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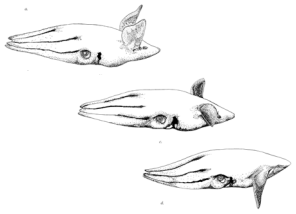

## APPOINTMENTS

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| 2016-present | Professor, College of Marine Science, University of South Florida |
| 2003-2015 | Professor, Biological Sciences Department, University of Rhode Island |

## EDUCATION

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| 2001-2003 | Postdoctoral Research Fellow.<br>Monterey Bay Aquarium Research Institute, Moss Landing, CA.<br>*Metabolism of marine animals: implications for a high-$CO_2$ world*.<br>Advised by Drs. B. Robison and J. Barry. |
| 1999-2001 | Postdoctoral Research Fellow.<br>Rosenstiel School of Marine and Atmospheric Science, University of Miami, FL.<br>*Acid-base balance in marine animals in relation to oceanic carbon dioxide.*<br>Advised by Dr. P. Walsh. |
| 1998 | Doctor of Philosophy.<br>Ecology, Evolution and Marine Biology, University of California, Santa Barbara, CA.<br>*Metabolism and locomotion of cephalopods in relation to habitat depth*.<br>Advised by Dr. James J. Childress, R. Suarez, F. G. Hochberg and A. Alldredge. |
| 1992 | Bachelor of Arts in Biological Sciences.<br>University of California, Santa Barbara, CA. |

## ADDITIONAL TRAINING

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| 2008 | *Optical Microscopy*, Marine Biological Laboratory in Woods Hole, MA. |
| 1999 | *Antarctic Biology Training Course*. National Science Foundation, US Antarctic Program. |

## RESEARCH INTERESTS

- Integrative physiology
- Pelagic Ecology
- Biological oceanography
- Organismal response to ocean warming, deoxygenation and acidification
- Evolution

## FIELD EXPERIENCE

- Principal Investigator, McMurdo/Palmer Station, Antarctica, 7 seasons
- Chief Scientist, 16 Oceanographic research cruises
- Field team member on > 40 Oceanographic research cruises (1992-2018)
- ~100 dives with manned and remotely operated submersibles
- Research certified SCUBA diver (130 ft) with more than 400 dives

## MAJOR GRANT SUPPORT

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|---|---|
| In prep | NSF Biological Oceanography<br>Does oxygen supply and demand constrain biogeography and depth distribution in gelatinous zooplankton? |
| In prep | NSF Polar Programs<br>Effect of ocean deoxygenation, acidification and warming on oxygen supply and demand in a foundational Antarctic species, *Euphausia superba*. |
| In prep | NSF Integrative Biology<br>Effects of ocean acidification on predator-prey behaviors in a unique monophagous pteropod model system.<br>$375,727 (USF Budget) |
| Pending | NSF Biological Oceanography<br>Collaborative Research: Does the unique metabolic temperature sensitivity constrain biogeography for diel vertical migrators.<br>$394,832 (USF budget) |
| Pending | Deep Green<br>Effect of deep-sea mining sediment plume on physiological oxygen supply in marine animals. Drazen, J. Co-PI (pre-proposal submitted) |
| Declined | NSF Integrative Organismal Systems<br>Collaborative Research: Disentangling the effects of temperature, oxygen, and aerobic scope on growth performance in fish<br>$250,401 (USF budget)<br>Bockus, A. PI, LUMCON |
| Pending | NSF Integrative Organismal Systems (IOS)<br>A new framework for understanding the evolution of oxygen supply in animals.<br>$811,960 (USF Budget) |
| Declined | NSF Biological Oceanography (BIO OCE)<br>Collaborative Research: Predicting metabolically available habitat for the Humboldt Squid, *Dosidicus gigas.*<br>$663,405 (USF Budget) |
| 2021 | FIO Shiptime Proposal<br>Pelagic Ecology: a ship-based course benefiting the graduate and undergraduate Marine Science Programs at the University of South Florida.<br>5 days shiptime awarded ($44,000 equivalent) |
| 2020-2024 | Office of Naval Research. Next generation sensor systems for natural oceanic bioluminescence assessments. Twardowski, PI. Harbor Branch Oceanographic Institute.<br>$248,630 (USF Subaward). |
| Declined | NSF Polar Programs<br>Antarctic deoxygenation and acidification: metabolically available habitat for krill and other key ecosystem components. C. Langdon, U Miami – Co-PI. |
| Declined | NSF Polar Programs |

Effects of ocean acidification on the neurophysiological underpinnings of predator-prey behaviors in a unique monophagous pteropod model system.
$375,727 (USF Budget)

Declined — NOAA RESTORE
The impact of multiple stressors on food web structure and dynamics and/or habitat quality and quantity and the implications for living marine resources. Pre-proposal. Ainsworth, lead PI. Full Proposal Invited

2019-2021 — California Seagrant – Ocean Protection Council
An ecophysiological framework to assess hypoxia driven habitat loss in the California Current Ecosystem. $123,068 USF budget.

2018 — FIO Shiptime Proposal
Pelagic Ecology: a ship-based course benefiting the graduate and undergraduate Marine Science Programs at the University of South Florida.
5 days shiptime awarded

2018-2021 — National Oceanic Atmospheric Administration (NOAA)
Development of a Framework to Assess Biological Vulnerability to Ocean Hypoxia in the California Current System
$1.1M total budget. $265,000 USF budget

2017 — FIO Shiptime Proposal
Pelagic Ecology: a ship-based course benefiting the graduate and undergraduate Marine Science Programs at the University of South Florida.
5 days shiptime awarded

2015-2018 — NOAA-OAR-CPO-2014-2004106 – Option 1. *Indicators of habitat change affecting three key commercial species of the U.S. Northeast Shelf: A design to facilitate proactive management in the face of climate change*. $402,000 (Seibel budget). PI: Vincent Saba (NEFSC). Co-PIs: Brad Seibel (University of Rhode Island), Josh Kohut (Rutgers), Grace Saba (Rutgers), Enrique Curchitser (Rutgers), John Manderson (NEFSC), Jon Hare (NEFSC), David Richardson (NEFSC), Greg DiDomenico (Garden State Seafood Association), Peter Moore (MARACOOS).

2015-2018 — National Science Foundation, Biological Oceanography. *A metabolic index to predict the consequences of expanding oxygen minimum zones for midwater ecosystems.*
$450,000, Seibel budget.
Lead PI, B. Seibel, with co-PIs C. Deutsch, C. Roman and K. Wishner

2014 — Rhode Island Endeavor Program 2013-14. *A ship-based course benefiting the Marine Biology program at the University of Rhode Island.* 6 days at sea aboard the *R/V Endeavor.*
Lead PI, B. Seibel.

2013-2016 — National Science Foundation, Ocean Acidification. *Ocean Acidification: Oxygen-limited $CO_2$ tolerance in Squids (Ommastrephidae and Loliginidae).* $393,279.
Lead PI, B. Seibel.

2013-2016 — National Science Foundation, Office of Polar Programs. *Synergistic effects of elevated carbon dioxide ($CO_2$) and temperature on the metabolism, growth, and reproduction of Antarctic krill (Euphausia superba).* $250,861.
Lead PI, G. Saba (Rutgers Univ.), with Co-PI, B. Seibel.

2009-2014 — Office of Naval Research. *Multidisciplinary University Research Initiative: Biological Response to the Polarized Underwater Light Field*. $700,000 (URI budget).

Lead PI, M. Cummings (U. T. Austin), with Co-PI, B. Seibel and 10 others.

2011-2012 Champlin Foundation*: Scientific Diving as a Tool for Education, Research, and Outreach.* $128,500.
Lead PI, A. Watson (URI), with Co-PI, B. Seibel and 4 others.

2009-2012 National Science Foundation, Biological Oceanography. *Midwater animal models: optical measurement of metabolic transitions in transparent biota.* $210,000
Lead PI, B. Seibel, with Co-PI, S. Johnsen (Duke University).

2009-2012 National Science Foundation, Biological Oceanography. *Collaborative Research: Hypoxia and the ecology, behavior and physiology of jumbo squid.* $330,944.
Lead PI, B. Seibel, with Co-PI, W. Gilly (Hopkins Marine Station).

2006-2009 National Science Foundation, Polar Programs. *Collaborative Research: RUI – Impacts of elevated $PCO_2$ on pteropod molluscs in the Ross Sea.* $189,897.
Lead PI, V. Fabry (California State University), with Co-PI, B. Seibel.

2006-2009 National Science Foundation, Biological Oceanography. *Zooplankton in the Redoxcline of the Cariaco Basin: Impact on biogeochemical cycling*. $218,561.
Lead PI, K. Daly (U. South Florida), with Co-PIs, B. Seibel and K. Wishner (URI).

2005-2008 National Science Foundation, Biological Oceanography. *Physiological basis of vertical migration in the jumbo squid, Dosidicus gigas*. $303,957.
Lead PI, B. Seibel, with Co-PI W. Gilly (Stanford University, Hopkins Marine Station).

2005 State of Rhode Island, Endeavor Program. *Blue water optical studies in support of Rhode Island private industry, URI academics, RI.* $70,000.
Lead PI, J. Sullivan (URI), with Co-PIs, B. Seibel and H. Dierssen (U. Connecticut).

2005-2007 NOAA-NERRS. *Effects of winter temperature on population dynamics of Mnemiopsis leidyi in Narragansett*. $40,000.
Lead PI, B. Sullivan (URI) ,with Co-PIs, B. Seibel and J. Costello (Providence College).

2001-2003 National Science Foundation/Polar Programs. *Temperature Compensation in Antarctic Pteropods.* $164,180.
Lead PI, R. Dudley (UC Berkeley) with Co-PIs, B. Seibel and J. Rosenthal.

## MINOR GRANT SUPPORT

2018 University of South Florida, Proposal Enhancement Grant. $7000.

2013 Company of Biologists Small Meetings Grant - World Congress of Malacology, Azores. Symposium on *Climate Change and Molluscan Ecophysiology,* $4000.

2008 University of Rhode Island Council for Research, Proposal Development Program. *Optical physiology of transparent animals,* $3,935.

2004 University of Rhode Island Council for Research, Proposal Development Program. *Temperature acclimation of locomotory system in pteropod mollusks*, $8,890.

2003 Curriculum Improvement Grant, University of Rhode Island, $2000.

1999 Journal of Experimental Biology Travelling Fellowship, $1500.

1998 Graduate Dissertation Fellowship, Graduate Division, University of California, Santa Barbara, $4000.

1998 Nejat B. Ezal Memorial Fellowship, $4000.

1997 Instructional Improvement, Academic Senate Committee on Effective Teaching, University of California, Santa Barbara, $1200.

## CITATIONS METRICS (GOOGLE SCHOLAR)

Full list of publications may be found at: http://goo.gl/RdqIA

**Total Citations**: 8639
**h-index**: 39 (largest number "h", such that h publications have at least h citations)
**i10-index**: 80 (number of publications with at least 10 citations)
**i100-index:** 19 (number of publications with at least 100 citations)

## PEER-REVIEWED PUBLICATIONS

Herrando-Perez, S., Vieites, D. R., Araujo, M. B. and **B. A. Seibel**. Novel data needed for the progress of macroecology. *Glob. Ecol. Biogeogr*. Submitted.

Saba, G. E., Bockus, A. B., C. T. Shaw and **B. A. Seibel**. Combined effects of ocean acidification and elevated temperature on feeding, growth and physiological processes of Antarctic krill (*Euphausia superba*). *Mar. Ecol. Prog. Ser.* Submitted.

Shedler, S., H., **B. A. Seibel**, Griffin, D. and H. Judkins. Vecchione and. Vertical distribution and biogeography of pteropod mollusks in the Gulf of Mexico. *J. Molluscan Studies*. In revision.

Gupta, A., H. Hadj-Moussa, R. Al-attar, **B. A. Seibel**, and K. B. Storey. Hypoxic jumbo squid activate neuronal apoptosis but not MAPK or antioxidant enzymes during oxidative stress. *Physiological Biochemical Zoology*. In press.

**Seibel, B. A.,** Andres, A., Birk, M. A., Shaw, C. T., Timpe, A. and C. Welsh. 2021. Oxygen supply capacity breathes new life into the critical oxygen partial pressure ($P_{crit}$). *Journal Experimental Biology*. In press.

Clark, K., H., Vecchione, M., **B. A. Seibel** and H. L. Judkins. 2020. Species abundance, spatial and vertical distributions, and eye-size trends of large heteropods (Pterotracheidae and Carinariidae) in the northern Gulf of Mexico. *Amer. Malacol. Bull*. 38, 73-82. https://doi.org/10.4003/006.038.0201

Deutsch, C., J. L. Penn, and **B. A. Seibel**. 2020. Metabolic trait diversity shapes marine biogeography. *Nature.* DOI: 10.1038/s41586-020-2721-y.

Howard, E. H., J. L. Penn, H. Frenzel, **B. A. Seibel**, D. Bianchi, L. Renault, F. Kessouri, M. A Sutula, J. C. McWilliams, and C. Deutsch. 2020. Climate driven aerobic habitat loss in the California Current System. *Science Advances.* 6: eaay3188.

**Seibel, B. A.** and C. Deutsch. 2020. Oxygen supply capacity in animals evolves to meet maximum demand at the current oxygen partial pressure regardless of size or temperature. *J. Exp. Biol.* 10.1242/jeb.210492

Wishner, K. F., **Seibel, B. A**., and D. Outram. 2020. Ocean Deoxygenation and Copepods: Coping with Oxygen Minimum Zone Variability. *Biogeosciences*. 17, 2315–2339.

Bockus, A. B., LaBreck, C. J., Camberg, J. L. and **B. A. Seibel**. 2020. Thermal range and physiological tolerance mechanisms in two shark species from the Northwest Atlantic. *Biol. Bull*. 238: 131–144.

Melzner, F., L. Tomanek and **B. A. Seibel.** 2020. Ocean acidification impacts on coastal invertebrates. Frontiers in Marine Science. *Ann. Rev. Mar. Sci*. 12:12.1–12.25

**Seibel, B. A**. and Wishner, K. F. 2019. Ch. 8.1 Mesopelagic Community response to deoxygenation. In *IUCN: Ocean deoxygenation: Everyone's problem*. Laffoley, D. and J. M. Baxter, eds.

Roman, C., J. Warren, E. Cordes and **B. A. Seibel**. 2019. Midwater acoustic echosounding with the Wire Flyer towed profiling vehicle. *Oceanography* 32: 126.

Slesinger, E., A. Andres, R. Young, **B. A. Seibel**, V. Saba, B. Phelan, J. Rosendale, D. Wieczorek, G. Saba. 2019. The effect of ocean warming on black sea bass (*Centropristis striata*) aerobic scope and hypoxia tolerance. PLoS ONE 14(6): e0218390. https://doi.org/10.1371/journal.pone.0218390

Birk, M. A., Mislan, A., and **B. A. Seibel**. 2019. Pelagic octopod response to hypoxia in oxygen minimum zones. *Deep-sea Res*. https://doi.org/10.1016/j.dsr.2019.04.017

Regan, M. D., M. Mandic, R. S. Dhillon, G. Y. Lau, A. P. Farrell, P. M. Schulte, **B. A. Seibel**, B. Speers-Roesch, G. R. Ultsch, J. G. Richards. 2019. Don't throw the fish out with the respirometry water – Correspondence on *JEB* 221(22), 163717. *J. Exp. Biol*. 222: jeb200253 doi: 10.1242/jeb.200253

Meath, B., Peebles, E. B., **Seibel, B. A**. and H. Judkins. 2019. Stable Isotopes in the Eye Lenses of *Doryteuthis plei* (Blainville 1823): Exploring natal origins and migratory patterns in the Eastern Gulf of Mexico. *Continental Shelf Research*. https://doi.org/10.1016/j.csr.2018.12.013.

Wishner, K. F., **B. A. Seibel**, C. Roman, C. Deutsch, D. Outram, C. T. Shaw, M. A. Birk, K. A. S. Mislan, T. J. Adams, D. Moore, S. Riley. 2018. Ocean deoxygenation and zooplankton: Very small oxygen differences matter. *Science Advances* 4, eaau5180. *Paper of the Year, Deep-sea Biology Society.*

Birk, M., Dymowska, A. E. and **B. A. Seibel**. 2018. Do squids breathe through their skin? *J. Exp. Biol*. 221, jeb185553. doi:10.1242/jeb.185553.

Birk, M. A., McLean, E. L. and **B. A. Seibel**. 2018. Ocean acidification does not limit squid metabolism via blood oxygen supply. *J. Exp. Biol.* 221, jeb187443. doi:10.1242/jeb.187443.

McLean, E. Katenka, N. V. and **B. A. Seibel**. 2018. Response of molting *Homarus americanus* to ocean acidification projections. *Marine Ecology Progress Series*. 596: 113–126.

Hadj-Moussa, H., Logan, S. M., **B. A. Seibel.** and K. B. Storey. 2018. Potential Role for MicroRNA in Regulating Hypoxia-Induced Metabolic Suppression in the Jumbo Squid? *BBA-Gene Regulatory Mechanisms*. 1861: 586–593.

Brietburg et al. 2018. Declining oxygen in the global ocean and coastal waters. *Science* 359. eaam7240.

Seibel, B. A., Luu, B. E., Tessier, S. N. Towanda, T., and K. B. Storey. 2018. Metabolic suppression in the pelagic crab, *Pleuroncodes planipes*, in oxygen minimum zones. *Comp. Biochem. Physiol*. 224: 88-97. 10.1016/j.cbpb.2017.12.017.

Haddock, S. H. D. et al. 2017. Insights into the biodiversity, behavior, and bioluminescence of deep-sea organisms using molecular and maritime technology. *Oceanogr.* 30: 38-47.

Bockus, A. and **B. A. Seibel**. 2017. Synthetic capacity does not predict elasmobranchs' ability to maintain trimethylamine oxide without a dietary contribution. *Comp. Biochem. Physiol. A*. https://doi.org/10.1016/j.cbpa.2017.12.008

Ambriz-Arreolaa, I., Gomez-Gutierrez, J., Fanco-Gordo, M., Palomares-Garcia, R., Sanchez-Velasco, L., Robison, C. J., and **B. A. Seibel**. 2017. Vertical pelagic habitat of euphausiid species assemblages in the Gulf of California. *Deep-Sea Res. Part I*. http://dx.doi.org/10.1016/j.dsr.2017.03.008

Birk, M. A., Paight, C. and **Seibel, B. A.** 2017. Observations of multiple pelagic egg masses from small-sized jumbo squid (*Dosidicus gigas*) in the Gulf of California. *Journal of Natural History*. 51: 2569-2584. DOI: 10.1080/00222933.2016.1209248

Carey, S., Olsen, R., Bell, K.L., Ballard, R., Dondin, F., Roman, C., Smart, C., Lilley, M., Lupton, J., **Seibel, B. A.** and Cornell, W., 2016. Hydrothermal venting and mineralization in the crater of Kick'em Jenny submarine volcano, Grenada (Lesser Antilles). *Geochemistry, Geophysics, Geosystems*. 17: 1000-1019.

**Seibel, B. A**., Schneider, J., Wishner, K., Kaartvedt, S., and K., Daly. 2016. Hypoxia tolerance and metabolic suppression in oxygen minimum zone euphausiids: Implications for ocean deoxygenation and biogeochemical cycles. *Integr. Comp. Biol*. doi:10.1093/icb/icw091

**Seibel, B. A**. 2016. Cephalopod susceptibility to asphyxiation via ocean incalescence, deoxygenation and acidification. *Physiology*. 31: 418–429.

Deck, C. A., Bockus, A. B., **Seibel, B. A**., and P. J. Walsh. 2016. Effects of short-term hyper- and hypo-osmotic exposure on the osmoregulatory strategy of unfed North Pacific spiny dogfish (*Squalus suckleyi*). *Comparative Biochemistry and Physiology A*. 193: 29-35.

Bockus, A. and **B. A. Seibel**. 2016. Trimethylamine oxide and lipid levels increase with depth in Hawaiian midwater fishes. *Deep-sea Res* 112: 37-44.

Trueblood, L. A., S. Zylinski, B. H. Robison, **B. A. Seibel**. 2015. An Ethogram of the Humboldt squid *Dosidicus gigas* (Orbigny, 1835) as Observed from Remotely Operated Vehicles. *Behaviour*. 152: 1911-1932.

Deutsch, C., Ferrel, A., **Seibel, B. A.**, H. O. Pörtner, R. B. Huey. 2015. Climate change tightens a metabolic constraint on marine habitats. *Science* 348: 6239 pp. 1132-1135. DOI: 10.1126/science.aaa1605

Brietburg et al. 2015. And on top of all that…Coping with ocean acidification in the midst of many stressors. *Oceanogr*. 28(2): 48-61.

Elder, L. E. and **B. A. Seibel**. 2015. Thermal stress response to diel vertical migration in the hyperiid amphipod, *Phronima sedentaria*. *Comp. Biochem. Physiol.* A. 187: 20-26. doi:10.1016/j.cbpa.2015.04.008.

Elder, L. E. and **B. A. Seibel**. 2015. Ecophysiological implications of vertical migration into oxygen minimum zones for the hyperiid amphipod, *Phronima sedentaria*. *J. Plankton Res*. 0: 1-15. doi:10.1093/plankt/fbv066.

**Seibel, B. A.** 2015. Environmental physiology of the jumbo squid, *Dosidicus gigas*: Implications for changing climate. *Amer. Mal. Bull*. 33: 1-13

Marko, P. B., Carrington, E., Rosa, R., Giomi, F., Troschinski, S., and **B. A. Seibel.** 2015. Symposium on "Climate change and molluscan ecophysiology" at the 79th Annual Meeting of the American Malacological Society. *Amer. Mal. Bull.* 33, 1-6.

Carey, S. et al. 2014. Cold Seeps Associated with a Submarine Debris Avalanche Deposit at Kick'em. Jenny Volcano, Grenada (Lesser Antilles). *Deep-Sea Res*. 93: 156-160.

Maas, A. E., S. Frazar, D. Outram, **B. A. Seibel** and K. J. Wishner. 2014. Fine-scale vertical distribution of macroplankton and micronekton in an Eastern Tropical North Pacific in association with an oxygen minimum zone. *J. Plankton Res.* (2014) 0(0): 1–19. doi:10.1093/plankt/fbu077

Trueblood, L. A. and **Seibel, B. A**. 2014. Slow swimming, fast strikes: the advantage of tentacles for squids in 'competition' with fishes. *J. Exp. Biol.* 217, 2710-2716

**Seibel, B. A.**, Häfker, S., Trübenbach, K., Zhang, J., Pörtner, H. O., Rosa, R. and Storey, K. B. 2014. Metabolic suppression during protracted exposure to hypoxia in the jumbo squid, *Dosidicus gigas*, living in an oxygen minimum zone. *J. Exp. Biol*. 217, 2555-2568

Robison, B. H., Drazen, J. C., and **Seibel, B. A.** 2014. Protracted egg-brooding in a deep-sea octopus. *PLoS ONE.* 9(7): e103437.

Carey, S., Bell, K. L C., Ballard, R. D., Roman, C., Dondin, F., Miloslavich, P., Gobin, J., **Seibel, B. A**., Bell, R., Smart, C., Fuller, S. A., Siu, N., Connally, P., Blake, R., Wishner, K. and B. T. Phillips. 2014. Fluid/Gas Venting and Biological Communities at Kick'em Jenny Submarine Volcano, Grenada (West Indies). *Oceanogr*. 27: 38-41.

Barry, J. P. Buck, K. R., Lovera, C., Brewer, P. G., **Seibel, B. A.**, Drazen, J. C., Tamburri, M. N., Whaling, P. J., Kuhnz, L., and Pane, E. F. 2013. The response of abyssal organisms to low pH conditions during a series of $CO_2$-release experiments simulating deep-sea carbon sequestration. *Deep-Sea Res*. 92: 249-260. http://dx.doi.org/10.1016/j.dsr2.2013.03.037.

Wishner, K., Outram, D., **Seibel, B. A.** and Daly, K. 2013. Zooplankton in the Eastern Tropical North Pacific: Boundary Effects of Oxygen Minimum Zone Expansion. *Deep-Sea Res*. 79: 122-140.

**Seibel, B. A.** and Childress, J. J. 2013. The real limits to marine life: a further critique of the *Respiration Index*. *Biogeosciences*. 10: 1-5.

Trueblood, L. A. and **Seibel, B. A**. 2013. Critical depth in the jumbo squid, *Dosidicus gigas* (Ommastrephidae), living in oxygen minimum zones I. Oxygen consumption rates and critical oxygen partial pressures. *Deep-Sea Res. II*. 95: 218-224.

**Seibel, B. A.** 2013. Critical depth in the jumbo squid, *Dosidicus gigas* (Ommastrephidae), living in oxygen minimum zones II. Blood-oxygen binding. *Deep-Sea Res. II.* 95: 139-144.

Trübenbach, K., Pegado, M. R., **Seibel, B. A.**, and Rosa, R. 2013. Ventilation rates and activity levels of jumbo squids under metabolic suppression in the oxygen minimum zone. *J. Exp. Biol.* 216: 359-368.

Mass, A. E., Wishner, K., and **B. A. Seibel**. 2012. Metabolic suppression in thecosomatous pteropods as an effect of low temperature and hypoxia in the Eastern Tropical North Pacific. *Mar. Biol.* 159:1955-1967.

Dymowska, A., Manfreddi, T., Rosenthal, J. C., and **B. A. Seibel**. 2012. Muscle ultrastructure and mitochondrial morphometrics in polar and temperate pteropods (Gymnosomata: Gastropoda). *J. Exp. Biol.* 215: 3370-3378.

Rosa, R., L. Gonzales, H. M. Dierssen, and **B. A. Seibel**. 2012. Environmental determinants of latitudinal size trends in cephalopods. *Mar. Ecol. Prog. Ser.* 464: 153-165.

Maas, A. E., Wishner, K., and **Seibel, B. A.** 2012. The metabolic response of pteropods to ocean acidification reflects natural $CO_2$-exposure in oxygen minimum zones. *Biogeosciences*. 9: 747-757.

Mass, A. E., **Seibel, B. A**., and Walsh, P. J. 2012. Effects of Elevated Ammonia Concentrations on Survival, Metabolic Rates and Glutamine Synthetase Activity in the Antarctic Pteropod Mollusc *Clione limacine antarctica*. *Polar Biol*. DOI: 10.1007/s00300-012-1158-7.

**Seibel, B. A.,** Maas, A. E., and Dierssen, H. M. 2012. Energetic plasticity underlies variable response to ocean acidification in the Antarctic pteropod, *Limacina helicina*. *PLoS One*. 7: e30464.

Maas, A. E., Elder, L. E., Dierssen, H. M. and **Seibel, B. A.** 2011. The metabolic response of Antarctic pteropods (Mollusca: Gastropoda) to food deprivation and regional productivity. *Marine Ecol. Prog. Ser.* 441: 129-139.

**Seibel, B. A**. 2011. Critical oxygen levels and metabolic suppression in oceanic oxygen minimum zones. *J. Exp. Biol*. 214: 326-336.

Pörtner, H. O., **Seibel, B. A.**, Melzner, F., Gutowska, M. 2011. Ch. 9. Nekton. In *Ocean Acidification*. J. P. Gattuso, ed. Oxford University Press.

Hunt, B., Strugnell, J., Allcock, L., Bednarsek, N., Linse, K., Nelson, R. J., Pakhomov, E., **Seibel, B. A.**, Steinke, D., and Würzberg, L. 2010. Poles apart: "Bipolar" pteropod species are genetically distinct. *PLoS One* 5(3): 1-4.

Rosa, R. and **Seibel, B. A**. 2010. Living on the surface: the physiological demands and ecological tradeoffs of an epipelagic existence in paper nautiluses, *Argonauta nouryi*. *ICES J. Mar. Science*. 67: 1494-1500.

Rosa, R., and **Seibel, B. A**. 2010. Slow pace of life of the Antarctic colossal squid. *J. Mar. Biol. Ass. U. K*. 90: 1375-1378.

Rosa, R., and Seibel, B. A. 2010. Metabolic physiology of the Humboldt Squid, *Dosidicus gigas*: implications for vertical migration in a pronounced oxygen minimum zone. *Prog. Oceanogr*. 86: 72-80.

Seibel, B. A., Girguis, P. R., and Childress, J. J. 2009. Variation in evolved "limits to life" preclude universal tolerance indices: a critique of the "Respiration Index". *Science* (e-Letters) http://www.sciencemag.org/cgi/eletters/324/5925/347#12814.

Rosenthal, J. C., Seibel, B.A., Dymowska, A., and F. Bezanilla. 2009. Trade-off between aerobic capacity and locomotory activity in an Antarctic pteropod. *Proc. Natl. Acad. Sci.* 106: 6192-6196.

Seibel, B. A. and Dierssen, H. M. 2009. Perspective: Animal function at the heart (and gut) of oceanography. *Science*. 323(5912): 343-344

Rosa, R., Trueblood, L. A., and B. A. Seibel. 2009. Ecophysiological demands on scaling of aerobic and anaerobic metabolism of deep-sea gonatid squids. *Physiol. Biochem. Zool.* 82(5). DOI 10.1086/591950.

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Rosa, R., Dierssen, H. M., Gonzales, L., and **B. A. Seibel**. 2008. Ecological biogeography of cephalopod mollusks in Atlantic Ocean. Historical and contemporary causes of coastal diversity patterns. *Global Ecol. Biogeogr*. 17: 600-610.

Staaf, D. J., S. Camarillo-Coop, S. H. D. Haddock, A. C. Nyack, J. Payne, R. Ramirez-Rojo, C. A. Salinas-Zavala, **B. A. Seibel**, L. Trueblood, C. Widmer, W. F. Gilly. 2008. Natural egg deposition by the Humboldt squid (*Dosidicus gigas*) in the Gulf of California and characteristics of paralarvae. *J. Mar. Biol. Ass. U.K.* 88: 759-770.

Fabry, V. J., **Seibel, B. A.**, Feely, R. A., and Orr, J. C. 2008. Impacts of Ocean Acidification on Marine Fauna and Ecosystem Processes. *ICES J. Mar. Sci*. 65: 414-432.

Aronson, R., Thatje, S., Clarke, A., Peck, L. S., Blake, D. B., Wilga, C. D., and Seibel, B. A. 2007. Climate change and invasibility of the Antarctic Benthos. *Annu. Rev. Ecol. Evol. Syst.* 38: 129-154.

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Drazen, J. C. and Seibel, B. A. 2007. Depth-related trends in metabolism of benthic and benthopelagic fishes. *Limnol. Oceangr*. 52: 2306-2316.

Seibel, B. A. and Drazen, J. C. 2007. The rates of metabolism in marine animals: environmental constraints, ecological demands and energetic opportunities. *Phil. Trans. Roy. Soc. Lond. B*. 362: 2061-2078.

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Seibel, B. A., Robison, B. H., Haddock, S. D. H. 2005. Post-spawning egg-care by a squid. *Nature* 438: 929.

Drake, B. G., E. A. Johnson, L. Hughes, B. A. Seibel, M. A. Cochrane, V. J. Fabry, L. Hannah, and D. Rasse. 2005. Ch. 18: Synergistic Effects. In: *Climate Change and Biodiversity*. T. E. Lovejoy and L. Hannah, eds. Yale University Press. 424 pp.

Wishner, K. F., J. R. Graff, J. W. Martin, S. Carey, H. Sigurdsson, and B. A. Seibel. 2005. Are midwater shrimp trapped in the craters of submarine volcanoes by hydrothermal venting? *Deep-Sea Res.* 152: 1528-1535.

Seibel, B. A., S. K. Goffredi, E. V. Thuesen, J. J. Childress, and B. H. Robison. 2004. Ammonium content and buoyancy in midwater cephalopods. *J. Exp. Mar. Biol. Ecol.* 313: 375-387.

Seibel, B. A. and H. M. Dierssen. 2003. Cascading trophic impacts of reduced biomass in the Ross Sea, Antarctica: just the tip of the iceberg? *Biol. Bull.* 205 (2): 93-99.

Seibel, B. A. and P. J. Walsh. 2003. Biological impacts of deep-sea carbon dioxide injection inferred from indices of physiological performance. *J. Exp. Biol.* 206: 641-650.

Barry, J.P., B.A. Seibel, J.C. Drazen, M.N. Tamburri, K.R. Buck, et al. 2003. Deep-sea field experiments on the biological impacts of direct deep-sea $CO_2$ injection. Proceedings of the Second Annual Conference on Carbon Sequestration, Alexandria, Virginia. pp. 1–7. (Extended Abstract).

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Seibel, B. A. and P. J. Walsh. 2001. Potential impacts of $CO_2$ injection on deep-sea biota. *Science*. 294(5541): 319-320.

Seibel, B. A. and D. B. Carlini. 2001. Metabolism of pelagic cephalopods as a function of habitat depth: a reanalysis using phylogenetically independent contrasts. *Biol. Bull.* 201(1): 1-5.

Seibel, B. A., F. G. Hochberg, and D. B. Carlini. 2000. Life history of *Gonatus onyx* (Cephalopoda: Teuthoidea): deep-sea spawning and post-spawning egg care. *Mar. Biol.* 137(3): 519-526

Seibel, B. A. and J. J. Childress. 2000. Metabolism of benthic octopods (Cephalopoda) as a function of habitat depth and oxygen concentration. *Deep-Sea Res.* 47(7): 1247-1260

Seibel, B. A., E. V. Thuesen and J. J. Childress. 2000. Light-limitation on predator-prey interactions: consequences for metabolism and locomotion in deep-sea cephalopods. *Biol. Bull.* 198: 284-298.

Hunt, J. C. and B. A. Seibel. 2000. Life history of *Gonatus onyx* (Cephalopoda: Teuthoidea): ontogenetic changes in habitat, behavior and physiology. *Mar. Biol.* 136(3): 543-552.

Seibel, B. A., F. Chausson, F. Lallier, J. J. Childress and F. Zal. 1999. Vampire blood: respiratory physiology of the Vampire Squid (Vampyromorpha: Cephalopoda) in relation to the oxygen minimum layer. *Experimental Biology Online*. 4(1).

Archipkin, A. and B. A. Seibel. 1999. Statolith microstructure from hatchlings of the oceanic squid, *Gonatus onyx* (Cephalopoda, Gonatidae) from the Northeast Pacific. *J. Plankton Res*. 21(2): 401-404.

Seibel, B. A., E. V. Thuesen and J. J. Childress. 1998. Flight of the Vampire: ontogenetic gait-transition in *Vampyroteuthis infernalis* (Cephalopoda: Vampyromorpha). *J. Exp. Biol*. 201(16): 2413-2424.

Childress, J. J. and B. A. Seibel. 1998. Life at stable low oxygen: Adaptations of animals to oceanic oxygen minimum layers. *J. Exp. Biol*. 201: 1223-1232.

Seibel, B.A., E. V. Thuesen, J. J. Childress, and L. A. Gorodezky. 1997. Decline in pelagic cephalopod metabolism with habitat depth reflects differences in locomotory efficiency. *Biol. Bull*. 192: 262-278.

Seibel, B. A. and J. J. Childress. 1996. Deep-breathing cephalopods? *Nature.* 384: 421 (Corresp.).

## MANUSCRIPTS IN PREPARATION

Bush, S., **B. A. Seibel,** S. D. H. Haddock, S. Johnsen, and B. H. Robison. A bioluminescent "halo" in a new deep sea-angel: (Pteropoda: Gymnosomata) from bathypelagic waters. *Biol. Letters*. In prep.

Timpe, A. and **B. A. Seibel.** A method for correcting systematic error in $PO_2$ measurement and mitigating its effect on critical oxygen pressure determination. *J. Exp. Biol. Methods and Techniques*. In prep.

**Seibel, B. A**. and M. A. Birk. Unique metabolic temperature sensitivity creates a cold-water habitat barrier in diel vertical migrators. *Science*. In prep.

Andres, A., **Seibel B.A.,** Slesinger, E., Saba, G.E., Saba, V. Hypoxia tolerance and aerobic scope in spiny dogfish, *Squalus acanthias*, as a function of temperature. *Mar. Ecol. Prog. Ser*. In prep.

Andres, A., R. Heuter, and **Seibel, B. A**. Hypoxia tolerance and aerobic scope in blacktip reef sharks as a function of temperature. *Physiol. Biochem. Zool*. In prep.

Andres, A., R. Heuter, and **B. A. Seibel**. Are Bull Sharks obligate ram ventilators? Oxygen supply capacity at rest and activity. *J. Exp. Biol*. in prep.

**Seibel, B. A.** Active metabolism, aerobic scope and hypoxia tolerance in a rare larval deep-sea anglerfish. *Biol. Letters*. In prep.

Burns, A. E., J. Kilborne and **B. A. Seibel**. Oxygen supply capacity in an estuarine shrimp. In prep.

Welsh, C. E. and **B. A. Seibel**. Oxygen supply in larval fishes: a review. In prep.

**Seibel, B. A.** Scaling of oxygen supply and demand. Functional Ecol. In prep.

## PRESENTATIONS

| | |
|---|---|
| 2020 | Oxygen supply and demand in marine animals. *Ocean Sciences*, San Diego, CA |
| 2020 | Pteropods of the Gulf of Mexico: Abundance and Distribution of Large Thecosomes. Shedler, S. et al. *GOMOSES*, Tampa, FL |
| 2019 | Hypoxia: Oxygen supply capacity evolves to meet maximum demand at the prevailing oxygen pressure. *Int. Congress of Comparative Physiology & Biochemistry*, Ottawa, CA |
| 2019 | Temperature: Oxygen supply capacity evolves to meet maximum demand at the prevailing pressure. *Society for Experimental Biology*. Seville, Spain. |
| 2019 | Body Size: Oxygen supply capacity evolves to meet maximum demand at the prevailing pressure. Workshop: *Is global warming causing animals to shrink? Society for Experimental Biology*. Seville, Spain |
| 2019 | Oxygen supply capacity evolves to meet demand at the incipient limiting oxygen level. Canadian Society of Zoologists. Windsor, CA |
| 2019 | Andres, A.M., Seibel, B., Slesinger, E., Saba, G., Saba, V., Morris, J (2019). How Low |

Can Predators Go? Hypoxia Tolerance of Coastal Shark Species of Varying Lifestyle. Society for Integrative and Comparative Biology, National Meeting, Tampa, FL.

2018 Andres, A., Slesinger, E., Saba, G.E., Saba, V. Phelan, B., Young, R., Rosendale, J., Wieczorek, D., Seibel B.A. Hypoxia tolerance and aerobic scope in spiny dogfish, *Squalus acanthias*, as a function of temperature. *American Fisheries Society*, Atlantic City, NJ

2018 *Physiological response of marine animals to ocean deoxygenation and warming*. U. Miami, Rosenstiel School of Marine and Atmospheric Science.

2018 Deoxygenation and marine life. *Ocean deoxygenation: drivers and consequences: Past, present and future.* Kiel, Germany. Invited Keynote.

2018 Wishner, K., Roman, C., Shaw, T., Deutsch, C., Mislan, A., and B. A. Seibel. Small scale variation in biology and chemistry in the Eastern Tropical Pacific. *Ocean Sciences*, Portland, OR

2018 Birk M.A., McLean E.L., Seibel B.A. (2018). Oxygen supply unaffected by ocean acidification in active squids (and probably most other marine animals too). *Society for Integrative and Comparative Biology Annual Meeting*. San Francisco, California, USA.

2018 Birk M.A., Seibel B.A. (2018). Squids do not breathe through their skin. *Society for Integrative and Comparative Biology Annual Meeting*. San Francisco, California, USA.

2018 Birk M.A., Mislan K.A.S., Seibel B.A. (2018). How do mesopelagic octopods breathe in the OMZ? *Ocean Sciences Meeting*. Portland, Oregon, USA.

2017 Birk M.A., McLean E.L., Seibel B.A. (2015). Effects of increased $CO_2$ on squid metabolism and hypoxia tolerance. *Cephalopod International Advisory Council Symposium*. Hakodate, Japan.

2017 Birk M.A., Seibel B.A. (2015). Observations of multiple pelagic egg masses from small-sized jumbo squid (Dosidicus gigas) in the Gulf of California. *Cephalopod International Advisory Council Symposium*. Hakodate, Japan.

2018 Andres, A., Seibel B.A., Schlesigner, E., Saba, G.E., Saba, V. Hypoxia tolerance and aerobic scope in spiny dogfish, *Squalus acanthias*, as a function of temperature. *Ocean Sciences*, Portland OR.

2017 Phelan, B., Slesinger, E., Andres, A., Rosendale J., Wieczorek, D., Young, R., Seibel, B., Saba, V., and Saba, G. (2017). Using controlled laboratory experiments to improve fisheries management in response to climate change. *Mid-Atlantic Chapter, American Fisheries Society*, Dover, Delaware.

2017 Slesinger, E., Young, R., Saba, G., Andres, A., Seibel, B., Phelan, B., Saba, V., Wieczorek, D., Rosendale, J. (2017). Effects of temperature on black sea bass (Centropristis striata) metabolic rate and aerobic scope. *ICES Annual Science Meeting*, Fort Lauderdale, Florida.

2017 Critical oxygen levels and ocean deoxygenation. *Wakefield Symposium, Alaska Sea Grant*. Invited Keynote

2017 Metabolic suppression in the pelagic crab, *Pleuroncodes planipes*. *Canadian Society of Zoologists*, Peter Hochachka Symposium.

2016 Cephalopod susceptibility to oxygen deoxygenation and acidification. *Mollusks in peril.* Sanibel Island, Florida. Invited Keynote

2016 Physiological strategies for vertical migration in oxygen minimum zones. *Ocean Sciences*. New Orleans. In symposium *"Ocean deoxygenation: Integrating coastal and oceanic perspectives in a changing world"*. Brietburg, Levin, Roman and Seibel convenors.

2016 Cephalopod susceptibility to asphyxiation via ocean incalescnece, deoxygenation and acidification. *UNC Charlotte*. Invited Seminar.

2016 *Physiology of vertical migrators in oxygen minimum zones. Society for Integrative and Comparative Biology.* Invited symposium speaker.

2015 *Predicting the response of marine organisms to climate change.* Scripps Institute of Oceanography. Invited seminar.

2015 *Predicting the response of marine organisms to climate change*. Rutgers University. Invited seminar.

2015 Palmer Station, Antarctica. Science Talk. *Euphausiid susceptibility to ocean acidification?*

2015 Society of Integrative and Comparative Biology. *The "Out of Classroom" Experience: Teaching Marine Biology at the University of Rhode Island.* Webb, J., Seibel, B. and Hobbs, N.-V.

2014 *Physiological indices of environmental tolerance.* Horn Point Laboratory, Invited seminar.

2014 First Ocean Global Change Biology Gordon Research Conference. *Critical depth: integrating the physiological responses to deoxygenation, warming and acidification in vertically mobile marine animals*, Invited Speaker.

2014 First Ocean Global Change Biology Gordon Research Conference. The synergistic effects of ocean acidification and warming on Antarctic Krill (Euphausia superba): Acid-base balance, metabolism and growth. Bockus, A., Saba, G., and B. A. Seibel.

2013 World Congress of Malacology, Azores. *Symposium on Climate Change and Molluscan Ecophysiology*, Co-organizer and speaker.

2013 University of South Florida. *Egg development and parental care in deep-sea animals*.

2013 Amer. Soc. Limnol. Oceanogr., New Orleans, co-organizer and speaker for: *Oxygen minimum zones and climate change*.

2012 PICES Symposium on Effects of natural and anthropogenic stressors in the North Pacific ecosystems: Scientific challenges and possible solutions. *Critical oxygen levels in expanding oxygen minimum zones*. Hiroshima, Japan, Invited Lecture.

2012 Scripps Institute of Oceanography, Invited Lecture.

2012 Norwegian University of Science and Technology, Invited Lecture.

2012 Amer. Soc. Limnol. Oceanogr., Salt Lake City, Utah. Co-Organizer and speaker for: *Adaptation to High $CO_2$ Oceans: From Experimental Evolution to Naturally $CO_2$ Rich Habitats*.

2011 IFM-Geomar, Kiel, Germany, Invited Lecture.

2011 NordCEE (Center for Earth Evolution), University of Odense, Denmark, Invited Lecture.

2011 Eur-Oceans Conference on Ocean Deoxygenation. Round-table discussion on the "Respiration Index". (Invited).

2011 European Geophysical Union, Ocean acidification in polar oceans.

2011 URI Honors Colloquium, Vetlesen Lecture Series. The State of our Oceans. *Ocean Acidification: The 'other $CO_2$ problem'* (Invited).

2011 IPCC, Ocean Acidification Workshop, Invited participant and poster presentation.

2011 5th Conference on Zooplankton Production, Pucon, Chile, Symposium on Ocean Acidification, *Zooplankton response to ocean acidification: knowns, unknowns and the unknowable*. (Invited).

2010 Amer. Soc. Limnol. Oceanogr., Portland. (Contributed talks, 4).

2010 Company of Biologists, Symposium on Biology of Energy Expenditure, *Metabolic suppression in oceanic oxygen minimum zones* (Invited).

2010 Amer. Physiol. Soc. - Global change and global science: Comparative physiology in a changing world, *Oceanic animals in expanding oxygen minimum zones*, Invited Speaker.

2009 University of Maine, Department of Marine Science, Invited Lecture.

2009 University of South Florida, Department of Marine Science, Invited Lecture.

2009 University of California, Berkeley. Hansen Lecture in Integrative Biology. *Hypoxia and the physiology, ecology and behavior of the jumbo squid,* Dosidicus gigas (Invited).

2009 Amer. Soc. Limnol. Oceanogr., Nice, France. Co-Organizer and speaker for Symposium: Biology and Biogeography of Oceanic Oxygen Minimum Zones.

2008 Brown University, Department of Ecology and Evolution, Invited lecture.

2008 Amer. Soc. Limnol. Oceanogr., *Metabolic response to ocean acidification.*

2008 Amer. Soc. Limnol. Oceanogr., Contributed co-authored poster.

2008 AAAS, Boston, Co-authored talk, *Climate change and invasibility of the Antarctic benthos.*

2008 Soc. Integr. Comp. Biol., Contributed co-authored talks (2).

2007 GLOBEC-CLIOTOP, Climate impacts on oceanic predators, La Paz, Mexico, Contributed talk.

2007 OCB Scoping Workshop for Ocean Acidification Research, San Diego, CA, Invited plenary.

2007 World Congress of Malacology, Antwerp, Belgium, Contributed co-authored talk.

2007 Soc. Integr. Comp. Biol, Contributed co-authored talks (3).

2006 Symposium: APS Comparative Physiology. Symposium on Fuel Selection. *Fuel selection in vertically migrating zooplankton*. (Invited).

2006 CLIOTOP: Squid as predators in oceanic ecosystems. *Vertical migration in jumbo squid* (Invited).

2006 Scripps Institute of Oceanography, *Metabolic rates of marine animals* (Invited).

2006 Gordon Research Conference, Metabolic basis of ecology. *On the depth and scale of metabolic rate variation*.

2006 Amer. Soc. Limnol. Oceanogr. Contributed poster.

2006 Soc. Integr. Comp. Biol. Contributed co-authored talk.

2005 Society for Experimental Biology. Symposium on Environmental constraints on locomotion. *The rates of metabolism in marine animals: environmental constraints, ecological demands and energetic opportunities* (Invited).

2005 SUNY, Stoneybrook, Invited Lecture.

2005 UMass Boston, Invited Lecture.

2005 IUPS Physiological Congress, San Diego. *Metabolic scaling in cephalopods* (Invited).

2004 Deep-sea Fisheries Symposium, Ocean Life Institute, WHOI, Contributed talk.

2004 University of Connecticut Avery Point Marine Laboratory (Invited).

2004 Graduate School of Oceanography, University of Rhode Island (Invited).

2003 10th Deep-sea Biology Symposium, Oregon Coast, Contributed co-authored talk.

2003 Amer. Soc. Limnol. Oceanogr., Salt Lake City, Utah, Contributed talk.

2002 Western Society of Naturalists, Monterey, CA, Contributed talk.

2002 Evergreen State College, Olympia Washington, Invited Lecture.

2002 McMurdo Station, Antarctica, Science Lecture Series, Invited Lecture.

2001 Amer. Geophys. Union, Eos Trans. AGU, Contributed co-authored talk.

2001 Moss Landing Marine Laboratories, Invited Lecture.

2001 Amer. Soc. Limnol. Oceanogr., Contributed talk.

2001 University of British Columbia, Canada, *Metabolic cold adaptation* (Invited).

2001 California State University, San Marcos, *Marine biotic response to $CO_2$* (Invited).

1999 Santa Clara University, CA, Invited Lecture.

1999 5th International Congress Physiology, Calgary, *Scaling in marine animals* (Invited).

1998 Roscoff Biological Station, France, *Biology of Vampyroteuthis infernalis* (Invited).

1997 Amer. Soc. Naturalists, La Paz, Mexico, Contributed talk.

1997 Deep-sea Biology Symposium, Monterey, California, Contributed talk.

1998 Company of Biologists Special Symposium, Monterey, CA, co-authored: *Life in stable low oxygen: adaptations of animals to oceanic oxygen minimum layers* (Invited).

## TEACHING EXPERIENCE

2017- University of South Florida, College of Marine Science, St. Petersburg, FL

1. *Ecological Physiology*, Fall 2017, Spring 2020
2. *Pelagic Ecology* (at sea aboard the *R/V Weatherbird*), Fall 2017, Spring 2018
3. *Biological Oceanography* (3 Lectures)
4. *Marine Ecology (3 Lectures), USFSP*

2003-2013 University of Rhode Island, Department of Biological Sciences, Kingston, RI

1. *Pelagic Ecology* (at sea aboard the *R/V Endeavor*)
2. *Invertebrate Zoology* (~30 students each Fall)
3. *Marine Biology* (60 students each Spring)
4. *Introduction to Marine Biology*
5. *Marine Environmental Physiology*
6. *Comparative Physiology* (Repeating graduate course, various topics)
7. *Biological Oceanography* (Repeating graduate course, various topics)
8. *Advanced Ecology* (Graduate Course)
9. *Human Physiology Lecture and Laboratory* (250 students)

1995-1996 Moorpark College, Department of Science and Engineering, Moorpark, CA

1. *Marine Life and Environment*, Instructor (25 students)
2. *Principles of Biology*, Instructor (70 students)

1995-1998 University of California, Santa Barbara, Ecology, Evolution and Marine Biology, Santa Barbara, CA

1. *Integrative Physiology,* Teaching Assistant
2. *Deep-sea Biology,* Teaching Assistant

## UNDERGRADUATE MENTORING AND ADVISING

| | |
|---|---|
| 2003-2016 | Undergraduate advising, 30+ students each semester at URI |
| 2014, 2015 | Hosted workshops on *How to apply to Graduate School.* |
| 2013-2015 | Worked with applicants on application essays for NOAA Hollings Scholarship awardees (Katharine Egan, Emily Bishop, and Nicole Marone, and finalist, Emily Thomsen). |
| 2010-present | Mentored Undergraduate Laboratory Assistants (~20 students) |
| 2003-2016 | Mentored Undergraduate Students in Independent Studies Projects (~10 students) |
| 2010 | Advised Undergraduate Honors Project (Kristina Camarena) |
| 2004 | Advised Senior Honors Thesis Project (Anne Farahi) |

## GRADATE AND POSTDOCTORAL MENTORING

*Degrees Conferred*

- Sarah Shedler, MS student, Conferred, Major Advisor
- Kris Clark, MS student, Conferred, Major Advisor
- Mathew Birk, Ph.D. Conferred 2018, Major Advisor
- Brenna Meath, MS. Conferred 2017, Committee Member
- Abigail Bockus, Ph.D. Conferred 2016, Major Advisor
- Erin McLean, MS. Conferred 2016, Major Advisor
- Brennan Phillips, Ph.D. GSO, Conferred 2015, Committee Member
- Leanne Elder, Ph.D. Conferred 2013, Major Advisor
- Al Nyack, Ph.D. Conferred 2013, Major Advisor
- Kathleen Turner, MS conferred 2013, GSO, Committee Member
- Rebecca Williams, Ph.D. Conferred, 2013, Committee Member
- Paul Suprenand, Ph.D. Conferred 2013, Univ. South Florida, Committee Member
- Jack Szczepanski, Ph.D. conferred 2012, Committee Member
- Jason Ramsay, Ph.D. conferred 2012, Committee Member
- Amy Maas, Ph.D. conferred 2011, Major Advisor
- Christine Cass, Ph.D. Conferred 2011, Univ. South Florida, Committee Member
- Shannon Gerry, Ph.D. conferred 2010, Committee Member
- Lloyd Trueblood, Ph.D. conferred 2010, Major Advisor
- Jason Graff, Ph.D. conferred 2010, Committee Member
- Jocelyn Dolce, MS conferrred 2009, Committee Member
- Sarah Marnell, MS conferred 2008, Major Advisor
- Howard Chang, Ph.D. conferred 2007, Committee Member
- Agnieszka Dymowska, MS conferred 2006, Major Advisor
- Jay Dimond, MS conferred 2006, Committee Member
- Debra Petrak, Ph.D. conferred 2006, Committee Member
- Lindsay Sullivan, Ph.D. conferred 2006, Committee Member
- Kate Hagstrom, Ph.D. conferred 2006, Committee Member
- Mary Rapien, Ph.D. conferred 2005, Committee Member
- Leslie Gillon, MS. conferred 2005, Committee Member
- Ladd Rutheford, MS. conferred 2005, Evergreen State College, Committee Member

*Continuing Students*

- Emily Slesinger, Rutgers University, Committee Member
- Alexandra Burns, PhD student, current, Major Advisor
- Alyssa Andres, PhD student, current, Major Advisor
- Christina Welsh, PhD student, current, Major Advisor
- Alexander Timpe, PhD student, current, Major Advisor

*Postdoctoral Researchers*

- Dr. Agnieszka Dymowska, Postdoctoral Researcher 2015-18, Major Advisor
- Dr. Rui Rosa, Postdoctoral Researcher 2006-09, Major Advisor

- Dr. Stephanie Bush, Postdoctoral Fellow 2010-12, Major Advisor

## ADMINISTRATIVE ACTIVITIES

- Graduate Admissions Committee, CMS, 2021
- Faculty search committee, Chemical Oceanography, USF
- Chair, Deans Advisory Council, CMS, 2017, 2018, 2019, 2020
- USF Graduate Council member, 2017, 2018, 2019
- Deans Advisory Council, CMS, 2016
- IMSE student exam committee, CMS, 2016, 2017
- CMS Aquarium committee
- Faculty search committee member, *Biology Department Chair*, 2014
- Faculty search committee member, *Teaching Specialist in Biology*, 2014.
- Space Allocation Committee, College of Environment and Life Sciences.
- Dive Control Board, Member, 2012.
- IEB Graduate Committee, 2012-2014.
- Administered 9 major grants (NSF and ONR) totaling ~$3.0M.
- Lead research expeditions to remote locations with dozens of participating organizations.
- Seawater oversight committee, Graduate School of Oceanography, 2014.
- Chair, faculty search committee, *Global Change Biologist*, 2011.
- Co-authored Strategic Plan for Biology Department Research Activities, 2010.
- Developed Outcomes Assessment program for Biology Department, 2008.
- Human Anatomy/Physiology revision committee, 2004.
- Graduate Committee, 2005-2008.
- Budget Committee, 2008, 2010.
- Faculty search committee member, *Senior Marine Biologist*, 2005
- Small boat oversight committee, 2005.
- Seawater system revision oversight committee, 2004.
- Committee to evaluate URI 101, University-wide introductory course, 2007.

## SCHOLASTIC ACTIVITIES AND ACADEMIC COMMUNITY SERVICE

- $GO_2Ne$, Global Ocean Oxygen Network. Intergovernmental Oceanographic Commission – Ocean Science Section. UNESCO; 2015-2020
- IUCN Report on Ocean Deoxygenation, Chapter Author: *Mesopelagic Community Response to Ocean Deoxygenation*
- IPCC review editor, WGII, 2018-2019
- Workshop on Pteropod susceptibility to Ocean Acidification, SCCWRP
- Councilor-at-large, American Malacological Society, 2014-2017
- NSF Proposal Review Panelist, 2014.
- Participated in the NSF- Ocean Acidification PI workshop, 2013.
- Invited public lecture: Vetlesen Lecture Series on the State of our Oceans, Univ. Rhode Island.
- Intergovernmental Panel on Climate Change: Ocean Acidification Workshop, Japan, 2011.
- Contributed to the Ocean Carbon and Biogeochemistry FAQs about ocean acidification (www.epoca-project.eu/index.php/FAQ.html).
- Instructor for the OCB short course on ocean acidification, Woods Hole, MA.
- Reviewed the Congressional Research Service Report on Ocean Acidification.
- Plenary speaker and participant in NSF (OCB)-sponsored workshop: *Ocean acidification.*
- Antarctic Biology Course workshop, Catalina Island, 2003.
- Department of Energy workshop on ocean disposal of carbon dioxide, MBARI, 2000.
- Refereed papers and proposals for more than a dozen journals and funding agencies.
- Gordon Research Conference on the *Metabolic Basis of Ecology,* July 2006.

## PUBLIC AND COMMUNITY OUTREACH

- Paper of the Year, Deep-sea Biology Society. Wishner et al., 2018. Ocean deoxygenation and zooplankton: Very small oxygen differences matter.
- Preprint Highlight, *J. Experimental Biology*. https://prelights.biologists.com/highlights/oxygen-supply-capacity-in-animals-evolves-to-meet-maximum-demand-at-the-current-oxygen-partial-pressure-regardless-of-size-or-temperature/

- Scientific American article on Ocean Deoxygenation
- USF Public Radio Interview – Global Deoxygenation
- Best paper 2015, 2nd place. Cephalopod International Advisory Council.
- Robison et al. 2014 featured in Discover Magazine's top 100 science discoveries of 2014.
- Co-PI, PARKA (Planting Antarctica in Kansas) Project. COSEES education program, 2013-2014.
- Ocean acidification webcast, *Jason Project,* 2013.
- Invited participant, Rhode Island Environmental Leaders Day (hosted by Senator Whitehouse), 2013, 2014.
- Biologists,*EV Nautilus Exploration Program and Ocean Exploration Trust,* 2012-2013.
- Invited lecture on deep-sea biology, Rhode Island Power Squadron, 2013.
- Invited lecture on extreme environments, Paul Cuffee School, Providence 2012-2013.
- Invited lecture on ocean acidification, America's Cup, 2012.
- Invited lecture on deep-sea biology, Harris Elementary School, Woonsocket, RI.
- Invited lecture on ocean acidification, the Lincoln Public Library, Lincoln, RI, 2010.
- Organized *Diversity Week* activities for the College of Environment and Life Sciences, URI.
- Invited lecture on extreme environments, Roger Williams Zoo, Docent Training Program, 2010.
- Invited lecture on extreme environments, Gilbert Middle School, Warwick, Rhode Island.
- Organized marine science field trip for Westerly Public Schools (Tower Street School Kindergarten).
- Invited lecture on deep-sea biology, Rhode Island Rotary Club.
- Scientific Advisor for Exhibit, *The Deep* (Claire Nouvian, curator). Paris Museum of Natural History.
- Research featured in dozens of news outlets including the *New York Times*, *San Francisco Chronicle, Science News, BBC World News, Discover Channel, National Public Radio,* and *National Geographic.*
- Contributed to children's encyclopedia, Seibel, B. A. *Octopuses, Squids and Other Cephalopods*, in *The New Book of Knowledge* Grolier, Scholastic, Danbury, CT, 2004.
- Instructor, *Marine Environment*, Senior Summer School, Santa Barbara, CA, 1996.
- Contributed photographs and text to many books and websites.

## PROFESSIONAL ASSOCIATIONS

- American Malacological Society
- American Society of Limnology and Oceanography
- American Physiological Society
- Society for Integrative and Comparative Biology