Tarling G, Freer JJ, Banas NS, Belcher A, Blackwell M, Cook KB, Castellani C, Cottier F, Daase M, Johnson ML, Last KS, Lindeque PK, Mayor DJ, Mitchell E, Parry HE, Stowasser G, Wootton M (2021) Can a key boreal *Calanus* copepod species now complete its life- cycle in the Arctic? Evidence and implications for Arctic food-webs. *Ambio*, 10.1007/s13280-021-01667-y.
42. Castellani G, Veyssi re G, Karcher M, Stroeve J, Banas N, Bouman H, Brierley A, Connan S, Cottier F, Gro e F, Hobbs, L, Katlein, C, Light B, McKee D, Orkney A, Proud, R (2021) Shine a light:

Under-ice light and its ecological implications in a changing Arctic Ocean. *Ambio*, 10.1007/s13280-021-01662-3.

41. Banas NS, Møller EF, Laidre KL, Simon M, Ellingsen IH, Nielsen TG (2021) Reconciling behavioral, bioenergetic, and oceanographic views of bowhead whale predation on overwintering copepods at an Arctic hotspot (Disko Bay, Greenland). *Front Mar Sci*, 10.3389/fmars.2021.614582.
40. Ershova EA, Kosobokova KN, Banas NS, Ellingsen I, Niehoff B, Hildebrandt N, Hirche H-J (2021) Sea ice decline drives biogeographical shifts of key *Calanus* species in the central Arctic Ocean. *Global Change Biol*, 10.1111/gcb.15562.
39. Hobbs L, Banas NS, Cohen JH, Cottier FR, Berge J, Varpe Ø (2021) A marine zooplankton community vertically structured by light across diel to interannual timescales. *Biol Lett*, 17:20200810, 10.1098/rsbl.2020.0810.
38. MacCready P, McCabe RM, Siedlecki SA, Lorenz M, Giddings SN, Bos J, Albertson S, Banas NS, Garnier S (2021) Estuarine circulation, mixing, and residence times in the Salish Sea. *J Geophys Res*, 126, e2020JC016738. 10.1029/2020JC016738.
37. Stone HB, Banas NS, MacCready P, Kudela RM, Oval B (2020) Linking chlorophyll concentration and wind patterns using satellite data in the Central and Northern California Current System. *Front Mar Res*, 10.3389/fmars.2020.551562.
36. Hobbs L, Banas NS, Cottier FR, Berge J, Daase M (2020) Eat or sleep: availability of winter prey explains mid-winter and spring behaviour in an Arctic *Calanus* population. *Front Mar Res*, 10.3389/fmars.2020.541564.
35. Olin AB, Banas NS, Wright PJ, Heath MR, Nager RG (2020) Spatial synchrony of breeding success in the black-legged kittiwake *Rissa tridactyla* reflects the spatial dynamics of its sandeel prey. *Mar Ecol Prog Ser*, 638:117–190.
34. Wheat E, Banas NS, Ruesink J (2019) Multi-day water residence time as a mechanism for physical and biological gradients across intertidal flats. *Est. Coast. Shelf Sci.*, 10.1016/j.ecss.2019.106303.
33. Sloughter T, Banas NS, Sambrotto RN (2019) Seasonal variations in photosynthetic efficiency of polar phytoplankton. *J. Mar. Res.* 191:64–75, 10.1016/j.jmarsys.2018.12.003.
32. Renaud PE†, Daase M†, Banas NS†, Gabrielsen TM, Søreide J, Varpe Ø, Cottier F, Falk-Petersen S, Halsband C, Vogedes D, Heggland K, Berge J (2018) Pelagic food webs in a changing Arctic: A trait-based perspective suggests a mode of resilience. *ICES J. Mar. Sci.*, doi:10.1093/icesjms/fsy063.
31. Stone HB, Banas NS, MacCready P (2018) The effect of alongcoast advection on Pacific Northwest shelf and slope water properties in relation to upwelling variability. *J. Geophys. Res.*, 123, 10.1002/2017JC013174.
30. Berdalet E, Kudela R, Urban E, Enevoldsen E, Banas NS, Mackenzie L, Montresor M, Burford M, Gobler C, Karlson B, Lim PT, Yin K (2017) GlobalHAB: New Program to Promote International Research, Observations, and Modeling of Harmful Algal Blooms in Aquatic Systems. *Oceanography*, 30:70–81, doi:10.5670/oceanog.2017.111.
29. Banas NS, Møller EF, Nielsen TG, Eisner LB (2016). Copepod life strategy and population viability in response to prey timing and temperature: Testing a new model across latitude, time, and the size spectrum. *Front. Mar. Sci.* 3:225, doi:10.3389/fmars.2016.00225.
28. Banas NS, Campbell RG (2016) Traits controlling body size in copepods: Separating general constraints from species-specific strategies. *Mar. Ecol. Prog. Ser.*, 558:21–33.
27. Burke BJ, Anderson JJ, Miller JA, Tomaro L, Teel DJ, Banas NS, Baptista AM (2016) Estimating behavior in a black box: How coastal oceanographic dynamics influence yearling Chinook salmon marine growth and migration behaviors. *Env. Biol. Fish*, 99:671, doi:10.1007/s10641-016-0508-7.

26. Wilson RJ, Banas NS, Heath MR, Speirs DC (2016) Projected impacts of 21st century climate change on diapause in *Calanus finmarchicus*. *Glob. Change Biol.*, 22: 3332–3340. doi:10.1111/gcb.13282.
25. Banas NS, Zhang J, Campbell RG, Sambrotto RN, Lomas MW, Sherr E, Sherr B, Ashjian C, Stoecker D, Lessard EJ (2016) Spring plankton dynamics in the Eastern Bering Sea, 1971–2050: Mechanisms of interannual variability diagnosed with a numerical model. *J. Geophys. Res.*, 121:1476–1501, doi:10.1002/2015JC011449.
24. Conway-Cranos L, Kiffney P, Banas N, Plummer M, Naman S, MacCready P, Bucci J, Ruckelshaus M (2015) Stable isotopes and oceanographic modeling reveal spatial and trophic connectivity among terrestrial, estuarine and marine environments. *Mar. Ecol. Prog. Ser.*, 533:15–28.
23. Moore SK, Johnstone JA, Banas NS, Salathé EP (2015) Present-day and future climate pathways affecting the harmful algal blooms species *Alexandrium catenella* in Puget Sound, WA, USA. *Harmful Algae* 48:1–15.
22. Banas NS, Conway-Cranos L, Sutherland DA, MacCready P, Kiffney P, Plummer M (2015) Patterns of river influence and connectivity among subbasins of Puget Sound, with application to bacterial and nutrient loading. *Estuaries and Coasts*, 38:735–753, doi:10.1007/s12237-014-9853-y.
21. Siedlecki SA, Banas NS, Davis KA, Giddings SN, Hickey BM, MacCready P, Connolly TP, Geier S (2015) Seasonal and interannual oxygen variability on the Washington and Oregon continental shelves. *J. Geophys. Res.*, doi:10.1002/2014JC010254.
20. Davis KA, Banas NS, Giddings SN, Siedlecki S, MacCready P, Hickey BM, Lessard EJ, Kudela RM (2015) Estuary-enhanced upwelling of marine nutrients fuels coastal productivity in the U.S. Pacific Northwest. *J. Geophys. Res.*, doi:10.1002/2014JC010248.
19. Otero Tranchero P, Banas NS, Ruiz-Villareal M (2014) A surface ocean trajectories visualization tool and its initial application to the Galician coast. *Envir Modelling and Software*, 66:12–16.
18. Giddings SN, MacCready P, Hickey BM, Banas NS, Davis KA, Siedlecki SA, Trainer VL, Kudela RM, Pelland N, Connolly TP (2014) Hindcasts of potential harmful algal bloom transport pathways on the Pacific Northwest coast. *J. Geophys. Res.*, 119:2439–2461.
17. Banas NS (2011) Adding complex trophic interactions to a size-spectral plankton model: Emergent diversity patterns and limits on predictability. *Ecol. Modelling* 222:2663–2675.
16. Sutherland DA, MacCready P, Banas NS, Smedstad LF (2011) A numerical modeling study of what controls the salt content and total exchange flow in the Salish Sea. *J. Phys. Oceanogr.*, 41:1125–1143, doi:10.1175/2011JPO4540.
15. Kudela RM, Horner-Devine AR, Banas NS, Hickey BM, Peterson TD, McCabe RM, Lessard EJ, Frame E, Bruland KW, Jay DA, Peterson JO, Peterson WT, Kosro PM, Palacios SL, Lohan MC, Dever EP (2010) Multiple trophic levels fueled by recirculation in the Columbia River plume. *Geophys. Res. Lett.*, 37, L18607, doi:10.1029/2010GL044342.
14. Hickey BM and 20 co-authors (2010) River Influences on Shelf Ecosystems: Introduction and Synthesis. *J. Geophys. Res.*, 115, C00B17, doi:10.1029/2009JC005452.
13. Banas NS, MacDonald PS, Armstrong DA (2009). Green crab larval retention in Willapa Bay, Washington: An intensive Lagrangian modeling approach. *Estuaries and Coasts*, 32:893–905.
12. Banas NS, Lessard E, Kudela R, MacCready P, Peterson T, Hickey BM, Frame E (2009). Planktonic growth and grazing in the Columbia River plume region: A biophysical model study. *J. Geophys. Res.*, 114, C00B06, doi:10.1029/2008JC004993.
11. Liu Y, MacCready P, Hickey BM, Dever EP, Kosro PM, Banas NS (2009). Comprehensive evaluation of a coastal ocean circulation model for the Columbia River plume using observations in summer 2004. *J. Geophys. Res.*, 114, C00B04, doi:10.1029/2008JC004929.

10. Banas NS, MacCready P, Hickey BM (2009) The Columbia River plume as along-shelf barrier and cross-shelf exporter: A Lagrangian model study. *Cont. Shelf Res.*, 29:292-301.
 9. MacCready P, Banas NS, Hickey BM, Dever E (2009) A model study of tide-and wind-induced mixing in the Columbia River estuary and plume. *Cont. Shelf Res.*, 29:278-291.
 8. Hickey BM, Banas NS (2008) Why is the northern end of the California Current System so productive? *Oceanography*, 21:90-107.
 7. Kudela RM, Banas NS, Barth JA, Frame EF, Jay D, Largier JL, Lessard EJ, Peterson TD, Vander Woude AJ (2008) New insights into the controls and mechanisms of plankton productivity in coastal upwelling waters of the northern California Current System. *Oceanography*, 21:40-53.
 6. Banas NS, Hickey BM, Newton JA, Ruesink J (2007) Tidal exchange, bivalve grazing, and patterns of primary production in Willapa Bay, Washington, USA. *Mar. Ecol. Prog. Ser.*, 341:123-139.
 5. Banas NS, Hickey BM (2005) Mapping exchange and residence time in Willapa Bay, Washington, a branching, macrotidal estuary. *J. Geophys. Res.*, 110(C11), 10.1029/2005JC002950.
 4. Banas NS, Hickey BM, MacCready P, Newton JA (2004) Dynamics of Willapa Bay, Washington, a highly unsteady, partially mixed estuary. *J. Phys. Oceanogr.*, 34, 2413-2427.
- (See also "Papers of Note: Questioning assumptions about estuary balance," *Bull. Amer. Met. Soc.*, Jan 2005)
3. Banas NS, Wang D-P, Yen J (2004) Experimental validation of an individual-based model for zooplankton swarming. *Handbook of Scaling Methods in Aquatic Ecology: Measurement, Analysis, Simulation* (L Seuront and PG Strutton, eds.), CRC Press.
 2. Hickey, BM, Banas NS (2003) Oceanography of the U.S. Pacific Northwest coast and estuaries with application to coastal ecology. *Estuaries*, 26, 1010-1031.
 1. Hickey, BM, X Zhang, Banas N (2002) Coupling between the California Current System and a coastal plain estuary in low riverflow conditions. *J. Geophys. Res.* 107(C10), 1029/1999JC000160.

Publications — Other

- Banas NS, Nguyen HTT, Garnier S, MacCready P, Allen SE (2019) Climate impacts on patterns of phytoplankton production in Puget Sound, USA: A model synthesis and narrowing of hypotheses. Technical Report, Salish Sea Marine Survival Project, <https://marinesurvivalproject.com/resources/>.
- Doolittle E, Banas NS (2018) The long-term effect of gender discriminatory programming. *New Music USA*. (<https://nmbx.newmusicusa.us/the-long-term-effects-of-gender-discriminatory-programming/>). Interactive mathematical model.
- Banas NS (2017) Indringing in diep water (Deep water intrusions: Between philosopher of science Isabelle Stengers, Haida mythteller Skaay, and the North Pacific Ocean). Transl. S. Vriezen. *nY* (Flemish literary journal), issue 32. English text at <http://ny-web.be/transitzone/deep-water-intrusions.html>.
- Banas NS, Cheng W (2015) An oceanographic circulation model for South Puget Sound. Shellfish aquaculture in Washington State: Final report to the Washington State Legislature (Washington SeaGrant, 84 pp: <https://wsg.washington.edu/shellfish-aquaculture/>), chapter 4.
- MacCready P, Banas NS (2012) Residual circulation, mixing, and dispersion. *Treatise on Estuarine and Coastal Science* (E Wolanski and DS McLusky, eds., Elsevier), chapter 2.5.
- Devol A, Newton JA, Bassin C, Banas NS, Kawase M, Ruef W, Bahng B, Warner M (2011) Determining nitrogen loads to Hood Canal and effect on oxygen. Hood Canal Dissolved Oxygen Program Integrated Assessment and Modeling Report (<http://www.hoodcanal.washington.edu/>), chapter 3.4.

Researcher supervision (* = first supervisor or equivalent)

Postdocs

2021–	* Dr Emma Tyldesley	Strathclyde	primary supervisor
2019–21	* Dr Fabian Grosse	Strathclyde	primary supervisor
2016–22	* Dr Laura Hobbs	Strathclyde/SAMS	co-supervisor
2018–20	* Dr Ricardo González Gil	Strathclyde	primary supervisor
2018–19	* Dr Aidan Hunter	Strathclyde	primary supervisor
2016–17	* Dr Sofia Ferreira	UW / Strathclyde	primary supervisor
2013	Dr Sarah Giddings	UW Oceanography	co-advisor
2011–12	Dr Samantha Siedlecki	UW JISAO	co-advisor
2010–12	* Dr Kristen Davis	UW APL/JISAO	primary advisor

Postgraduate students

2021–	* Aislinn Borland	PhD	Strathclyde M&S	1st supervisor
2021–	Lívia Oliveira	PhD	Strathclyde M&S	2nd supervisor
2019–	William McDonald	PhD	Strathclyde M&S	2nd supervisor
2019–	Stacey Connan	PhD	Strathclyde Physics	2nd supervisor
2019–	* Paul Udom	PhD	Strathclyde M&S	1st supervisor
2018–	Toni Dwyer	PhD	Glasgow BAHCM	co-supervisor
2017–	* Euan McRae	MPhil	Strathclyde M&S	1st supervisor
2017–20	* Agnes Olin	PhD	Strathclyde M&S	1st supervisor
2016–21	* Thai Hoa Nguyen	PhD	Strathclyde M&S	1st supervisor
2016–	* Soizic Garnier	PhD	Strathclyde M&S	1st supervisor
2013–20	* Hally Stone	MSc/PhD	UW Oceanography	primary advisor
2015–	* Trevor Slougher	PhD	Strathclyde M&S	1st supervisor
2013–15	Jeff Rutter	PhD	UW Aquat & Fish Sci	committee member
2011–14	Liz Tobin	PhD	UW Oceanography	committee member
2010–14	Dan Nowacki	PhD	UW Oceanography	committee member
2012	Tom Connolly	PhD	UW Oceanography	reading committee
2012	Greg Kowalke	PhD	UW Oceanography	committee member
2010	Elizabeth Wheat	PhD	UW Biology	committee member
2010	Katie Boldt	MSc	UW Oceanography	committee member

Conference presentations and seminars — invited

2022	Theoretical Ecology Group, University of Bergen (“Precarious livelihoods in plankton and predators: Revisiting the metaphors we use for foraging in resource patchworks”)
2021	CAO/ARCTOS Workshop on Modelling Arctic Ecosystems, online Panelist, “The circular feedback between models and experiments,” Advances in Marine Ecosystem Modelling Research conference, online
2020	Gulf of Maine Research Institute, Portland, Maine, USA
2019	ArcticABC Science Meeting, Tromsø, Norway * 4th International Workshop on Trait-based Approaches to Ocean Life, Chicheley, UK NOAA Alaska Fisheries Science Center, Seattle, USA * Gordon Research Conference on Polar Marine Science, Lucca, Italy (“Trophic teleconnections in the changing Arctic Ocean: Modelling zooplankton life history and energy flows along long-distance transport corridors”)
2018	School of Biological Sciences, Univ of Aberdeen, UK Strathclyde Humanities seminar series Dept of Religious Studies, Univ of Glasgow, UK
2017	Arctic ABC Science Meeting, Trondheim, Norway

- 2016 Institute of Biodiversity, Animal Health, and Comparative Medicine, Univ of Glasgow, UK
- 2015 Scottish Oceans Institute, Univ of St Andrews, UK
UK–Norwegian Arctic Workshop, Scottish Association of Marine Science, Oban, UK
MEOPAR/MEAP-TT Workshop on Operational Ocean Modeling, Halifax, Canada
- 2014 Program on the Comparative History of Ideas, Univ of Washington, USA
National Institute of Aquatic Resources, Danish Technical Univ, Charlottenlund, Denmark
Graduate School of Oceanography, Univ of Rhode Island, USA
- 2013 Workshop on Modeling in Support of Management of Coastal Hypoxia and Acidification in the California Current Ecosystem (Center for Ocean Solutions / California Ocean Science Trust), USA
- 2012 Dept of Oceanography, Texas A&M, USA
- 2011 Oceanography Dept, Dalhousie Univ, Halifax, Canada
Institut Universitaire Européen de la Mer, Brest, France
Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Germany
North Pacific Science Organisation (PICES) Annual Meeting, Khabarovsk, Russia (“Freshwater influences on productivity in the northern California Current System, present and future: Or, rivers as buffers against climate change in upwelling zones”)
- 2010 AGU Fall Meeting, San Francisco, CA, USA (“Freshwater influences on productivity, retention, and export in the northern California Current System”)
- 2009 * Gordon Research Conference on Coastal Oceanography, New London, NH, USA (“Growth, grazing, retention, and dispersion in a complex river plume”)
- 2007 Civil & Environmental Engineering, UC Berkeley, USA
Ocean Sciences Dept, UC Santa Cruz, USA
* Gordon Research Conference on Coastal Ocean Modeling, New London, NH, USA (“Designing ecosystem models to tell biological stories”)
Young Investigators series, School of Aquatic and Fishery Sciences, University of Washington, USA
- 2006 Oregon State Univ, Corvallis, OR, USA
- 2005 NOAA Southwest Fisheries Science Center, Pacific Grove, CA, USA
Ocean Sciences Dept, UC Santa Cruz, USA
Virginia Institute of Marine Science, Gloucester Pt, VA, USA

Conference presentations and seminars — submitted (§ = student author)

- 2022 Tyldesley E, Banas NS, Diack G, Bull C (2022) A multi-scale view of the ocean environment along a 3,000 km post-smolt migration. International Year of the Salmon (IYOS) Synthesis Symposium, Vancouver, Canada
- 2021 Banas NS (2021) Modelling range limits in *Calanus* copepods in rapidly changing Arctic gateways: A trait- and life-history-based approach. Advances in Marine Ecosystem Modelling Research (AMEMR), online.
Banas NS, Nguyen HTT, Garnier S, MacCreedy P, Allen S (2021) Climate impacts on patterns of phytoplankton production in Puget Sound, USA: Narrowing the hypotheses through multi-model synthesis. AMEMR, online.
§ Udom PS, Banas NS, McKee D, Große F, Kudela RM (2021) Satellite- and model-based prediction of harmful algae dynamics in the US Pacific Northwest. AMEMR, online.
Große F, Banas NS, Porter M, Henley S, Zhang J, Ellingsen I (2021) Modelling phytoplankton dynamics in the Arctic's marginal ice zone. AMEMR, online.
Große F, Banas NS, Porter M, Henley S, Zhang J, Ellingsen I (2021) Modelling phytoplankton dynamics in the Arctic's marginal ice zone. Arctic Science Summit Week, online.
Hobbs LJ, Banas NS, Cohen J, Cottier FR, Berge J, Varpe Ø (2021) Arctic zooplankton and the lightscape of fear: Behavioural responses to light buffer diel and seasonal changes in visual predation risk. Arctic Science Summit Week, online.
Berdalet E, Anderson C, Banas NS, and 17 co-authors (2021) GlobalHAB (IOC-UNESCO and SCOR): Latin America contribution to the international coordination for sound knowledge of HABs and management of their impacts. 12th International Phycological Congress, Chile (online).
- 2020 § Olin AB, Banas NS, Wright PJ, Heath MR, Johns DG, Nager RG (2020) Generating planktivore prey fields from continuous plankton recorder data. MASTS Annual Science Meeting, online.

- Berdalet E, Anderson C, Banas NS, and 13 co-authors (2020) GlobalHAB (IOC-UNESCO and SCOR): International coordination to assess and minimize the risks of harmful algal blooms impacts to human health. Human Health and The Ocean in a Changing World (1st International Symposium), Monaco (online).
- Hobbs LJ, Banas NS, Cohen J, Varpe Ø (2020) Arctic zooplankton and the lightscape of fear: Behavioural responses to light buffer diel and seasonal changes in visual predation risk. AGU/ASLO Ocean Sciences Meeting, San Diego, CA, USA
- Große F, Banas NS, Slougher TM, Porter M, Zhang J, Ellingsen I (2020) A new framework for interregional comparisons of biogeochemical models across the Arctic Marginal Ice Zone. AGU/ASLO Ocean Sciences Meeting, San Diego, USA
- Siedlecki SA, MacCready P, McCabe R, Banas NS, Davis KA, Giddings SN, Hales B, Barth J, Durski S (2020) Winter influences on summer hypoxia variability. AGU/ASLO Ocean Sciences Meeting, San Diego, USA.
- Ershova E, Kosobokova KN, Banas NS, Niehoff B, Hildebrandt N, Ellingsen I (2020) Biogeographical shifts in key *Calanus* species in the Arctic Ocean driven by sea-ice decline. AGU/ASLO Ocean Sciences Meeting, San Diego, USA.
- Banas NS, Hunter A, Ershova E, Keister JE, Zhang J, Ferreira ASA, Ashjian CA, Campbell RG, Kimmel DG, Eisner LB, Ellingsen I, Kosobokova KN (2020) Modelling *Calanus* population dynamics under climate change along the North American Pacific margin from the California Current to the Arctic. AGU/ASLO Ocean Sciences Meeting, San Diego, USA.
- 2019 § Udom PS, Banas NS, McKee D, Kudela RM (2019) Satellite- and model-based prediction of harmful algae dynamics in the US Pacific Northwest. Oral Presentation: MASTS Annual Science Meeting, Glasgow, UK
- Große F, Banas NS, Slougher TM (2019) Modelling phytoplankton spring bloom dynamics across the changing Arctic Ocean. Challenger Society Ocean Modelling Special Interest Group, Edinburgh, UK
- § Stone HB, Banas NS, MacCready P (2019). Gone with the wind: Linking phytoplankton biomass and wind patterns using satellite data in the California Current System. Gordon Research Conference on Coastal Ocean Dynamics, Manchester, NH, USA
- Hunter A, Banas NS (2019). Trait-based modelling of *Calanus* from the California Current System to the Bering Sea. Poster, Gordon Research Conference on Polar Marine Science, Lucca, Italy.
- § McRae ED, Banas NS, Tarling GA, Murphy EJ, Speirs DC (2019) A zooplankton perspective on high latitude, spring phytoplankton blooms: Insights from the Southern Ocean. Gordon Research Conference on Polar Marine Science, Lucca, Italy.
- Hobbs LJ, Banas NS, Cottier FR, Last KS, Berge J (2019) Application of a life-history model to investigate inter-annual variation in energetic trade-offs of Arctic copepods. Biennial Conference of the Challenger Society for Marine Science, Newcastle, UK.
- 2018 § Garnier S, Banas NS, MacCready P (2018) Optimal-detail circulation models of fjords and sea lochs: An application to the Puget Sound. MASTS Annual Science Meeting, Glasgow, UK.
- González-Gil R, Banas NS, Bresnan E, Hindson J, Machairopoulou M, Walsham P, Heath MR (2018). Interannual variations in the spring phytoplankton bloom in the Scottish North Sea. MASTS Annual Science Meeting, Glasgow, UK.
- § Garnier S, Banas NS, MacCready P (2018) Optimal-detail circulation models of fjords and sea lochs: An application to the Puget Sound. Physics of Estuaries and Coastal Seas Meeting, Galveston, USA.
- § Stone HB, Banas NS, MacCready P (2018) Linking phytoplankton biomass and wind patterns using satellite data in the Northern California Current System. Eastern Pacific Ocean Conference, Mt Hood, OR, USA.
- § Olin AB, Banas NS, MacDonald A, Daunt F, Nager RG. (2018) Pinpointing what aspect of prey biology drives variation in black-legged kittiwake breeding success. BOU Annual Meeting, Nottingham, UK.
- § Garnier S, Banas NS, MacCready P (2018) Optimal-detail circulation models of fjords and sea lochs: An application to the Puget Sound. Poster, Salish Sea Ecosystem Conference, Seattle, USA.
- Banas NS, Ashjian CJ, Campbell RG, Laidre KL, Møller EF, Nielsen TG, Simon M, Zhang J (2018) Are Arctic productivity hotspots sources or sinks? A trait-based approach to mesozooplankton life history and energetics along advective corridors. AGU/ASLO Ocean Sciences Meeting, Portland, USA.
- § Garnier S, Banas NS, MacCready P (2018) Optimal-detail circulation models of fjords and sea lochs: An application to the Puget Sound. Poster, AGU/ASLO Ocean Science Meeting, Portland, USA.
- Hobbs LJ, Banas NS, Cottier F, Last KS, Berge J, Kwasiński S (2018) Application of a life-history model to investigate inter-annual variation in energetic trade-offs of Arctic copepods. AGU/ASLO Ocean Science Meeting, Portland, USA.
- § Nguyen HTT, Banas NS (2018) Ensemble approach to explore Puget Sound plankton dynamics. Poster, AGU/ASLO Ocean Science Meeting, Portland, USA.

- 2017 § Stone HB, Banas NS, MacCready P (2018) Linking phytoplankton biomass and wind patterns using satellite data in the Northern California Current System. Poster, AGU/ASLO Ocean Science Meeting, Portland, OR, USA.
- Banas NS, Ashjian CJ, Campbell RG, Laidre KL, Møller EF, Nielsen TG, Simon M, Zhang J (2017) Are Arctic productivity hotspots sources or sinks? Mapping food-web energy transfer along advective corridors. MASTS ASM, Glasgow, UK.
- Hobbs LJ, Banas NS, Cottier F, Last KS, Berge J (2017) Inter-annual variation in the seasonal strategies of zooplankton in a high Arctic fjord. UK Arctic Sciences, Oban, UK.
- Hobbs LJ, Banas NS, Cottier F, Last KS, Berge J (2017) Inter-annual variation in the seasonal strategies of zooplankton in a high Arctic fjord. MASTS ASM, Glasgow, UK.
- § Olin AB, Banas NS, Nager RG, Wright PJ, Heath MR (2017) Spatial variability in kittiwake colony dynamics. MASTS ASM, Glasgow, UK.
- § Garnier S, Banas NS (2017) Tidally averaged mixing parameterization for optimal-detail circulation models of fjords and sea lochs. MASTS ASM, Glasgow, UK.
- § Nguyen HTT, Banas NS (2017) Long-term Puget Sound plankton dynamics: A comprehensive parameter-space exploration in a new model. Poster, MASTS ASM, Glasgow, UK.
- § Slougher T, Banas NS, Sambrotto R (2017) Integrating seasonality into models of Arctic phytoplankton. UK Arctic Sciences, Oban, UK.
- Banas NS, Daase M, Renaud P, Møller EF, Nielsen TG, Campbell RG (2017) Life history plasticity in large copepods and resilience at the base of Arctic food webs. Poster, Workshop on trait-based approaches to ocean life, Bergen, Norway.
- § Nguyen HTT, Banas NS (2017) Long-term Puget Sound plankton dynamics: A comprehensive parameter-space exploration in a new model. Poster, Advances in Marine Ecosystem Modelling Research, Plymouth, UK.
- § Stone HB, Banas NS, MacCready P (2017) The effect of alongcoast advection on Pacific Northwest shelf and slope water properties in relation to upwelling variability. Poster, Gordon Research Conference on Coastal Ocean Dynamics, Biddeford, ME, USA.
- § Slougher T, Banas NS, Sambrotto R (2017) Seasonal variations in photosynthetic efficiency of polar phytoplankton. Gordon Res Conf on Polar Sciences, Ventura, CA, USA.
- 1998–2016 **48 other oral and poster presentations**

Learning and teaching

Strathclyde

- 2021– MM916, “Data Analytics in R” (lecturer)
- 2018– MM206, “Introduction to Mathematical and Statistical Computing” (lecturer/coordinator)
- 2016– MM50x, 5th-year projects, MMath / MSc (supervisor to 4 students)
- 2015– MM401, 4th-year projects, Maths and Stats BSc (supervisor to 14 students)
- 2015–20 MM11x, 1st-year mathematics for Engineering and Chemistry undergrads (lecturer, tutor)
- 2016 MM211/213, 2nd-year mathematics for Engineering undergrads (lecturer)

Univ of Washington

- 2013 “Climate Change Impacts on Marine Ecosystems,” Aquatic and Fishery Sciences (instructor)
- 2004–13 “Northwest Coastal Stories: Turbulence in Science and Culture,” Comparative History of Ideas, Oceanography, and Honors Program (course creator)
- 2011 “Writing Animals,” Honors Program (course creator, co-taught with Sarah Read, English)
- 2008, 10 Huckabay Teaching Fellowship (mentor to 2 PhD students on course-development projects)
- 2001–10 Independent Studies, Comparative History of Ideas (advisor to 4 students)
- 2008 “World Religions and the Environment,” Honors Program (course creator)
- 2001–07 “Humans and Other Animals,” Honors Program and Comp History of Ideas (course creator)
- 2000 “Introduction to Oceanography” (teaching assistant)

Knowledge exchange

Scientific advisory work

- 2019– ICES Working Group on Integrative, Physical-Biological, and Ecosystem Modelling
- 2016– * Program lead, “An early warning system for *Pseudo-nitzschia* harmful algal blooms on Pacific Northwest Beaches” (NOAA MERHAB, 2016–2021)
- 2015–19 End-user forum, Arctic ABC (Applied Technology, Biological Interactions, and Consequences) program (Univ of Tromsø, Norway)
- 2013–19 US Technical Team, Salish Sea Salmon Marine Survival Project
- 2015 Contributor, “State of Knowledge: Climate Change in Puget Sound,” Univ of Washington Climate Impacts Group
- 2012–15 Steering committee, Puget Sound Environmental Monitoring and Assessment Program Modeling Workgroup
- 2012 Science team, Earth System Prediction Capability (ESPC) demonstration program on Coastal Harmful Algal Blooms and Hypoxia

Conference organisation

- 2022 * Conference chair, GlobalHAB/EuroMarine Workshop on Modelling and Prediction of Harmful Algal Blooms, Glasgow, UK
- 2017 Scientific committee, UK Arctic Conference, Oban, UK
- 2014 Steering committee, Second International Workshop on Trait-Based Approaches to Ocean Life
- 2011, 14 Session chair, Salish Sea Ecosystem Conference, Seattle, WA, USA
- 2013 Steering committee, Gordon Research Conference on Coastal Ocean Circulation
- 2007 * Conference chair, Eastern Pacific Oceanographic Congress (EPOC)

Art–science collaborations and public engagement

- 2021– * Lead scientist and contributing artist, Mapping Ocean Change through Art (NERC Creative Climate Connections programme)
- 2021 Invited speaker, COP26 Climate Cafe, Royal Conservatoire of Scotland
- * Co-curator and contributing artist, “Changing Climate, Changing Stories” exhibition at the Hunterian Museum, Glasgow
- Invited talk, Orkney International Science Festival
- Design for environmental theatre piece: “Salar” by Kersti Tacreiter, Canada
- 2018, 22 Invited talk, Orkney International Science Festival
- 2017– Working group member, Ocean Memory Project (US National Academies Keck Futures Initiative)
- 2012 * Solo exhibition: “Rain and Flow,” Blindfold Gallery, Seattle, May 10–June 9
- 2009 Collaborator on public art installation: Carrie Bodle, “Sewing Sonifications,” Westlake Park, Seattle, Aug 10
- 2008 Group exhibition: “Maxalot: Processing Light,” Today’s Art Festival, The Hague, Sep 26–27
- Two computational works featured in *Patterns 2: Design, Art, and Architecture* (Glasner, Schmidt, and Schöndeling, eds., Birkhäuser Basel): *Rain* (2007) and *Rosette 80* (2007)

Citizenship

External

- 2018– Associate Editor, *Elementa: Science of the Anthropocene*
- 2018 Reviewer, MASTS Small Grants scheme
- 2017–21 Leader of the Modelling and Synthesis Group for the NERC Changing Arctic Ocean programme
- 2017 Dissertation referee, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Trieste (Marco Di Pasquale, PhD)
- Proposal review panel, NERC
- 2015–22 * GlobalHAB Scientific Steering Committee (Scientific Committee of Oceanic Research (SCOR) / UNESCO Intergovernmental Oceanographic Commission)
- 2014 External examiner, Danish Technical Univ (Julie Sainmont, PhD)
- 2011 Proposal review panel, NOAA Ecohab program
- 2011 Proposal review panel, Minnesota SeaGrant
- 2006– Individual proposal review for 15 funding bodies (US National Science Foundation [Physical, Biological, Chemical Oceanography, Polar Sciences, LTER]; US NOAA MERHAB program; US Environmental Protection Agency; Maine SeaGrant, Minnesota SeaGrant, Oregon SeaGrant, California SeaGrant, Univ of Louisiana, Qatar National Research Fund, North Pacific Research Board)
- 2005– Article review for 20+ journals

Internal — Strathclyde

- 2016– Faculty of Science Board of Study (SCIB)
- 2019–22 Equity and Diversity Committee, M&S
- 2019–20 Mentor in university mentoring scheme
- 2019–20 Working group on department workload model, M&S
- 2018–19 Athena SWAN self-assessment team, M&S
- 2018 Presentation to delegation from FCO Science and Innovation Network
- 2017 Strategic Dialogue Meeting with Scottish Funding Council
- 2015–16 Academic liason to Scottish Aquaculture Innovation Centre

Internal — Univ of Washington

- 2007–11 Huckabay Graduate Teaching Fellowship selection committee
- 2005–07 Honors Program Faculty Council
- 2003 Senior Facilitator, Annual TA Conference on Teaching and Learning, Center for Instructional Development and Research
- 2002 Physical Oceanography graduate curriculum committee
- 2001 Organizer, Student Physical Oceanography Retreat, Friday Harbor, WA
- 2000 Organizer, The All-Student Oceanography Educational Retreat, Friday Harbor, WA