

**AMANDA E. BATES**

Ocean Sciences Centre, Memorial University  
0 Marine Lab Road  
Newfoundland, A1K 3E6, Canada  
abates@mun.ca

**ACADEMIC HISTORY**

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- 2001-2006 **PhD in Biology** Supervisor: V. Tunnicliffe  
University of Victoria, Victoria, Canada  
Doctoral Thesis: Population and feeding characteristics of hydrothermal vent gastropods along environmental gradients
- 1993-1998 **BSc First Class Honors in Biology** Supervisor: L. Druehl  
Simon Fraser University, Vancouver, Canada  
Honor's Thesis: Intertidal micro-distribution of symbiont-type *Anthopleura xanthogrammica* (Brandt, 1935): factors limiting algal success

**POSITIONS HELD**

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- 2017-pres. **Associate Professor (Canada Research Chair)**  
Memorial University, Ocean Sciences Centre, Canada
- 2013-2017 **Lecturer (Assistant Professor)**  
University of Southampton, Ocean and Earth Science, Southampton
- 2011-2013 **Research Fellow (Level B)**  
University of Tasmania, IMAS, Australia
- 2010-2011 **Research Fellow (Level B)**  
Deakin University, Centre for Integrated Ecology, Australia
- 2009-2010 **Post-doctoral Fellow**  
University of Otago, Department of Marine Science, New Zealand
- 2008 **Post-doctoral Fellow**  
University of British Columbia, Department of Zoology, Canada
- 1997-2001 **Science Educator**  
University of Victoria, Bamfield Marine Sciences Centre, Canada

**ACCEPTED JOURNAL ARTICLES**

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1. Morley, S.A., L.S. Peck, J. Sunday, S. Heiser, **A.E. Bates** (in press)  
Physiological acclimation and persistence of ectothermic species under extreme heat events. *Global Ecology and Biogeography*
2. Bradley, B.A., B.B. Laginhas, R. Whitlock, J.M. Allen, **A.E. Bates**, G. Bernatchez, J.M. Diez, R. Early, J. Lenoir, M. Vilà, C.J.B. Sorte (in press)  
Disentangling the abundance-impact relationship for invasive species. *Proceedings of the National Academy of Sciences*
3. Waldock, C.A., R.D. Stuart-Smith, G.J. Edgar, T.J. Bird, **A.E. Bates** (2019) The shape of abundance distributions across temperature gradients in reef fishes. *Ecology Letters* (online only)

4. Cooke, R., **A.E. Bates**, F. Eigenbrod (2019) Global trade-offs of functional redundancy and functional dispersion for birds and mammals. *Global Ecology and Biogeography*. 28: 415-543
5. Pakeman, R.J., **A.E. Bates**, R. Corlett, G. Cumming, D. Johns, L.P. Koh, R. Loyola, B. Maas, L. Pejchar, R.B. Primack, T.J. Regan, R. Roth, D. Descoteaux, V. Devictor (2019) Fifty Years of Biological Conservation. *Biological Conservation* 230, A1-A4
6. Costello, M.J., K.H. Beard, R.B. Primack, V. Devictor, **A.E. Bates** (2019) Are killer bees good for coffee? The contribution of a paper's title and other factors to its future citations. *Biological Conservation* 229: A1-A5
7. **Bates, A.E.**, B. Helmuth, M.T. Burrows, M.I. Duncan, J. Garrabou, T. Guy-Haim, F. Lima, A.M. Queiros, R. Seabra, R. Marsh, Y. Belmaker, N. Bensoussan, Y. Dong, A. Mazaris, D. Smale, M. Wahl, G. Rilov (2018). Biologists ignore ocean weather at their peril. *Nature* 560: 299-301
8. De Palma, A., K. Sanchez-Ortiz, P.A. Martin, A. Chadwick, G. Gilbert, **A.E. Bates**, L. Börger, S. Contu, S.L.L. Hill, A. Purvis (2018). Challenges with inferring how land-use affects terrestrial biodiversity: study design, time, space and synthesis. *Advances in Ecological Research* 58: 163-199
9. Waldock, C.A., M.A. Dornelas, **A.E. Bates** (2018) Temperature driven biodiversity change: disentangling space and time. *BioScience* 11: 873-884
10. Bruno, J.F., **Bates, A.E.**, C. Cacciapaglia, E.P. Pike, S. Amstrup, R. van Hooonk, S.A. Henson, R.B. Aronson (2018) Climate change threatens the world's marine protected areas. *Nature Climate Change* 8: 499-503
11. Dornelas, M., L. Antao, F. Moyes, **A.E. Bates**, A. Magurran + 234 data contributors (2018) BioTIME: a database of biodiversity time series for the Anthropocene. *Global Ecology and Biogeography* 27: 760-786
12. Day, P., R.D. Stuart-Smith, G.J. Gedgar, **A.E. Bates** (2018) Species' thermal ranges predict changes in reef fish community structure during eight years of extreme temperature variation. *Diversity and Distributions* 24: 1036-1046 [Editor's Pick]
13. Chapman, A.S.A., V. Tunnicliffe, **A.E. Bates** (2018) Both rare and common species make unique contributions to functional diversity in an ecosystem unaffected by human activities. *Diversity and Distributions* 24: 1-11 [Editor's Pick]
14. Campbell, S.J., G.J. Edgar, R.D. Stuart-Smith, G. Soler, **A.E. Bates** (2018) Fishing-gear restrictions and biomass gains for coral reef fishes in marine protected areas. *Conservation Biology* 32: 401-410
15. Stuart-Smith, R.D., G.J. Gedgar, **A.E. Bates** (2017) Thermal limits to the geographic distributions of shallow-water marine species. *Nature Ecology and Evolution* 1: 1846-1852
16. Edgar, G.J., T.J. Alexander, J.S. Lefcheck, **A.E. Bates**, R.J. Thomson, J.E. Duffy, M.J. Costello, R.D. Stuart-Smith (2017) Abundance and local-scale processes contribute to multi-phyla gradients in global marine diversity. *Science Advances* 3: e1700419
17. **Bates, A.E.**, R.D. Stuart-Smith, N.S. Barrett, G.J. Edgar (2017) Biological interactions both facilitate and resist climate-related functional change in temperate reef communities. *Proceedings of the Royal Society B*. **284**: 20170484.

18. Stuart-Smith, R. D., G.J. Edgar, N.S. Barrett, **A.E. Bates** + 20 authors (2017) Continental-scale assessment of biodiversity trends on Australia's rocky and coral reefs. *Biosciences* 67: 134-146
19. Edgar, G.J., **A.E. Bates**, T.J. Bird, A.H. Jones, S. Kininmonth, R.D. Stuart-Smith, T.J. Webb (2016) New approaches to conservation science through scaling up of ecological data. *Annual Review of Marine Science* 8: 435-461
20. Morley, S.A., **A.E. Bates**, M. Lamare, J. Richard, K.D. Nguyen, J. Brown and L.S. Peck (2016) Rates of warming and the global sensitivity of shallow water marine invertebrates to elevated temperature. *Journal of the Marine Biological Association of the United Kingdom* 96: 159-165
21. Stuart-Smith, R.D., G.J. Edgar, N.S. Barrett, S.J. Kininmonth, **A.E. Bates** (2015) Thermal biases and vulnerability to warming in the world's marine fauna. *Nature* 528: 88-92
22. Sunday, J.M., G. Pecl, S. Frusher, A. Hobday, N. Hill, N. Holbrook, G.J. Edgar, R. Stuart-Smith, N. Barrett, T. Wernberg, R. Watson, D.A. Smale, E.A. Fulton, D. Slawinski, M. Feng, B.T. Radford, P.A. Thompson, and **A.E. Bates** (2015) Species traits and climate velocity explain geographic range shifts in an ocean warming hotspot. *Ecology Letters* 18: 944-953
23. Coleman, M.A., **A.E. Bates**, R.D. Stuart-Smith, H.A. Malcolm, D. Harasti, A. Jordan, N.A. Knott, G.J. Edgar, B. Kelaher (2015) Functional traits reveal early changes in marine reserves following protection from fishing. *Diversity and Distributions* 21: 876-887
24. **Bates, A.E.**, T.J. Bird, G. Pecl, S. Frusher, A. Hobday, T. Wernberg, D.A. Smale, J. M. Sunday, R.K. Colwell, N.K. Dulvy, G.J. Edgar, M. Feng, E.A. Fulton, N. Hill, N. Holbrook, B.T. Radford, P.A. Thompson, R. Watson (2015) Distinguishing geographical range shifts from artefacts of detectability and sampling effort. *Diversity and Distributions* 21: 13-22
25. Stuart-Smith, R., **A.E. Bates**, J. Lefcheck, E.J. Duffy, S.C. Baker, R. Thomson, J.F. Stuart-Smith, N.A. Hill, S.J. Kininmonth, L. Airoidi, M.A. Becerro, S.J. Campbell, T.P. Dawson, S.A. Navarrete, G. Soler, E.M.A. Strain, T.J. Willis, G.J. Edgar (2015) The potential of trait-based approaches to contribute to marine conservation. *Marine Policy* 51: 148-150
26. Lee, R.W., K. Robert, M. Matabos, **A.E. Bates**, K.S. Juniper (2015) Temporal and spatial variation in temperature experienced by macrofauna at Main Endeavour hydrothermal vent field. *Deep-Sea Research Part I* 106: 154-166
27. Pecl, G.T., A.J. Hobday, S. Frusher, W.H.H. Sauer and **A.E. Bates** (2014) Ocean warming hotspots provide early warning laboratories for climate change impacts. *Reviews Fish Biology and Fisheries* 24: 409-413
28. Bird, T.J., **A.E. Bates**, J. Lefcheck, N. Hill, S. Wotherspoon, M. Krkosek, R. Stuart-Smith, J. Stuart-Smith, G. Pecl, G. Edgar, R.J. Thomson, N. Barrett, S. Frusher (2014) Statistical solutions for error and bias in global citizen science datasets. *Biological Conservation* 173: 144-154
29. **Bates, A.E.**, N.S. Barrett, R.D. Stuart-Smith, N.J. Holbrook, P.A. Thompson and G.J. Edgar (2014) Resilience and signatures of tropicalization in protected reef fish communities. *Nature Climate Change* 4: 62-67
30. **Bates, A.E.**, G. Pecl, S. Frusher, A. Hobday, T. Wernberg, D.A. Smale, J. M. Sunday, R.K. Colwell, N.K. Dulvy, G.J. Edgar, M. Feng, E.A. Fulton, N. Hill, N. Holbrook, B.T. Radford, P.A. Thompson, R. Watson (2014) Defining and observing stages of climate-mediated range shifts in marine systems. *Global Environmental Change* 26: 27-38

31. Sunday, J.M., **A.E. Bates**, M.R. Kearney, R.K. Colwell, N.K. Dulvy, J.T. Longino and R.B. Huey (2014) Thermal-safety margins and the necessity of thermoregulatory behavior across latitude and elevation. *Proceedings of the National Academy of Sciences* 111: 5610-5615
32. **Bates, A.E.**, C.M. McKelvie, C. Sorte, S. Morley, J. Mondon, T.J. Bird, G. Quinn (2013) Geographical range, heat tolerance, and invasion success of aquatic species across latitude. *Proceedings of the Royal Society B* 280: 20131958
33. Watson, S.A., S.A. Morley, **A.E. Bates**, M.S. Clark, R.W. Day, M. Lamare, S.M. Martin, P.C. Southgate, K.S. Tan, P.A. Tyler, L.S. Peck (2013) Low global sensitivity of metabolic rate in calcified marine invertebrates. *Oecologia* 174: 45-54
34. Stuart-Smith, R., **A.E. Bates**, J. Lefcheck, E.J. Duffy, S.C. Baker, R. Thomson, J.F. Stuart-Smith, N.A. Hill, S.J. Kininmonth, L. Airoidi, M.A. Becerro, S.J. Campbell, T.P. Dawson, S.A. Navarrete, G. Soler, E.M.A. Strain, T.J. Willis, G.J. Edgar (2013) Integrating evenness and functional traits reveals new global hotspots of fish diversity. *Nature* 501, 539-542 [Post-publication peer review by Faculty of 1000; Highlighted in Nature News and Views]
35. **Bates, A.E.**, T.J. Bird, K. Robert, K.L. Onthank, S.K. Juniper, G. Quinn and R.W. Lee (2013) Activity and positioning of eurythermal hydrothermal vent sulphide worms in a variable thermal environment. *Journal of Experimental Marine Biology and Ecology* 448: 149-155
36. Leung, T., **A.E. Bates** (2013) More rapid and severe disease outbreaks for aquaculture in the tropics: implications for food security. *Journal of Applied Ecology* 50: 215-222 [Editor's Choice]
37. Sunday, J.M., **A.E. Bates** and N.K. Dulvy (2012) Thermal tolerance and the global redistribution of animals. *Nature Climate Change* 2: 686-690 [Post-publication peer review by Faculty of 1000; Cover Article]
38. Morley, S.A., S.M. Martin, S.M., **A.E. Bates**, M.S. Clark, J. Ericson, M. Lamare and L.S. Peck (2012) Spatial and temporal variation in the heat tolerance limits of two keystone Southern Ocean invertebrates. *Marine Ecology Progress Series* 450: 81-92
39. Voight, J, R.W. Lee. R, A. Refy, **A.E. Bates** (2012) Scientific gear as a vector for non-native species at deep-sea hydrothermal vents. *Conservation Biology* 26: 938-942
40. Higgins, F., **A.E. Bates**, M. Lamare (2012) Heat tolerance and preference of *Octopus huttoni* (Benham, 1943). *Journal of Thermal Biology* 37: 83-88
41. **Bates, A.E.**, Leiterer, F., Wiedebach, M.L. and Poulin, R. (2011) Parasitized snails take the heat: a case of host manipulation? *Oecologia* 167: 613-621
42. **Bates, A.E.**, T.L. Harmer and C.M. Cavanaugh (2011) Phylogenetic characterization of episymbiotic bacteria hosted by a hydrothermal vent limpet (Lepetodrilidae, Vetigastropoda). *Biological Bulletin* 220: 118-127 [Editor's Pick, featured article on the Biological Bulletin website]
43. Nguyen, K.D., S.E. Morley, C. Lai, M.S. Clark, K.S. Tan, **A.E. Bates** and L.S. Peck (2011) Upper temperature limits of tropical marine ectotherms: Global warming implications. *PLOS ONE* 6: e29340
44. Sunday, J., **A.E. Bates** and N. Dulvy (2011) Global analysis of thermal tolerance and latitude in ectotherms. *Proceedings of the Royal Society B* 278: 1823-1830 [Post-publication peer review by Faculty of 1000; 4<sup>th</sup> most cited article in PRSB in 2011]

45. **Bates, A.E.**, R.W. Lee, V. Tunnicliffe and M. Lamare (2010) Deep-sea hydrothermal vent animals select cool fluids in a variable thermal environment. *Nature Communications* 1: 14 [Featured article with featured image on the Nature website]
46. **Bates, A.E.**, M. Lamare, R. Poulin (2010) Spatial variation in parasite-induced mortality in an amphipod: shore height versus exposure history. *Oecologia* 163: 651-659
47. **Bates, A.E.**, L. McLean, P. Laing, L. Raeburn, C. Hare (2010) Specificity in cnidarian-hosted symbioses: *Anthopleura* species from the Pacific Northeast host different algal types in similar habitats. *Biological Bulletin* 218: 237-247
48. **Bates, A.E.**, W.B. Stickle, C.D.G. Harley (2010) Impact of temperature on an emerging parasitic disease between a sperm-feeding scuticociliate and Northeast Pacific sea stars. *Journal of Experimental Marine Biology and Ecology* 384: 44-50
49. **Bates, A.E.**, B.J. Hilton, C.D.G. Harley (2009) Effects of temperature, season and locality on wasting disease in the keystone predatory sea star, *Pisaster ochraceus*. *Diseases of Aquatic Organisms* 86: 245-251
50. **Bates, A.E.** (2008) Size and sex-based habitat partitioning by *Lepetodrilus fucensis* near hydrothermal vents on the Juan de Fuca Ridge. *Canadian Journal of Fisheries and Aquatic Sciences* 65: 2332-2341
51. Tunnicliffe, V., J.M. Rose, **A.E. Bates** and N. Kelly (2008) Effects of a parasitic copepod (Chitonophilidae, Cyclopoida) on a hydrothermal vent limpet (Lepetodrilidae, Vetigastropoda). *Parasitology* 135: 1281-1293 [Editor's Pick, featured article on the journal cover]
52. Lloyd, M. and **A.E. Bates** (2008) Influence of density-dependent food consumption, foraging and stacking behaviour on the growth rate of the Northern abalone, *Haliotis kamtschatkana*. *Aquaculture* 277: 24-29
53. **Bates, A.E.** (2007) Feeding strategy, morphological specialization and the presence of bacterial symbionts in lepetodrilid gastropods from hydrothermal vents. *Marine Ecology Progress Series* 347: 87-99
54. **Bates, A.E.** (2007) Persistence, morphology and nutritional state of a gastropod hosted bacterial symbiosis in different levels of hydrothermal vent flux. *Marine Biology* 152: 557-568
55. DeChaine, E.G., **A.E. Bates**, C.M. Cavanaugh and T.M. Shank (2006) Off-axis symbiosis found: characterization and biogeography of bacterial symbionts of *Bathymodiolus* mussels from Lost City hydrothermal vents. *Environmental Microbiology* 8: 1902-1912 [Headlined on journal cover]
56. Bates, A.E., V. Tunnicliffe and R.W. Lee (2005) Role of thermal conditions in habitat selection by hydrothermal vent gastropods. *Marine Ecology Progress Series* 305: 1-15 [Featured article]
57. **Bates, A.E.** (2000) Intertidal distribution of two algal symbionts hosted by *Anthopleura xanthogrammica* (Brandt, 1835). *Journal of Experimental Marine Biology and Ecology* 249: 249-262

## OTHER PUBLICATIONS

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1. Costello, M.J., Z. Basher, L. McLeod, I. Assad, S. Claus, F. Hernandez, J. Mees, L. Vandepitte, M. Yasuhara, H. Gislason, M. Edwards, W. Appeltans, H. Enevoldsen, G. Edgar, P. Miloslavich, S. de Monte, I. Sousa Pinto, **A.E. Bates**

- (2016) Methods for the study of marine biodiversity. The GEO Handbook on Biodiversity Observation Networks. Chapter 10, 129-163.
2. Marzin, C., D., Benzaken, M. del Mar Otero, F. Quemmerais, **A.E. Bates**, M. Brown, S. Hutto, R. Brock. Marine Protected Areas and adaptation to climate change: How can MPAs increase climate resilience? In: Simard, F., Laffoley, D., Baxter J.M. (editors) 2016. Marine Protected Areas and Climate Change: Adaptation and Mitigation Synergies, Opportunities and Challenges. Gland, Switzerland: IUCN.
  3. Barrett, N., **A.E. Bates**, M. Beger, R. Stuart-Smith, C. Syms, N. Holbrook, N. Knott, D. Booth, B. Kelaher, C.D. Buxton, G. Edgar G (2014) Adaptive management of temperate reefs to minimise effects of climate change: developing new effective approaches for ecological monitoring and predictive modelling. 205. Fisheries Research and Development Corporation.

## RESEARCH GROUP MEMBERS

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1. 2018-2020: An ecophysiological framework for predicting the response of cold-water corals and sponges to multiple climate stressors (Dr. Jackson Chu, Post-doctoral Fellow)
2. 2018-2022: Interactions between climate and fisheries-driven regime changes on coastal beta diversity in the northwest Atlantic (Brittany Conradi, PhD)
3. 2018-2022: Physiological diversity in cold-water rocky reef communities mediates assemblage structures (Jasmin Schuster, PhD).
4. 2018-2020: Role of winter cold tolerance in limiting the impacts of the invasive green crab (Brandy Biggar, MSc)
5. 2018-2020: Winter versus summer energetics in constraining population dynamics in North Atlantic seabirds (Ceren Richards, MSc)
6. 2014-2017: Do MPAs increase physiological resilience in South African line fish; *Chrysoblephus laticeps* (Murray Duncan, Commonwealth PhD Scholarship)
7. 2014-2017: A functional trait perspective on the biodiversity of hydrothermal vent communities (Abbie Chapman, PhD)
8. 2014-2018: Shifting the paradigm: testing the ecological relevance of oxygen and capacity limited thermal tolerance (Rose Stainthrop, PhD)
9. 2015-2019: Global biodiversity dynamics: understanding the ecological impacts of climate warming (Conor Waldock, PhD)
10. 2015-2019: Quantifying the integrity, resilience and stability of global biomes (Robert Cooke, PhD)
11. 2016-2020: The influence of environmental variability on the ecological performance of native and non-native marine organisms (Ella McKnight, PhD)

## EDITORIAL SERVICE

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- Associate Editor: Global Ecology and Biogeography (10 articles per year since 2015)
- Editor: Biological Conservation (200 articles per year since 2016)
- Associate Editor: Ecology Letters (20 articles per year since 2018)
- Editor: Oceanography and Marine Biology Annual Review (1 review per year since 2018)
- Associate Editor: Peer J (~3 articles per year since 2015).

- Guest Editor: Special edition on climate warming hotspots in the ocean in *Fish and Fisheries Biology* (2013-2014)

## GRANTS

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1. PI: Canada Research Chairs (2017-2022) Marine Physiological Ecology. \$500,000
2. PI: Memorial University of Newfoundland Seed, Bridge and Multidisciplinary Fund (2018-2019) Multi-stressor facility. Building the capacity of Newfoundland to monitor rocky reefs. \$9,640
3. PI: Canadian Foundation for Innovation, John R. Evans Leaders Fund (2018-2020) Multi-stressor facility. \$50,000
4. PI: Newfoundland and Labrador Innovation Council, Leverage Research and Development Fund Total (2018-2020) Multi-stressor facility. \$68,894
5. PI: Synthesis Centre of Biodiversity Sciences, sDiv (2018) Writing support for: A functional trait perspective on the global biodiversity of hydrothermal vent communities. €3,500 EUR
6. Project Partner: Norwegian Research Council, (2018-2020) Barents Sea in change - consequences for ecosystem structure, behavior, and vulnerability to human impact. €1,000,000 EUR
7. PI: Synthesis Centre of Biodiversity Sciences, sDiv (2016) A functional trait perspective on the global biodiversity of hydrothermal vent communities. €30,000 EUR
8. Col: National Geographic (2016) Deep Diversity in the Mariana Backarc: Connecting the Hot Vent Dots. \$10,000 US
9. Project Contributor: NSERC, Canadian Healthy Oceans Network II CHONe 2015-2020
10. Project Partner: NERC (January, 2015) Standard Grant, How does global land use reshape ecological assemblages over time? £729,816 UK
11. Co-I: Climate Change Office (2012) Increasing reporting capacity to detect shifting marine species and the development of a qualitative report card for resource managers. \$22,000 AUS
12. External Investigator: National Centre for Excellence in Desalination (2012) Assessing and mitigating environmental impacts of SWRO outfalls on key benthic marine organisms. \$502,800, AUS
13. Co-I: Fisheries and Forestry and the Fisheries Research and Development Corporation (2012) Extending the REDMAP pilot to southeast Australia: using citizen science for engagement and early indication of potential new species. Department of Agriculture. \$60,000 AUS
14. Project Contributor: Australian National Network in Marine Science (2011) Issues in Marine Science: Developing sustainable strategies for range-shifting species. \$275,000 AUS

## AWARDS

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| 2017 | Editor of the Year, <i>Global Ecology and Biogeography</i>        |
| 2017 | "Best Feedback" Award, University of Southampton                  |
| 2015 | Nomination: Outstanding Lecturer Award, University of Southampton |
| 2008 | Postdoctoral Fellowship (NSERC, Canada) \$80,000                  |
| 2006 | Best Departmental Talk Award (UVic) \$500                         |

2005	AAAS Annual Membership (Research: UVic)	\$150
2004&2005	Howard E. Petch Scholarship (Research: UVic)	\$5,000
2004	Maritime Awards Society of Canada (Research: UVic)	\$10,000
2004&2005	R. Baker Memorial Scholarship (Research: UVic)	\$2,000
2003	Postgraduate Scholarship B (NSERC, Canada)	\$50,000
2002&2003	M. de Burgh Memorial Scholarship (Academic: UVic)	\$2,000
2002&2003	W.G. Fields Memorial Scholarship (Teaching: UVic)	\$4,000
2001	Post-graduate Scholarship A (NSERC, Canada)	\$34,000
2001-2005	President's Research Scholarship (Research: UVic)	\$4,000/yr

## WORKSHOPS

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1. Invited Participant: *The impact of future climate scenarios on Marine Protected Areas* (scheduled for June 2019) King Abdullah University of Science and Technology, Saudi Arabia
2. Invited Participant: *Advancing marine conservation in the European and contiguous seas* (March 2018) COST, European Cooperation in Science and Technology, Haifa, Israel
3. Invited Participant: *How temperature, body size, and dispersal affect life in the ocean* (May 2018 and March 2019) Royal Society of New Zealand, Catalyst Fund, Auckland, NZ and Puerto Montt, Chile.
4. Co-convener: *Will impacts of global change be greater than the sum of its parts?* (July 2015 and May 2016) Borchard Foundation, Nantes, France and Penryn, Cornwall
5. Invited Participant: *Quantifying biodiversity change through time* (sCHANGE) (March 2016) German Centre for Integrative Biodiversity Research, Leipzig, Germany
6. Invited Participant: *DIPS/OBIS scientific data analysis workshop* (December 2015), Intergovernmental Oceanographic Commission, Brussels, Belgium
7. Participant: *Workshop on inter-relations between Marine Protected Areas and climate change* (April 2015). IUCN, Paris, France
8. Invited Participant: *Models of global biodiversity* (January 2015). NHM, London, UK
9. Invited participant: *Review of the need to designate highly protected marine areas* (October 2014). Cefas, London, UK
10. Invited participant: *Managing marine resources on the move* (August 2014). Glasgow, UK
11. Invited participant: *Science for policy workshop* (May 2014). Southampton, UK
12. Participant: *EuroMarine+ launch meeting* (April 2014), Paris, France
13. Invited participant: *Climate change adaptation – a strategy for Australia's marine biodiversity & fisheries* (September 2013). Fisheries Research and Development Corporation, Melbourne, Australia
14. Invited participant: *Global human impacts on inshore ecosystems* (November 2012). Maria Island National Park, Darlington, Australia
15. Co-convener: *Climate change and range shifts in the ocean: detection, prediction and adaptation* (May 2012). Effects of the Climate Change on the World's Oceans, Yeosu, Korea



16. Invited participant: *Implications of future climate to Victoria's environment and marine resources* (March 2012). Department of Sustainability and Environment, Melbourne, Australia
17. Co-convener: *Synthesis of biophysical processes related to range shifting species in Southeast and Southwest Australia* (February 2012). University of Tasmania, Hobart, Australia
18. Invited participant: *Preparing for climate change in marine systems in Australia and India* (January 2012). University of Tasmania, Hobart, Australia
19. Invited participant: *Advancing databases for global biodiversity assessments* (December 2011). In association with the 25<sup>th</sup> International Congress on Conservation Biology, University of Auckland, Auckland, New Zealand
20. Invited participant: *Marine climate change in Southeast Australia* (November 2011). University of Tasmania, Hobart, Australia

### **INVITED PRESENTATIONS AT SCIENTIFIC MEETINGS**

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1. Keynote: **A.E. Bates** (2018) *Ocean variability and biodiversity change*. Science Atlantic Meeting. St. John's, Canada
2. Keynote: **A.E. Bates** (2018) *Three "grand" challenges for predicting marine biodiversity change in the Anthropocene era*. World Congress on Marine Biodiversity, Montreal, Canada
3. Keynote: **A.E. Bates** (2017) *Functional shifts in rocky reef biodiversity: interacting effects of ocean warming and protection across trophic levels*. Predicting Biodiversity Change and Impacts on Ecosystem Function, British Ecological Society, London, UK
4. Keynote: **A.E. Bates** (2016) *Thermal safety, environmental variability and geographic distributions*. British Ecological Society Aquatic Sciences and Macroecology Meeting. London, UK
5. Invited Speaker: **A.E. Bates** (2016) *Challenges and Directions for Biological Monitoring in Our Ocean*. Building a European Building a European Ocean Observing System – European Parliament, Brussels, <http://eurogoos.eu/events/eoos-event-european-parliament/>
6. Invited Speaker: **A.E. Bates** (2016) *Existing Long-term Biological Data. Essential Ocean Variables' for monitoring and assessment of marine biodiversity and ecosystems health'*, AtlantOS General Assembly, Kiel, Germany
7. Invited Speaker: **A.E. Bates**, G. Edgar, R. Stuart-Smith (2016) *Continental-scale assessment of biodiversity trends and indicators for Australia's rocky and coral reef ecosystems*. GEO BON Open Science Conference and All Hands Meeting. Biodiversity and Ecosystem Services Monitoring for the 2020 Targets and Beyond. Leipzig, Germany
8. Keynote: **A.E. Bates**, G. Edgar, R. Stuart-Smith, N. Barrett (2015) *Rocky reef biodiversity in transition: interacting effects of ocean warming and protection across trophic levels*. Aquatic Biodiversity and Ecosystems: evolution, interactions & global change. Liverpool, UK
9. Inaugural Talk: **A.E. Bates**, G. Edgar, R. Stuart-Smith, N. Barrett (2015) *Thinking big, and even bigger: biodiversity, conservation and global change in marine systems*. Festival Nacional Biodiversidad 2015. Tenerife, Spain
10. Keynote: Becerro, M.A., N. Barrett, N., **A.E. Bates**, S. Campbell, G. Edgar, R. Riera, R. Stuart-Smith (2013) *Biodiversity challenges out of the blue*. BiodivERsA 2011 Kick-Off Meeting. Almería, Spain

## UNDERGRADUATE TEACHING EXPERIENCE

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### Higher Academy of Education Teaching Fellow, UK

- Postgraduate certificate in teaching and learning (2015), University of Southampton, UK

### University of Southampton, Ocean and Earth Sciences, UK

- *Coordinator: Marine Biology and Oceanography MSci* (2014, 2015, 2016). Integrated masters degree in marine biology
- *Coordinator: Deep Sea Ecology* (2015, 2016). Explored the physical environment of the deep sea including hydrothermal vents and considers the patterns of fauna of the deep sea in this framework
- *Deliver 8+ Lectures: Functional Ecology, Marine Ecology, Molecular Ecology, Marine Field Ecology* (2014-2016)
- *Delivery Statistics Support Workshops* (2014-2016): Marine Field Ecology

### Bamfield Marine Sciences Centre, University of Victoria, Canada

- *Coordinator: Experimental Field Ecology* (2008). Provided practical, hands-on experience in statistical analyses and experimental design in field settings
- *Coordinator: Marine Invertebrate Symbioses* (2010). Introduced the diversity, evolution, ecology, physiology, and morphology of symbiotic associations with a focus on marine invertebrate hosts
- *Coordinator: Marine Population Ecology and Dynamics* (2006, 2007, 2008). Introduced students to life-history strategies, population dynamics and ecological principles using field, lab and modeling approaches
- *Coordinator: Directed Studies* (2005). Guided independent research projects over four months; data from six projects were included in peer-reviewed published articles where the students were authors
- *Coordinator: Seminars and Papers* (2005). Led a discussion-based course to debate issues stimulated by journal articles and participation in formal seminars by invited guest speakers

## ADDITIONAL RESEARCH EXPERIENCE

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### Antarctic research

Three-week expedition at Scott Base, McMurdo Sound to quantify upper thermal limits of juveniles versus adults of the benthic invertebrate fauna, facilitated by Antarctica New Zealand

### Hydrothermal Vent research expeditions

Participation in 11 research cruises to deep-sea hydrothermal vent sites in the Pacific Ocean; responsibilities included planning and directing dive operations, completing dive logs, assisting fellow researchers and writing cruise reports

Year	Hydrothermal System	Collaborating Institution
2016	Mariana Backarc	Schmidt Ocean Institute, NOAA, UVic
2008/03/02/01	Endeavour Seamount	Washington State & Harvard Universities
2003/02/01	Axial Volcano	NOAA
2003	East Pacific Rise	Woods Hole Oceanographic Institute
2003	Guaymas Basin	Monterey Bay Aquarium Research Institute
2002	Explorer Segment	NOAA