**Cited References**

to accompany

*Marine Biology: Function, Biodiversity, Ecology*, 5e

by Jeffrey S. Levinton

**A**

Abele, L. G., and K. Walters. 1979. The stability–time hypothesis: Reevaluation of the data. *American Naturalist*, v. 114, pp. 559–568.

Abercrombie, D.L., Chapman, D.D., Gulak, S.J.B., Carlson, J.K. 2013. Visual identification of fins from common elasmobranchs in the northwest Atlantic ocean. NOAA Technical Memorandum, NMFS-SEFSC-643, pp. 1–51.

Achlatis M., Pernice M., Green K., de Goeij J.M., Guagliardo P., Kilburn M.R., Hoegh-Guldberg O., Dove S. 2019 Single-cell visualization indicates direct role of sponge in uptake of dissolved organic matter. *Proc. R. Soc. B* 286: 2019-2153. doi: 10.1098/rspb.2019.2153

Ackerman, J. D. 1997. Submarine pollination in the marine angiosperm, *Zostera marina* L. I. The influence of floral morphology on fluid flow. *American Journal of Botany*, v. 84, pp. 1099–1109.

Adam, T. C. 2010. Competition encourages cooperation: Client fish receive higher-quality service when cleaner fish compete. *Animal Behaviour*, v. 79, pp. 1183–1189.

Adoutte, A., G. Balavoine, N. Lartillot, O. Lespinet, B. Prudhomme, and R. de Rosa. 2000. The new animal phylogeny: Reliability and implications. *Proceedings of the National Academy of Sciences, USA*, v. 97, pp. 4453–4456.

Aitken, A.R.A., Roberts, J.L., van Ommen, T.D., Young, D.A., Golledge, N.R., Greenbaum, J.S., Blankenship, D.D., Siegert, M.J. 2016. Repeated large-scale retreat and advance of Totten Glacier indicated by inland bed erosion. *Nature*, v. 533, pp. 385–389.

Albins, M. A., and M. A. Hixon, 2008. Invasive Indo-Pacific lionfish *Pterois volitans* reduce recruitment of Atlantic coral-reef fishes. *Marine Ecology—Progress Series*, v. 367, pp. 233–238.

Alcaraz, M. 1997. Copepods under turbulence: Grazing, behavior and metabolic rates. *Scientia Marina*, v. 61 (suppl.), pp. 177–195.

Alcock, J. 2009. *Animal Behavior: An Evolutionary Approach.* Sunderland, MA: Sinauer Associates.

Alder, J. 1996. Have tropical marine protected areas worked? An initial analysis of their success. *Coastal Management*, v. 24, pp. 97–114.

Alexander, R. M. 1983. *Animal Mechanics.* Oxford: Blackwell Scientific.

Alldredge, A. L., and L. P. Madin. 1982. Pelagic tunicates: Unique herbivores in the marine plankton. *BioScience*, v. 32, pp. 655–663.

Alldredge, A. L., U. Passow, and B. Logan. 1993. The existence, abundance, and significance of large transparent exopolymer particles in the ocean. *Deep-Sea Research I*, v. 40, pp. 1131–1140.

Alldredge, A. L., and M. Silver. 1988. Characteristics, dynamics and significance of marine snow. *Progress in Oceanography*, v. 20, pp. 41–82.

Allen, B., A. M. Power, R. M. O’Riordan, A. A. Myers, and D. McGrath. 2006. Increases in the abundance of the invasive barnacle *Elminius modestus* Darwin in Ireland. *Proceedings of the Royal Irish Academy*, v. 106B, pp. 155–161.

Allen, B., and S. L. Williams. 2003. Native eelgrass *Zostera marina* controls growth and reproduction of an invasive mussel through food limitation. *Marine Ecology Progress Series*, v. 254, pp. 57–67.

Aller, J. 1998. Benthic community response to temporal and spatial gradients in physical disturbance within a deep-sea western boundary region. *Deep-Sea Research, Part I, Oceanographic Research Papers*, v. 44, pp. 39 ff.

Aller, R. C. 1980. Relationship of tube-dwelling benthos with sediment and overlying water chemistry. In K. R. Tenore and B. C. Coull, eds., *Marine Benthic Dynamics.* Columbia: University of South Carolina Press, pp. 285–308.

Allmon, R. A., and K. P. Sebens. 1988. Feeding biology and ecological impact of an introduced nudibranch, *Tritonia plebeia*, New England, USA. *Marine Biology*, v. 99, pp. 375–385.

Almany, G. R., M. L. Berumen, S. R. Thorrold, S. Planes, and G. P. Jones. 2007. Local replenishment of coral reef fish populations in a marine reserve. *Science*, v. 316, pp. 742–744.

Alroy, J., et al. 2008. Phanerozoic trends in the global diversity of marine invertebrates. *Science*, v. 321, pp. 97–100.

Álvarez-Noriega, M., Burgess, S.C., Byers, J.E. et al. 2020. Global biogeography of marine dispersal potential. *Nat Ecol Evol*. doi: 10.1038/s41559-020-1238-y

Amon, D., Ziegler, A., Dahlgren, T. et al. 2016. Insights into the abundance and diversity of abyssal megafauna in a polymetallic-nodule region in the eastern Clarion-Clipperton Zone. *Sci Rep* 6, 30492. doi: 10.1038/srep30492

Appleton, R.D., Palmer, A.R. 1988. Water-borne stimuli released by predatory crabs and damaged prey induce more predator-resistant shells in a marine gastropod. *Proceedings of the National Academy of Sciences USA*. v. 85, pp. 4387–4391.

Altman, S., and R. B. Whitlatch. 2007. Effects of small-scale disturbance on invasion success in marine communities. *Journal of Experimental Marine Biology and Ecology*, v. 342, pp.15–29.

Ambrose, R. F. 1982. Shelter utilization by the molluscan cephalopod *Octopus bimaculatus. Marine Biology*, v. 7, pp. 67–73.

American Institute of Biological Sciences. 1976. *Symposium on Sources, Effects, and Sinks of Hydrocarbons in the Aquatic Environment, American University, Washington, DC, 1976.* Washington, DC: American Institute of Biological Sciences.

American Institute of Biological Sciences. 1978. *Conference on Assessment of Ecological Impacts of Oil Spills, Keystone, Colorado, 1978.* Washington, DC: American Institute of Biological Sciences.

Ames, E. P. 2004. Atlantic cod stock structure in the Gulf of Maine. *Fisheries Research*, v. 29, pp. 10–28.

Amsler, A. D. 2008. *Algal Chemical Ecology.* Berlin: Springer-Verlag.

Anderson, A. E., J. J. Childress, and J. A. Fanuzzi. 1987. Net uptake of CO2 driven by sulfide and thiosulphate oxidation in the bacterial symbiont-containing clam *Solemya reidi. Journal of Experimental Biology*, v. 133, pp. 1–31.

Anderson, C. M., and M. Treshow. 1980. A review of environmental and genetic factors that affect height in *Spartina alterniflora* Loisei (salt marsh cord grass). *Estuaries*, v. 3, pp. 168–176.

Anderson, D. M., and D. Wall. 1978. Potential importance of benthic cysts of *Gonyaulax tamarensis* and *G. excavata* in initiating toxic dinoflagellate blooms. *Journal of Phycology*, v. 14, pp. 224–234.

Anderson, D. T. 1982. Origins and relationships among the animal phyla. *Proceedings of the Linnaean Society of New South Wales*, v. 106, pp. 151–166.

Anderson, J. W., J. M. Neff, B. A. Cox, H. E. Tatem, and G. M. Hightower. 1974. Characteristics of dispersions and water-soluble extracts of crude and refined oils and their toxicity to estuarine crustaceans and fish. *Marine Biology*, v. 27, pp. 75–88.

Anderson, R. B., S. Thatje, A. Clarke, L. S. Peck, D. B. Blake, C. D. Wilga, and B. A. Seibel. 2007. Climate change and invasibility of the Antarctic benthos. *Annual Review of Ecology, Evolution, and Systematics*, v. 38 pp. 129–154.

Andersson, M. 1994. *Sexual Selection.* Princeton, NJ: Princeton University Press.

Andrews, J. D. 1984. Transport of bivalve larvae in the James River, Virginia, USA. *Journal of Shellfish Research*, v. 3, pp. 29–40.

Arendt, D. 2003. Evolution of eyes and photoreceptor cell types. *International Journal of Developmental Biology*, v. 47, pp. 563–571.

Arias-Ortiz, A. et al. 2018. A marine heatwave drives massive losses from the world’s largest seagrass carbon stocks. *Nature Climate Change*. doi: 10.1038/s41558-018-0096-y

Armour, K.C., Marshall, J. Scott, J.R., Donohoe, A., Newsom, E.R. 2016. Southern Ocean warming delayed by circumpolar upwelling and equatorward transport. *Nature Geoscience*. doi: 10.1038/ngeo2731

Aronson, R.B., and Precht, W.F. 2001. White-band disease and the changing face of Caribbean coral reefs. *Hydrobiologia*, v. 460, pp. 25-38.

Aronson, R. B., S. Thatje, A. Clarke, L. S. Pecke, D. B. Blake, C. D. Wilga, and C. A. Seibel. 2007. Climate change and invisibility of the Antarctic benthos. *Annual Review of Ecology, Evolution, and Systematics*. v. 38, pp. 129–154.

Arrigo, K.R, G.L. van Dijken. 2015. Continued increases in Arctic Ocean primary production. *Progress in Oceanography*. doi: 10.1016/j.pocean.2015.05.002

Arp, A. J., and J. J. Childress. 1983. Sulfide binding by the blood of the hydrothermal vent tube worm *Riftia pachyptila. Science*, v. 219, pp. 295–297.

Ashmole, N. P., and M. J. Ashmole. 1967. Comparative feeding ecology of seabirds of a tropical oceanic island. *Peabody Museum of Natural History Bulletin*, v. 24, pp. 1–131.

Atema, J., and D. Stenzler. 1976. Alarm substance of the marine mud snail, *Nassarius obsoletus:* Biological characterization and possible evolution. *Journal of Chemical Ecology*, v. 3, pp. 173–187.

Atkinson, A., V. Siegel, E. Pakhomov, and P. Rothery. 2004. Long-term decline in krill stock and increase in salps within the Southern Ocean. *Nature*, v. 432, pp. 100–103.

Atkinson, A., Hill, S. L., Pakhomov, E. A., Siegel, V., Reiss, C. S., Loeb, V. J., Steinberg, D. K., Schmidt, K., Tarling, G. A., Gerrish, L. & Sailley, S. 2019. Krill (*Duphausia superba*) distribution contracts southward. *Nature*. doi: 10.1038/s41558-018-0370-z

Atlas, R. M., and T. C. Hazen. 2011. Oil biodegradation and bioremediation: A tale of the two worst spills in U.S. history. *Environmental Science and Technology*, v. 45, pp. 6709–6715.

Ator, S. W., Garcia, A. M., Schwarz, G. E., Blomquist, J. D. & Schellick, A. J. 2019. Toward explaining nitrogen and phosphorus trend in Chesapeake Bay tributaries, 1992-2012. *Journal of the American Water Resources Association,* 55: 1149–1168.

Attrill, M. J., and R. M. Thomas. 1996. Long-term distribution patterns of mobile estuarine invertebrates (Ctenophora, Cnidaria, Crustacea: Decapoda) in relation to hydrological parameters. *Marine Ecology—Progress Series*, v. 143, pp. 25–36.

Ault, J.S., et al. 2013. Assessing coral reef fish population and community changes in response to marine reserves in the Dry Tortugas, Florida, USA *Fisheries Research*, v. 144, pp. 28–37.

Austin, B. 1988. *Marine Microbiology.* New York: Cambridge University Press.

Avila, C., Angulo-Preckler, C., Martín-Martín, R.P. et al. 2020. Invasive marine species discovered on non–native kelp rafts in the warmest Antarctic island. *Scientific Reports* 10, 1639. doi: 10.1038/s41598-020-58561-y

Avise, J. C. 1992. Molecular population structure and the biogeographic history of a regional fauna: A case history with lessons for conservation. *Oikos*, v. 63, pp. 62–76.

Avise J. C., et al. 1990. The evolutionary genetic status of Icelandic eels. *Evolution*, v. 44, pp. 1254–1262.

Ayres, K. L., R. K. Booth, J. A. Hempelman, K. L., Koski, C. K. Emmons, et al. 2012. Distinguishing the impacts of inadequate prey and vessel traffic on an endangered killer whale (*Orcinus orca*) population. *PLoS ONE*, v. 7, no. 6: e36842, published online, doi: 10.1371/journal.pone.0036842.

Azam, F., T. Fenchel, J. G. Gray, L. A. Meyer-Reil, and T. Thingstad. 1983. The ecological role of water column microbes in the sea. *Marine Ecology—Progress Series*, v. 10, pp. 257–265.

**B**

Babcock, R. C., and C. N. Mundy. 1992. Reproductive biology, spawning and field fertilization rates of *Acanthaster planci. Australian Journal of Marine and Freshwater Research*, v. 43, pp. 523–534.

Babcock, R. C., C. N. Mundy, and D. Whitehead. 1994. Sperm diffusion models and *in situ* confirmation of long-distance fertilization in the free-spawning asteroid *Acanthaster planci. Biological Bulletin*, v. 186, pp. 17–28.

Bacci, G. 1965. *Sex Determination.* New York: Pergamon Press.

Backwell, P. R. Y., J. H. Christy, S. R. Telford, M. D. Jennions, and N. I. Passmore. 2000. Dishonest signaling in a fiddler crab. *Proceedings of the Royal Society B*, v. 267, pp. 719–724.

Bagby, S. C., Reddy, C. M., Aeppli, C., Fisher, G. B. & Valentine, D. L. 2017. Persistence and biodegradation of oil at the ocean floor following Deepwater Horizon. *Proceedings of the National Academy of Sciences,* 114, E9–E18.

Baird, R. W., P. A. Abrams, and L. M. Dill. 1992. Possible indirect interactions between transient and resident killer whales: Implications for the evolution of foraging and speciation in the genus *Orcinus. Oecologia*, v. 89, pp. 125–132.

Baker, A. C. 2003. Flexibility and specificity in coral-algal symbiosis: Diversity, ecology and biogeography of *Symbiodinium. Annual Review of Ecology and Systematics*, v. 34, pp. 661–689.

Bakun, A. 1990. Global climate change and intensification of coastal ocean upwelling. *Science*, v. 247, pp. 198–201.

Bakus, G. J. 1974. Toxicity in holothurians: A geographic pattern. *Biotropica*, v. 6, pp. 229–236. Ballantine, W. J. 1996. ‘No-take’ marine reserve networks support fisheries. In D. A. Hancock, D. C. Smith, A. Grant, and J. P. Beumer, eds., *Second World Fisheries Congress; Developing and Sustaining World Fisheries Resources.* Canberra, Australia: CSIRO, pp. 702–706.

Ballard, J. W. O., G. J. Olsen, D. P. Faith, W. A. Odgers, D. M. Rowell, and P. W. Atkinson. 1992. Evidence from 12S ribosomal RNA sequences that onychophorans are modified arthropods. *Science*, v. 258, pp. 1345–1348.

Banse, K. 1990. Does iron really limit phytoplankton production in the offshore subarctic Pacific? *Limnology and Oceanography*, v. 35, pp. 772–775.

Banse, K. 1992. Grazing, temporal changes of phytoplankton concentrations, and the microbial loop in the open sea. In P. G. Falkowski and A. D. Woodhead, eds., *Primary Productivity and Biogeochemical Cycles in the Sea.* New York: Plenum, pp. 409–440.

Barbeau, M. A., and R. E. Scheibling. 1994. Behavioral mechanisms of prey size selection by sea stars (*Asterias vulgaris* Verrill) and crabs (*Cancer irroratus* Say) preying on juvenile sea scallops (*Placopecten magellanicus* Gmelin). *Journal of Experimental Marine Biology and Ecology*, v. 180, pp. 103–136.

Barber, P. H., and D. R. Bellwood. 2005. Biodiversity hotspots: Evolutionary origins of biodiversity in wrasses (*Halichoeres:* Labridae) in the Indo-Pacific and new world tropics. *Molecular Phylogenetics and Evolution*, v. 35, pp. 235–253.

Barber, P. H., M. V. Erdmann, and S. R. Palumbi. 2006. Comparative phylogeography of three codistributed stomatopods: Origins and timing of regional lineage diversification in the Coral Triangle. *Evolution*, v. 60, pp. 1825–1829.

Barber, R. T. 1992. Geological and climatic time scales of nutrient variability. In P. G. Falkowski and A. D. Woodhead, eds., *Primary Productivity and Biogeochemical Cycles in the Sea.* New York: Plenum, pp. 89–106.

Barber, R. T., and F. P. Chavez. 1991. Regulation of primary productivity rate in the equatorial Pacific. *Limnology and Oceanography*, v. 36, pp. 1803–1815.

Barber, R. T., and R. L. Smith. 1981. Coastal upwelling systems. In A. R. Longhurst, ed., *Analysis of Marine Ecosystems.* New York: Academic Press, pp. 31–68.

Barbier, E. B., and I. Strand. 1998. Valuing mangrove-fishery linkages: A case study of Campeche, Mexico. *Environmental and Resource Economics*, v. 12, pp. 151–166. Bardach, J. E., J. H. Ryther, and W. O. McLarney. 1972. *Aquaculture: The Farming of Freshwater and Marine Organisms.* New York: Wiley-Interscience.

Bargett, A. E. 1991. Physical processes and the maintenance of nutrient-rich euphotic zones. *Limnology and Oceanography*, v. 36, pp. 1527–1545.

Bargu, S., C. L. Powell, Z. Wang, G. H. Doucette, and M. W. Silver. 2008. Note on the occurrence of *Pseudo-nitzschia australis* and domoic acid in squid from Monterey Bay, CA (USA). *Harmful Algae*, v. 7, pp. 45–51.

Barnes, H. 1956. *Balanus balanoides* (L.) in the Firth of Clyde: The development and annual variation of the larval population, and the causative factors. *Journal of Animal Ecology*, v. 25, pp. 72–84.

Barnes, R. D. 1987. *Invertebrate Zoology*, 5th ed. Philadelphia: Saunders. Chapter 3, “Introduction to the Metazoa,” is especially recommended.

Barreto, F. S., and M. M. McCartney. 2008. Extraordinary AFLP fingerprint similarity despite strong assortative mating between reef fish color morphospecies. *Evolution*. doi: 10.1111/j.1558-5646.2007.00285.x

Barrington, E. J. W. 1979. *Invertebrate Structure and Function*, 2nd ed. New York: Wiley.

Barron, M. G., Vivian, D. N., Heintz, R. A. & Yim, U. H. 2020. Long-term ecological impacts from oil spills: Comparison of Exxon Valdex, Hebei Spirit, and Deepwater Horizon. *Environmental Science and Technology,* 54, 6456–6467. doi: 10.1021/acs.est.9b05020

Barry, J. P., Baxter, C. H., Sagarin, R. D. & Gilman, S. E. 1995. Climate-related, long-term faunal changes in a California rocky intertidal community. *Science*, v. 267, pp. 672–675.

Barsdate, R. J., R. T. Prentki, and T. Fenchel. 1974. Phosphorous cycle of model ecosystems: Significance for decomposer food chains and effect of bacterial grazers. *Oikos*, v. 25, p. 239–251.

Barton, A., Hales, B., Waldbusser, G.G., Langdon, C., Feely, R. A. 2012. The Pacific oyster, *Crassostrea gigas*, shows negative correlation to naturally elevated carbon dioxide levels: Implications for near-term ocean acidification effects. *Limnology and Oceanography*, v. 57, pp. 698–710.

Bates, A. E., V. Tunnicliffe, and R. C. Lee. 2006. Role of thermal conditions in habitat selection by three hydrothermal vent gastropods. *Marine Ecology Progress Series*, v. 30, pp. 1–15.

Baum, J. K., R. A. Myers, D. G. Kehler, B. Worm, S. J. Harley, P. A. Doherty. 2003. Collapse and conservation of shark populations in the Northwest Atlantic. *Science*, v. 299, p. 389–392.

Bayne, B. L., ed. 1976. *Marine Mussels: Their Ecology and Physiology.* Cambridge: Cambridge University Press.

Bayne, B. L., D. A. Brown, K. Burns, D. R. Dixon, I. Ivanovici, D. R. Livingstone, D. M. Lowe, M. N. Moore, A. R. D. Stebbing, and J. Widdows. 1985. *The Effects of Stress and Pollution on Marine Animals.* New York: Praeger Scientific.

Beacham, T. D., and C. C. Wood. 1999. Application of microsatellite DNA variation to estimation of stock composition and escapement of Nass River sockeye salmon (*Oncorhynchus nerka*). *Canadian Journal of Fisheries and Aquatic Sciences*, v. 56, pp. 297–310.

Beatty, J. T., et al. 2005. An obligately photosynthetic bacterial anaerobe from a deep-sea hydrothermal vent. *Proceedings of the National Academy of Sciences USA*, v. 102, pp. 9306–9310.

Beaufort, L., Probert, I., de Garidel-Thoron, T. et al. 2011. Sensitivity of coccolithophores to carbonate chemistry and ocean acidification. *Nature* 476, 80–83. [doi: 10.1038/nature10295](https://doi.org/10.1038/nature10295)

Beaugrand, G., Kirby, R.R. 2010. Climate, plankton, and cod. *Global Change Biology* v. 16. pp. 1268–1280.

Beck, M. W., R. D. Brumbaugh, L. Airoldi, A. Carranza, L. D. Coen, C. Crawford, O. Defeo, et al. 2009. *Shellfish Reefs at Risk: A Global Analysis of Problems and Solutions.* Arlington, VA: The Nature Conservancy.

Becker, B. J., L. A. Levin, F. J. Fodrie, and P. A. McMillan. 2007. Complex larval connectivity patterns among marine invertebrate populations. *Proceedings of the National Academy of Science*, v. 34, pp. 3267–3272.

Beddington, J. R., R. J. H. Beverton, and D. M. Lavigne, eds. 1985. *Marine Mammals and Fisheries.* Boston: Allen & Unwin.

Bednarsek, N., Feely, R.A., Reum, J.C.P., Peterson, B., Menkel, J., Alin, S.R., Hales, B. 2014. *Limacina helicina* shell dissolution as an indicator of declining habitat suitability owing to ocean acidification in the California Current Ecosystem. *Proceedings of the Royal Society B*. doi: 10.1098/rspb.2014.0123

Behringer, D. C., B. R. Silliman, and K. D. Lafferty. 2020. Marine Disease Ecology. Oxford University Press.

Berdalet, E., et al. 2016. Marine harmful algal blooms, human health and wellbeing: challenges and opportunities in the 21st century. *Journal of the Marine Biological Association of the United Kingdom*. V. 96, pp. 61–91.

Bernatowicz, P.P., Kotwica-Rolinska, E. J., Sikora, A., Polanska, M.A., Pijanowska, J., Bebas, P. 2016. Temporal expression of the clock genes in the water flea Daphnia pulex (Crustacea: Cladocera). *Journal of Experimental Zoology* (A) v. 325, pp. 233–254.

Behrenfeld, M. J., et al. 2006. Climate-driven trends in contemporary ocean productivity. *Nature*, v. 444, pp. 752–755.

Behrenfeld, M.J. 2010. Abandoning Sverdrup’s Critical Depth Hypothesis on phytoplankton blooms. *Ecology* v. 91, pp.977–989.

Behrenfeld, M.J., Boss, E.S. 2014. Resurrecting the ecological underpinnings of ocean plankton blooms. *Annual Review of Marine Science* 2014, v.6, pp.167–94.

Behrenfeld, M.J., Boss, E.S. 2018. Student’s tutorial on bloom hypotheses in the context of phytoplankton annual cycles. *Global Change Biology*. doi: 10.1111/gcb.13858

Behrenfeld, M. J., A. J. Bale, Z. S. Kolber, J. Aiken, and P. G. Falkowski. 1996. Confirmation of iron limitation of phytoplankton photosynthesis in the equatorial Pacific Ocean. *Nature*, v. 383, pp. 508–511.

Behrenfeld, M. J., E. Boss, D. A. Siegel, and D. M. Shea. 2005. Carbon-based ocean productivity and phytoplankton physiology from space. *Global Biogeochemical Cycles*, v. 19 (GB1006), pp. 1–14.

Behrenfeld, M. J., and P. G. Falkowski. 1997. A consumer’s guide to phytoplankton productivity models. *Limnology and Oceanography*, v. 42, pp. 1479–1491.

Bejarano, A. C., F. M. Gulland, T. Goldstein, J. St. Leger, M. Hunter, L. H. Schwacke, F. M. VanDolah, and T. K. Rowles. 2008. Demographics and spatio-temporal signature of the biotoxin domoic acid in California sea lion (*Zalophus californianus*) stranding records. *Marine Mammal Science*, v. 24, pp. 899–912.

Belgrano, A., Lindahl, O., Hernroth, B. 1999. North Atlantic Oscillation primary productivity and toxic phytoplankton in the Gullmar Fjord, Sweden (1985–1996). *Proceedings of the Royal Society B* 266: 425–430.

Bellwood, D. R., A. S. Hoey, J. L. Ackerman, and M. Depczynski. 2006. Coral bleaching, reef phase shifts and the resilience of coral reefs. *Global Change Biology* v. 12, pp. 1587–1594.

Bellwood, D. R., and T. P. Hughes. 2001. Regional-scale assembly rules and biodiversity of coral reefs. *Science*, v. 292, pp. 1532–1535.

Bels, V. L., J. Davenport, and S. Renous. 1998. Food ingestion in the estuarine turtle *Malaclemys terrapin:* Comparison with the marine leatherback turtle *Dermochelys coriacea. Journal of the Marine Biological Association of the United Kingdom*, v. 78, pp. 953–972. Berger, J. J. 1985. *Restoring the Earth*. New York: Knopf. [See Chapter 4 for discussion on salt marsh restoration.]

Benoit-Bird, K.J., Lawson, G.L. 2016. Ecological insights from pelagic habitats acquired from using active acoustic techniques. *Annual Review of Marine Science*, v. 8, pp.463–490.

Berglund, A. 1990. Sequential hermaphroditism and the size-advantage hypothesis: An experimental test. *Animal Behavior*, v. 39, pp. 426–433.

Berkelmans, R., and M. J. H. van Oppen. 2006. The role of zooxanthellae in the thermal tolerance of corals: A nugget of hope for coral reefs in an era of climate change. *Proceedings of the Royal Society of London B*, v. 273, pp. 2305–2312.

Bernatchez, S., Xuereb, A., Laporte, M., Benestan, L., Steeves, R., Laflamme, M., Bernatchez L., Mallet, M.A. 2018. Seascape genomics of eastern oyster (*Crassostrea virginica*) along the Atlantic coast of Canada. *Evolutionary Applications*. doi: 10.1111/eva.12741

Berta, A. 1994. What is a whale? *Science*, v. 263, pp. 180–181.

Bertness, M. D. 1989. Intraspecific competition and facilitation in a northern acorn barnacle population. *Ecology*, v. 70, pp. 257–268.

Bertness, M. D. 1991a. Interspecific interactions among high marsh perennials in a New England salt marsh. *Ecology*, v. 72, pp. 125–137.

Bertness, M. D. 1991b. Zonation of *Spartina patens* and *Spartina alterniflora* in a New England salt marsh. *Ecology*, v. 72, pp. 138–148.

Bertness, M. D. 1999. *The Ecology of Atlantic Shorelines*. Sunderland, MA: Sinauer Associates. [See Chapter 7.]

Bertness, M. D., P. J. Ewanchuk, and B. R. Silliman. 2002. Anthropogenic modification of New England salt marsh landscapes. *Proceedings of the National Academy of Sciences USA*, v. 99, pp. 1395–1398.

Bertness, M. D., G. C. Trussell, P. J. Ewanchuk, B. R. Silliman, and C. M. Crane. 2004. Consumer-controlled community states on Gulf of Maine rocky shores. *Ecology*, v. 85, pp. 1321–1331.

Bett, B. J., M. G. Malzone, B. E. Narayanaswamy, and B. D. Wigham. 2001. Temporal variability in phytodetritus and megabenthic activity at the seabed in the deep Northeast Atlantic. *Progress in Oceanography*, v. 50. pp. 349–368.

Bianchi, T. S., C. Rolff, Widbom, B., and R. Elmgren. 2002. Phytoplankton pigments in Baltic Sea seston and sediments: Seasonal variability, fluxes, and transformations. *Estuarine Coastal and Shelf Science*, v. 55, pp. 369–383.

Billett, D. S. M., R. S. Lampitt, A. L. Rice, and R. F. C. Mantoura. 1983. Seasonal sedimentation of phytoplankton to the deep-sea benthos. *Nature*, v. 302, pp. 520–522.

Bird, K. T., and P. H. Benson, eds. 1987. *Seaweed Cultivation for Renewable Resources.* Amsterdam: Elsevier.

Birkeland, C. 1982. Terrestrial runoff as a cause of outbreaks of *Acanthaster planci* (Echinodermata: Asteroidea). *Marine Biology*, v. 69, pp. 175–185.

Birkeland, C., and S. Neudecker. 1981. Foraging behavior of two Caribbean chaetodontids: *Chaetodon capistratus* and *C. aculeatus. Copeia*, v. 1981, pp. 169–178.

Biscéré, T, Zampighi M, Lorrain A, Jurriaans S, Foggo A, Houlbrèque F, Rodolfo-Metalpa R. 2019 High PCO2 promotes coral primary production. *Biol. Lett.* 15: 20180777. doi: 10.1098/rsbl.2018.0777

Bitman, J., H. C. Cecil, and G. F. Fries. 1970. DDT-induced inhibition of avian shell gland carbonic anhydrase: A mechanism for thin eggshells. *Science*, v. 168, pp. 594–596.

Bitter, M. C., L. Kapsenberg, and J. P. Gattuso. 2019. Standing genetic variation fuels rapid adaptation to ocean acidification. *Nature Communications*. doi: 10.1038/s41467-019-13767-1

Blakeslee, A. M. H., J. E. Byers, and M. P. Lesser. 2008. Solving cryptogenic histories using host and parasite molecular genetics: the resolution of *Littorina littorea*’s North American origin. *Molecular Ecology*, v. 17, pp. 3684–3696.

Blakeslee, A.M.H. 2012. Invasive or native? The case history of the common periwinkle snail Littorina littorea in northeast North America. pp. 7–23 In, Holm, P. *Oceans Past: Management Insights from the History of Marine Animal Populations.* Routledge Publishers.

Bliss, D., ed. 1982–1986. *The Biology of Crustacea* (10 volumes). New York: Academic Press.

Block, B. A., et al. 2001. Migratory movements, depth preferences, and thermal biology of Atlantic bluefin tuna. *Science*, v. 293, pp. 1310–1314.

Block, B. A., et al. 2011. Tracking apex marine predator movements in a dynamic ocean. *Nature*, v. 475, pp. 86–90.

Block, B. A., J. R. Finnerty, A. F. R. Stewart, and J. Kidd. 1993. Evolution of endothermy in fish: Mapping physiological traits on a molecular phylogeny. *Science*, v. 260, pp. 210–214.

Blumer, M., and J. Sass. 1972. Oil pollution: Persistence and degradation of spilled fuel oil. *Science*, v. 176, pp. 1120–1122.

Boetius, A., Albrecht, S., Bakker, K., Bienhold, C., Felden, J., Fernández-Méndez, M., Hendricks, S., Katlein, C., Lalande, C., Krumpen, T., Nicolaus, M., Peeken, I., Rabe, B., Rogacheva, A., Rybakova, E., Somavilla, R. & Wenzhöfer, F. 2013. Export of Algal Biomass from the Melting Arctic Sea Ice. *Science,* 339: 1430–1432.

Bogsted, B., Gjo/sæter, H., Haug, T., Lindstro/m, U. 2015. A review of the battle for food in the Barents Sea: cod vs. marine mammals. *Frontiers in Ecology and Evolution*. doi: 10.3389/fevo.2015.00029

Boncagni, P., Rakaj, A., Fiancini, A., Vizzini, S. 2019. Preferential assimilation of seagrass detritus by two coexisting Mediterranean seacucumbers: *Holothuria polii* and *Holothuria tubulosa*. *Estuarine and Coastal Shelf Science* v 231. doi: 10.1016/j.ecss.2019.106464

Bopp, L., Le Quere, C., Heimann, M., Manning, A. C. & Monfray, P. 2002. Climate induced oceanic oxygen fluxes: Implications for the contemporary carbon budget. *Global Biogeochemical Cycles*, v. 16, p. 1022.

Bold, H. C., and M. J. Wynne. 1978. *Introduction to the Algae: Structure and Function.* Englewood Cliffs, NJ: Prentice-Hall.

Bollati, E., C. D'Angelo, R. Alderdice, M. Pratchett, M. Ziegler, and J. Wiedenmann. 2020. Optical feedback loop involving dinoflagellate symbiont and scleractiian host drives colorful coral bleaching. *Current Biology*. doi: 10.1016/j.cub.2020.04.055

Bone, Q., N. B. Marshall, and J. S. Blaxter. 1994. *Biology of Fishes*, 2nd ed. Glasgow and London: Blackie Academic and Professional.

Bonfil, R., et al. 2005. Transoceanic migration, spatial dynamics, and population linkages of white sharks. *Science*, v. 310, pp. 100–103.

Bonner, W. N. 1990. *The Natural History of Seals.* New York: Facts on File.

Boolootian, R. A. 1966. *Physiology of Echinodermata.* New York: Interscience Publishers. Booth, D. J., and G. A. Beretta. 2002. Changes in a fish assemblage after a coral bleaching event. *Marine Ecology—Progress Series*, v. 245, pp. 205–212.

Booth, J.A.T., McPhee-Shaw, E.E., Chua, P., Kingsley, E. Denny, M., Phillips, R., Bograd, S.J., Zeidberg, L.D., Gilly, W.F. 2012. Natural intrusions of hypoxic, low pH water into nearshore marine environments on the California coast. *Continental Shelf Research* v. 45, pp. 108–115.

Boucher, D. H., ed. 1985. *The Biology of Mutualism: Ecology and Evolution.* New York: Oxford University Press.

Boulding, E. G., and M. LaBarbera. 1986. Fatigue damage: Repeated loading enables crabs to open larger bivalves. *Biological Bulletin*, v. 171, pp. 538–547.

Bowen, B. W., N. Kanezaki, C. J. Limpus, G. R. Hughes, A. B. Meylan, and J. C. Avise. 1994. Global phylogeography of the loggerhead turtle (*Caretta caretta*) as indicated by mitochondrial DNA haplotypes. *Evolution*, v. 48, pp. 1820–1828.

Bowen, B. W., and S. A. Karl. 2007. Population genetics and phylogeography of sea turtles. *Molecular Ecology*, v. 16, pp. 4886–4907.

Bowen, B. W., A. B. Meylan, J. P. Ross, C. J. Limpus, G. H. Balaza, and J. C. Avise. 1992. Global population structure and natural history of the green turtle (*Chelonia mydas*) in terms of matriarchal phylogeny. *Evolution*, v. 46, pp. 865–881.

Boyce, D. G., M. R. Lewis, and B. Worm. 2010. Global phytoplankton decline over the past century. *Nature*, v. 466, pp. 591–596.

Boyce, D.G., H.K. Lotze, D.K. Tittensor, D.A. Carozza, B. Worm. 2020. Future ocean biomass losses may widen socioeconomic equity gaps. *Nature Communications* . doi: 10.1038/s41467-020-15708-9

Boyd, P. W., et al. 2007. Mesoscale iron enrichment experiments, 1993–2005: Synthesis and future directions. *Science*, v. 315, pp. 612–617.

Bracken, M. E. S. & Low, N. H. N. 2012. Realistic losses of rare species disproportionately impact high trophic levels. *Ecology Letters,* 15, 461–467.

Brakel, J., Werner, F.J., Terns, V., Reusch, T.B.H., Bockelmann, A.C. 2014. Current European Labyrinthula zosterae are not virulent and modulate seagrass (*Zostera marina*) defense gene expression. *PLoS One*. doi: 10.1371/journal.pone.0092448

Branch, M., and G. Branch, 1981. *The Living Shores of South Africa*. Capetown: C. Struik. Brault, S., and H. Caswell. 1993. Pod-specific demography of killer whales (*Orcinus orca*). *Ecology*, v. 74, pp. 1444–1454.

Brenchley, G. A. 1982. Predation on encapsulated larvae by adults: Effects of introduced species on the gastropod *Ilyanassa obsoleta. Marine Ecology—Progress Series*, v. 9, pp. 255–262.

Brierley, A., et al. 2002. Antarctic krill under sea ice: Elevated abundance of krill in a narrow band just south of ice edge. *Science*, v. 295, pp. 1890–1892.

Briggs, J. C. 2005. The marine East Indies: diversity and speciation. *Journal of Biogeography*, v. 32, pp. 1517–1522.

Brito-Morales, I., Schoeman, D.S., Molinos, J.G. et al. 2020. Climate velocity reveals increasing exposure of deep-ocean biodiversity to future warming. *Nature Climate Change*. doi: 10.1038/s41558-020-0773-5

Britton-Simmons, K., G. Foley, and D. Okamoto. 2009. Spatial subsidy in the subtidal zone: Utilization of drift algae by a deep subtidal sea urchin. *Aquatic Biology*, v. 5, pp. 233–243.

Brodie, J., Fabricius, K., De’ath, G., Okaji, K. 2005. Are increased nutrient inputs responsible for more outbreaks of crown-of-thorns starfish? An appraisal of the evidence. *Marine Pollution Bulletin*, v. 51, pp. 266–278.

Brooke CG, Roque BM, Shaw C, Najafi N, Gonzalez M, Pfefferlen A, De Anda V, Ginsburg DW, Harden MC, Nuzhdin SV, Salwen JK, Kebreab E and Hess M. 2020. Methane reduction potential of two Pacific coast macroalgae during in vitro ruminant fermentation. *Front. Mar. Sci.* 7: 561. doi: 10.3389/fmars.2020.00561

Brooke, N., and W. H. Holland. 2003. The evolution of multicellularity and early animal genomes. *Current Opinion in Genetics and Development*, v. 13, pp. 599–603.

Brown, A. C., and A. McLachlan. 1990. *Ecology of Sandy Shores*. New York: Elsevier.

Brown, H. M., A. Briden, T. Stokell, F. J. Griffin, and G. N. Cherr. 2004. Thermotolerance and Hsp70 profiles in adult and embryonic California native oysters, *Ostreola conchaphila* (Carpenter, 1857). *Journal of Shellfish Research* 23.

Brown, O. B., R. H. Evans, J. W. Brown, H. R. Gordon, R. C. Smith, and K. S. Baker. 1985. Phytoplankton blooming off the U.S. east coast: A satellite description. *Science*, v. 229, pp. 163–167.

Browne, K. A., and R. K. Zimmer. 2001. Controlled field release of a waterborne chemical signal stimulates planktonic larvae to settle. *Biological Bulletin*, v. 200, pp. 87–91.

Bruland, K. W., J. R. Donat, and D. A. Hutchins. 1991. Interactive influences of bioactive trace metals on biological production in oceanic waters. *Limnology and Oceanography*, v. 36, pp. 1555–1567.

Bruno, J.F., Sweatman, H., Precht, W.F., Selig, E.R., Schutte, V.G.W. 2009. Assessing evidence of phase shifts from coral to macroalgal dominance on coral reefs *Ecology* v. 90, pp. 1478–1484.

Brunton, C. H., L. R. M. Cocks, and S. L. Long, eds. 2001. *Brachiopods: Past and Present* (special volume). London: Systematics Association.

Brusca, R. C., and G. J. Brusca. 1990. *Invertebrates.* Sunderland, MA: Sinauer Associates. Brusca, R. C., and G. J. Brusca. 2003. *Invertebrates*, 2nd ed. Sunderland, MA: Sinauer Associates.

Brusca, R.C., Moore, W., Shuster, S.M. 2016. *Invertebrates*, 3rd ed., Sunderland, MA; Sinauer.

Bryan, G. W., P. E. Gibbs, L. G. Hummerstone, and G. R. Burt. 1986. The decline of the gastropod *Nucella lapillus* around south-western England: Evidence for the effect of tributyltin from antifouling paints. *Journal of the Marine Biological Association of the United Kingdom*, v. 66, pp. 611–640.

Buckley, B. A., M.-E. Owen, and G. E. Hofmann. 2001. Adjusting the thermostat: The threshold induction temperature for the heatshock response in intertidal mussels (genus *Mytilus*) changes as a function of thermal history. *Journal of Experimental Biology*, v. 204, pp. 3571–3579.

Buckley, B. A., and G. N. Somero. 2009. cDNA microarray analysis reveals the capacity of the cold-adapted Antarctic fish *Trematomus bernacchii* to alter gene expression in response to heat stress. *Polar Biology*, v. 32, pp. 403–415.

Bue, B. G., S. Sharr, and J. E. Seeb. 1998. Evidence of damage to pink salmon populations inhabiting Prince William Sound, Alaska, two generations after the *Exxon Valdez* oil spill. *Transactions of the American Fisheries Society*, v. 127, pp. 35–43.

Buessler, K. O., J. E. Andrews, S. M. Pike, and M. A. Charette. 2004. The effects of iron fertilization on carbon sequestration in the Southern Ocean. *Science*, v. 304, pp. 414–417.

Bulleri, F. 2009. Facilitation research in marine systems: State of the art, emerging patterns and insights for future development. *Journal of Ecology*, v. 97, pp. 2001–2030.

Bundy, M. H., and G.-A. Paffenhoffer. 1996. Analysis of flow fields associated with freely swimming calanoid copepods. *Marine Ecology Progress Series*, v. 133, pp. 99–113.

Burkenroad, M. D. 1943. A possible function of bioluminescence. *Journal of Marine Research* v. 2, pp. 161–164.

Burkholder, J. M., M. A. Mallin, and H. B. Glasgow, Jr. 1999. Fish kills, bottom-water hypoxia, and the toxic *Pfiesteria* complex in the Neuse River and Estuary. *Marine Ecology— Progress Series*, v. 179, pp. 301–310.

Burtenshaw, J.C., Oleson, E.M., Hildebrand, J.A., McDonald, M.A., Andrew, R.K., Howe, B.M., Mercer, J.A. 2004. Acoustic and satellite remote sensing of blue whale seasonality and habitat in the Northeast Pacific. *Deep-Sea Research* II, v. 51, pp. 967–986.

Burton, R. S. 1998. Intraspecific phylogeography across the Point Conception biogeographic boundary. *Evolution*, v. 52, pp. 734–745.

Burton, R.S. 2009. Molecular markers, natural history, and conservation of marine animals. *BioScience* v. 59, pp. 831–840.

Bushnell, D. M., and K. J. Moore. 1991. Drag reduction in nature. *Annual Reviews of Fluid Mechanics*, v. 23, pp. 65–79.

Buss, L. W. 1990. Competition within and between encrusting clonal invertebrates. *Trends in Ecology and Evolution*, v. 5, pp. 352–356.

Buss, L. W., and J. B. C. Jackson. 1979. Competitive networks: Nontransitive competitive relationships in cryptic coral reef environments. *American Naturalist*, v. 113, pp. 223–234.

Buston, P. M., and M. A. Cant. 2006. A new perspective on size hierarchies in nature: Patterns, causes, and consequences. *Oecologia*, v. 149, pp. 362–372.

Butler, A. 1995. Subtidal rocky reefs. In A. J. Underwood and M. G. Chapman, eds., *Coastal Marine Ecology of Temperate Australia.* Sydney: University of New South Wales Press, pp. 83–105.

Butler, A. J. 1986. Recruitment of sessile invertebrates at five sites in Gulf St. Vincent, South Australia. *Journal of Experimental Marine Biology and Ecology*, v. 97, pp. 13–36. Butler, A. J., and P. L. Chesson. 1990. Ecology of sessile animals on sublittoral hard substrata: The need to measure variation. *Australian Journal of Ecology*, v. 15, pp. 521–531.

Butman, C. A. 1987. Larval settlement of soft-sediment invertebrates: The spatial scales explained by active habitat selection and the emerging role of hydrodynamic processes. *Oceanography and Marine Biology Annual Reviews*, v. 25, pp. 113–165.

Butman, C. A., J. P. Grassle, and E. J. Buskey. 1988. Horizontal swimming and gravitational sinking of *Capitella* sp. 1 (Annelida: Polychaeta) larvae: Implications for settlement. *Ophelia*, v. 29, pp. 43–57.

Byrne, M. 2011. Impact of ocean warming and ocean acidification on marine invertebrate life history stages: vulnerabilities and potential for persistence in a changing ocean. *Oceanography and Marine Biology: An Annual Review*, 49:1–42.

Byrnes, J., J. J. Stachowicz, K. M. Hultgren, A. R. Hughes, S. V. Olyarnik, and C. S. Thornber. 2006. Predator diversity strengthens trophic cascades in kelp forests by modifying herbivore behaviour. *Ecology Letters*, v. 9, pp. 61–71.

**C**

Calbet, A. 2001. Mesozooplankton grazing effect on primary production: A global comparative analysis in marine ecosystems. *Limnology and Oceanography*, v. 26, pp. 1824–1830.

Caley, M. J., M. H. Carr, M. A. Hixon, T. P. Hughes, G. P. Jones, and B. A. Menge. 1996. Recruitment and the local dynamics of open marine populations. *Annual Review of Ecology and Systematics*, v. 27, pp. 477–507.

Cammen, L. M. 1980. Ingestion rate: An empirical model for aquatic deposit feeders and detritivores. *Oecologia*, v. 20, pp. 33–49.

Capone, D. G., J. P. Zehr, H. W. Paerl, B. Bergman, and E. J. Carpenter. 1997. *Trichodesmium* a globally significant marine cyanobacterium. *Science* v. 276, pp. 1221–1229. doi: 1210.1126/science.1276.5316.1221.

Capone, D. G., D. A. Bronk, M. R. Mulholland, and E. J. Carpenter. 2008. *Nitrogen in the Marine Environment*, 2nd ed. San Diego: Academic Press.

Caraco, N., J. J. Cole, P. A. Raymond, D. L. Strayer, M. L. Pace, S. E. G. Findlay, and D. T. Fischer. 1997. Zebra mussel invasion in a large, turbid, river: Phytoplankton response to increased grazing. *Ecology*, v. 78, pp. 588–602.

Caraco, N. F., J. J. Cole, and D. L. Strayer. 2006. Top-down control from the bottom: Regulation of eutrophication in a large river by benthic grazing. *Limnology and Oceanography*, v.51, pp. 664–670.

Carefoot, T. 1977. Pacific Seashores. Seattle: University of Washington Press.

Carey, G. F., J. M. Teal, J. W. Kanwisher, K. D. Lawson, and J. S. Beckett. 1971. Warm-bodied fish. *American Zoologist*, v. 11, pp. 137–145.

Carey, S. C., C. R. Fisher, and H. Felbeck. 1988. Mussel growth supported by methane as sole carbon and energy source. *Science*, v. 240, pp. 78–80.

Carlton, J. T., and J. B. Geller. 1993. Ecological roulette: The global transport of non-indigenous marine organisms. *Science*, v. 261, pp. 78–82.

Carlton, J. T., J. K. Thompson, L. E. Schemel, and F. H. Nichols. 1990. Remarkable invasion of San Francisco Bay (California, USA) by the Asian clam *Potamocorbula amurensis.* I. Introduction and dispersal. *Marine Ecology—Progress Series*, v. 66, pp. 81–94.

Carlton, J. T., G. J. Vermeij, D. R. Lindberg, D. A. Carlton, and E. C. Dubley. 1991. The first historical extinction of a marine invertebrate in an ocean basin: The demise of the eelgrass limpet, *Lottia alveus*. *Biological Bulletin*, v. 180, pp. 72–80.

Carney, R. S. 2005. Zonation of deep biota on continental margins. *Oceanography and Marine Biology, An Annual Review*, v. 43, pp. 211–278.

Caron, D. A., et al. 2003. Development and application of a monoclonal-antibody technique for counting *Aureococcus anophagefferens*, an alga causing recurrent brown tides in the mid- Atlantic United States. *Applied and Environmental Microbiology*, v. 69, pp. 5492–5502.

Carpenter, E. J. 1973. Nitrogen fixation by *Oscillatoria* (*Trichodesmium*) *thiebautii* in the southwestern Sargasso Sea. *Deep-Sea Research*, v. 20, pp. 285–288.

Carpenter, E. J., and K. Romans. 1991. Major role of the cyanobacterium *Trichodesmium* in nutrient cycling in the North Atlantic Ocean. *Science,* v. 254, pp. 1356–1358.

Carpenter, K. E., et al. 2008. One third of reef-building corals face elevated extinction risk from climate change and local impacts. *Science*, v. 321, pp. 560–563.

Carr, A. 1984. *The Sea Turtle: So Excellent a Fishe.* Austin: University of Texas Press. Carr, J. W., J. M. Anderson, F. G. Whoriskey, and T. Dilworth. 1997. The occurrence and spawning of cultured Atlantic salmon (*Salmo salar*) in a Canadian river. *ICES Journal of Marine Science*, v. 54, pp. 1064–1073.

Carr, M. H., J. E. Neigel, J. A. Estes, S. Andelman, R. R. Warner, and J. L. Largier. 2003. Comparing marine and terrestrial ecosystems: Implications for the design of coastal marine reserves. *Ecological Applications*, v. 13, pp. S90–S107. [See also other articles in this supplemental journal issue of *Ecological Applications*, v. 13.]

Carrier, J. C., J. A. Musick, and M. R. Heithaus. 2004. *Biology of Sharks and Their Relatives.* Boca Raton, FL: CRC Press.

Carrington, E. 2002. Seasonal variation in the attachment strength of blue mussels: Causes and consequences. *Limnology and Oceanography*, v. 47, pp. 1723–1733.

Carroll, M. L., and R. C. Highsmith. 1996. Role of catastrophic disturbance in mediating *Nucella–Mytilus* interactions in the Alaskan rocky intertidal. *Marine Ecology—Progress Series*, v. 138, pp. 125–133.

Carson, R. 1989. *The Sea Around Us.* New York: Oxford University Press. [Reissue of the classic 1950 book with afterword by Jeffrey Levinton.]

Carter, A. R., and R. J. Anderson. 1991. The intertidal alga *Gelidium pristoides* in the eastern Cape, South Africa. *Journal of the Marine Biological Association of the United Kingdom*, v. 71, pp. 555–568.

Carter, H. H., and D. W. Pritchard. 1988. Oceanography of Chesapeake Bay. In B. Kjerfve, ed., *Hydrodynamics of Estuaries.* Boca Raton, FL: CRC Press, pp. 2–11.

Cassar, N., et al. 2007. The Southern Ocean biological response to aeolian iron deposition. *Science*, v. 317, pp. 1067–1070.

Castellano, I., Ercolesi, E., Palumbo, A. 2014. Nitric Oxide Affects ERK signaling through downregulation of MAP kinase phosphatase levels during larval development of the ascidian *Ciona intestinalis*. *PLoS ONE* 9(7): e102907. doi: 10.1371/journal.pone.0102907.

Castilla, J. C. 1996. Chilean resources of benthic invertebrates: Fishery, collapses, stock rebuilding and the role of coastal management areas and national parks. In D. A. Hancock, D. C. Smith, A. Grant, and J. P. Beumer, eds., *Second World Fisheries Congress; Developing and Sustaining World Fisheries Resources.* Canberra, Australia: CSIRO, pp. 130–135.

Castilla, J. C., and R. Durãn. 1985. Human exclusion from the rocky intertidal zone of central Chile: The effects on *Concholepas concholepas* (Gastropoda). *Oikos*, v. 45, pp. 391–399. Cavalier-Smith, T. 1998. A revised six-kingdom system of life. *Biological Reviews*, v. 73, pp. 203–266.

Cavalier-Smith, T. 2003. Phylogeny and classification of phylum Cercozoa (Protozoa). *Protist*, v. 154, pp. 341–358.

Cavan, E.L. et al. 2019. The importance of Antarctic krill in biogeochemical cycles. *Nature Communications*. doi: 10.1038/s41467-019-12668-7

Cavanaugh, C. M. 1985. Symbiosis of chemolithotrophic bacteria and marine invertebrates from hydrothermal vents and reducing sediments. *Bulletin of the Biological Society of Washington*, v. 6, pp. 373–388.

Cavanaugh, K. C., D. C. Reed, T. W. Bell, M. C. Castorani, R. Beas-Luna, 2019. *Front. Mar. Sci.* 6, 413.

Cervino, J. M., et al. 2008. The Vibrio core group induces yellow band disease in Caribbean and Indo-Pacific reef-building corals. *Journal of Applied Microbiology*, v. 105, pp. 1658–1671.

Chalant, A., C. Jézéquel, P. Keith, and B. Hugueny. 2019. The global geography of fish diadromy modes. *Global Ecology and Biogeography* 28:1272–1282. doi: 1210.1111/geb.12931.

Chamberlain, J. A., Jr., and R. R. Graus. 1975. Water flow and hydromechanical adaptations of branched reef corals. *Bulletin of Marine Science, Gulf and Caribbean*, v. 25, pp. 112–125.

Chan, F., J. A. Barth, J. Lubchenco, A. Kirincich, H. Weeks, W. T. Peterson, and B. A. Menge. 2008. Emergence of anoxia in the California current large marine ecosystem. *Science*, v. 319, p. 920.

Chang, D., and T. F. Duda, Jr. 2012. Extensive and continuous duplication facilitates rapid evolution and diversification of gene families. *Molecular Biology and Evolution*, v. 29, pp. 2019–2029.

Chaparro, O. R., R. J. Thompson, and J. E. Ward. 1993. In vivo observations of larval brooding in the Chilean oyster, *Ostrea chilensis* Philippi 1845. *Biological Bulletin*, v. 185, pp. 365–372.

Chapman, D.D., Pinhal, D., Shivji, M. 2009. Tracking the fin trade: genetic stock identification in western Atlantic scalloped hammerhead sharks *Sphyrna lewini*. *Endangered Species* R*esearch* v. 9, pp. 221-228.

Chapman, A. R. O. 1987. *Functional Diversity of Plants in the Sea and on Land.* Boston: Jones and Bartlett.

Cheng, I.-J., J. S. Levinton, M. M. McCartney, and D. E. Martinez. 1993. A bioassay approach to seasonal variation in the nutritional value of sediment. *Marine Ecology—Progress Series*, v. 94, pp. 275–285.

Chester, C. M. 1996. The effect of adult nutrition on the reproduction and development of the estuarine nudibranch, *Tenellia adspersa* (Nordmann, 1845). *Journal of Experimental Marine Biology and Ecology*, v. 198, pp. 113–130.

Childress, J. J. 1971. Respiratory adaptations to the oxygen minimum layer in the bathypelagic mysid *Gnathophausia ingens. Biological Bulletin (Woods Hole)*, v. 141, pp. 109–121.

Childress, J. J., 1995. Are there physiological and biochemical adaptations of metabolism in deep-sea animals? *Trends in Ecology and Evolution*, v. 10, pp. 30–36.

Childress, J. J., and B. A. Seibel. 1998. Life at stable low-oxygen levels: Adaptations of animals to oceanic oxygen minimum layers. *Journal of Experimental Biology*, v. 201, pp. 1223–1232.

Chisholm, S. W. 1992. What limits phytoplankton growth. *Oceanus*, v. 35, pp. 36–46.

Chiswell, S. 2011. Annual cycles and spring blooms in phytoplankton: don't abandon Sverdrup completely. *Mar. Ecol. Prog. Ser*. 443, 39–50. doi: 10.3354/meps09453

Christensen, V., S. Guénette, J. J. Heymans, C. J. Walters, R. Watson, D. Zeller, and D. Pauly. 2003. Hundred-year decline of North Atlantic predatory fishes. *Fish and Fisheries*, v. 4, pp. 1–24.

Christy, J. H. 1983. Female choice in the resource-defense mating system of the sand fiddler crab, *Uca pugilator. Behavioral Ecology and Sociobiology*, v. 12, pp. 169–180.

Church, J. A. 2007. Oceans: A change in circulation? *Science,* v. 317, pp. 908–909.

Cimino, M., Lynch, H., Saba, V. et al. 2016. Projected asymmetric response of Adélie penguins to Antarctic climate change. *Sci Rep* 6, 28785. doi: 10.1038/srep28785

Cinner, J. E., Zamborain-Mason, J., Gurney, G. G., Graham, N. A. J., et al. 2020. Meeting fisheries, ecosystem function, and biodiversity goals in a human-dominated world. *Science,* 368:307-311. doi: 10.1126/science.aax9412

Clapham, P. J., and P. J. Palsbøll. 1997. Molecular analysis of paternity shows promiscuous mating in female humpback whales (*Megaptera novaeangliae*, Borowski). *Proceedings of the Royal Society B*, v. 264, pp. 95–98.

Clark, M. 2001. Are deepwater fisheries sustainable?—the example of orange roughy (*Hoplostethus atlanticus*) in New Zealand. *Fisheries Research*, v. 51, pp. 123–135.

Clark, M., A. A. Rowden, T. Schlacher, Williams, A., M. Consalvey, K. I. Stocks, A. D. Rogers, T. D. O’Hara, et al. 2010. The ecology of seamounts: Structure, function and human impacts. *Advances in Marine Science*, v. 2, pp. 253–278.

Clark, R. B. 1986. *Marine Pollution.* Oxford: Clarendon Press. v. 16, pp. 559–568.

Clarke, A., D. K. A. Barnes, and D. A. Hodgeson. 2005. How isolated is Antarctica? *Trends in Ecology and Evolution*, v. 20, pp. 1–3.

Clarke, S.C., McAllister, M.K., Milner-Gulland, E. J., Kirkwood, G. P., Michielsens, C. G. J., Agnew, D. J., Pikitch, E.K., Nakano, H. and Shivji, M.S. 2006. Global estimates of shark catches using trade records from commercial markets. *Ecology Letters v.* 9, pp. 1115-1126.

Clarkson, E. N. K. 1998. *Invertebrate Palaeontology and Evolution.* Oxford: Blackwell Science.

Cleary, D.F.R., Swierts, T., Coelho, F.J.R.C. et al. 2019. The sponge microbiome within the greater coral reef microbial metacommunity. *Nature Communications* 10, 1644. doi: 10.1038/s41467-019-09537-8

Cleveland, A., E. A. Verde, and R. W. Lee. 2011. Nutritional exchange in a tropical tripartite symbiosis: direct evidence for the transfer of nutrients from anemonefish to host anemone and zooxanthellae. *Marine Biology*, v. 158, pp. 589–602.

Cloern, J. E., et al. 2010. Biological communities in San Francisco Bay track large-scale climate forcing over the North Pacific. *Geophysical Research Letters*, v. 37, L21602. doi: 10.1029/2010GL044774.

Cloern, J. E., A. D. Jassby, J. K. Thompson, and K. A. Hieb. 2007. A cold phase of the East Pacific triggers new phytoplankton blooms in San Francisco Bay. *Proceedings of the National Academy of Science*, v. 104, pp. 18561–18565.

Cloud, P. E. J. 1968. Pre-metazoan evolution and the origins of the Metazoa. In E. T. Drake, ed., *Evolution and Environment.* New Haven, CT: Yale University Press, pp. 1–72.

Coates, M., and S. C. McKillup. 1995. Role of recruitment and growth in determining the upper limit of distribution of the intertidal barnacle *Hexaminius popeiana*. *Marine and Freshwater Research*, v. 46, pp. 1065–1070.

Coblentz, F.E., Towle, D.W., Shafer, T.H. 2006. Expressed sequence tags from normalized cDNA libraries prepared from gill and hypodermal tissues of the blue crab, *Callinectes sapidus*. *Comparative Biochemistry and Physiology Part D Genomics Proteomics*. v. 1, pp. 200-208.

Coen, L. D., R. D. Brumbaugh, D. Bushek, R. Grizzle, M. W. Luckenbach, M. H. Posey, S. P. Powers, and S. G. Tolley. 2007. Ecosystem services related to oyster restoration. *Marine Ecology Progress Series*, v. 341, pp. 303–307.

Coen, L. D., K. L. Heck, Jr., and L. G. Abele. 1981. Experiments on competition and predationamong shrimps of seagrass meadows. *Ecology*, v. 62, pp. 1484–1493.

Cohen, A. N., and J. T. Carlton. 1998. Accelerating invasion rate in a highly invaded estuary. *Science*, v. 279, pp. 555–558.

Colaío, A., D. Desbruyeres, and J. Guezennec. 2007. Polar lipid fatty acids as indicators of trophic associations in a deep-sea vent system community. *Marine Ecology*, v. 28, pp. 15–24.

Cole, J. J., S. Findlay, and M. L. Pace. 1988. Bacterial production in fresh and saltwater ecosystems: A cross-system overview. *Marine Ecology-Progress Series*, v. 43, pp. 1–10.

Cole, J. J., M. L. Pace, S. L. Carpenter, and J. F. Kitchell. 2000. Persistence of net heterotrophy in lakes during nutrient addition and food web manipulations. *Limnology and Oceanography*, v. 45, pp. 1718–1730.

Coll, J. C. 1992. The chemistry and chemical ecology of octocorals (Coelenterata, Anthozoa, Octocorallia). *Chemical Reviews*, v. 92, pp. 613–631.

Collie, J. S., G. A. Escanero, and P. C. Valentine. 1997. Effects of bottom fishing on the benthic megafauna of Georges Bank. *Marine Ecology Progress Series*, v. 155, pp. 159–172.

Comiso, J.C. 2002. A rapidly declining perennial sea ice cover in the Arctic. *Geophysical Research Letters.* doi: 10.1029/2002GL015650

Conlan, K. E., H. S. Lenihan, R. G. Kvitek, and J. S. Oliver. 1998. Ice scour disturbance to benthic communities in the Canadian High Arctic. *Marine Ecology Progress Series*, v. 166, pp. 1–16.

Connell, J. H. 1961. The influence of interspecific competition and other factors on the distribution of the barnacle *Chthamalus stellatus*. *Ecology*, v. 42, pp. 710–723.

Connell, J. H., and R. O. Slatyer. 1977. Mechanisms of succession in natural communities and their role in community stability and organizations. *American Naturalist*, v. 111, pp. 1119–1144.

Connolly, S. R., and J. Roughgarden. 1999a. Increased recruitment of northeast Pacific barnacles during the 1997 El Niño. *Limnology and Oceanography*, v. 44, pp. 466–469.

Connolly, S. R., and J. Roughgarden. 1999b. Theory of marine communities: Competition, predation, and recruitment-dependent interaction strength. *Ecological Monographs*, v. 69, pp. 277–296.

Connon, R.E., Geist, J., Pfeiff, J., Loguinof, A.V., D’Abronzo, L.S., Wintz, H., Vulpe, C.D., and Werner, I. 2009. Linking mechanistic and behavioral responses to sublethal esfenvalerate exposure in the endangered delta smelt; *Hypomesus transpacificus* (Fam. Osmeridae). *BMC Genomics* 10: 608. doi: 10.1186/1471-2164-10-608

Connor, R. C., J. Mann, P. L. Tyack, and H. Whitehead. 1998. Social evolution in toothed whales. *Trends in Ecology and Evolution*, v. 13, pp. 228–232.

Conover, D. O., and S. B. Munch. 2002. Sustaining fisheries yields over evolutionary time scales. *Science*, v. 297, pp. 94–96.

Conway Morris, S. 1998. *The Crucible of Creation.* Oxford: Oxford University Press.

Cosson-Sarradin, N., M. Sibuet, G. L. J. Paterson, and A. Vangriesheim. 1998. Polychaete diversity at tropical Atlantic deep-sea sites: Environmental effects. *Marine Ecology— Progress Series*, v. 165, pp. 173–185.

Costello, C., S. D. Gaines, and J. Lynham. 2008. Can catch shares prevent fisheries collapse? *Science*, v. 321, pp. 1678–1681.

Costello, C., D. Ovando, R. Hilborn, S. D. Gaines, O. Deschenes, and S. E. Lester. 2012. Status and solutions for the world’s unassessed fisheries. *Science*, v. 338, pp. 517–520.

Côté, I.M., Precht, W.F., Aronson, R.B., Gardner, T.A., 2016. Is Jamaica a good model for understanding Caribbean coral reef dynamics? *Marine Pollution Bulletin* in press.

Coull, B. C., et al. 1977. Quantitative estimates of the meiofauna from the deep sea off North Carolina USA. *Marine Biology*, v. 39, pp. 233–240.

Coull, B. C., and W. B. Vernberg. 1970. Harpacticoid copepod respiration: *Enhydrosoma propinquum* (Brady) and *Longipedia helgolandica* (Klie). *Marine Biology*, v. 5, pp. 341–344.

Cowen, R. K., C. B. Paris, and A. Srinivasan. 2006. Scaling of connectivity in marine populations. *Science*, v. 311, pp. 522–527.

Cowles, D. L., and J. J. Childress. 1988. Swimming speed and oxygen consumption in the bathypelagic mysid *Gnathophausia ingens. Biological Bulletin*, v. 175, pp. 111–121.

Cox, A., and B. R. Hart. 1986. *Plate Tectonics: How It Works.* Oxford: Blackwell Science. Cox, P. A. 1988. Hydrophilous pollination. *Annual Review of Ecology and Systematics*, v. 19, pp. 261–279.

Craig, J. K., J. A. Rice, L. B. Crowder, and D. A. Nadeau. 2007. Density-dependent growth and mortality in an estuary-dependent fish: An experimental approach with juvenile spot *Leiostomus xanthurus*. *Marine Ecology Progress Series*, v. 343, pp. 251–262. Cronin, T. M., and M. E. Raymo. 1997. Orbital forcing of deep-sea benthic species diversity. *Nature*, v. 385, pp. 624–627.

Cronin, T. W. 1982. The estuarine retention of larvae of the crab *Rhithropanopeus harrisii. Estuarine and Coastal Shelf Science*, v. 15, pp. 207–220.

Crowder, L. B., D. T. Crouse, S. S. Heppell, and T. H. Martin. 1994. Predicting the impact of turtle excluder devices on loggerhead sea turtle populations. *Ecological Applications*, v. 4, pp. 437–445.

Crowder, L. B., E. L. Hazen, M. Avissar, R. Bjorkland, C. Latanich, and M. B. Ogburn. 2008. The impacts of fisheries on marine ecosystems and the transition to ecosystem-based management. *Annual Review of Ecology, Evolution and Systematics*, v. 39, pp. 259–278.

Crowley, T. J. 2000. Causes of climate change over the past 1000 years. *Science*, v. 289, pp. 270–277.

Cucio, C., Engelen, A.H., Costa, R., Muyzer. 2016. Rhizosphere microbiomes of European seagrasses are selected by the plant, but are not species specific. *Frontiers of Microbiology* v. 31. doi: 10.3389/fmicb.2016.00440

Cunning, R., Silverstein, R. N. & Baker, A. C. 2015. Investigating the causes and consequences of symbiont shuffling in a multi-partner coral reef symibiosis under environmental change. *Proceedings of the Royal Society B* 282(1809), 20141725.

Cunningham, C. W. 2008. How to use genetic data to distinguish between natural and human- mediated introduction of *Littorina littorea* to North America. *Biological Invasions*, v. 10, pp. 1–6.

Cushing, D. 1988. *The Provident Sea.* Cambridge: Cambridge University Press.

Cushing, D. H. 1975. *Marine Ecology and Fisheries.* Cambridge: Cambridge University Press.

**D**

d’Ovidio, F., S. De Monte, S. Alvain, Y. Dandonneau, and M. Levy. 2010. Fluid dynamical niches of phytoplankton types. *Proceedings of the National Academy of Science*, v. 107, pp. 18366–18370.

Dahlke, F. T., S. Wohlrab, M. Butzin, and H.-O. Portner. 2020. Thermal bottlenecks in the life cycle define climate vulnerability of fish. *Science* 369:65-70.

Dalpadado, P., et al. 2012. Climate effects on the Barents Sea ecosystem dynamics. *ICES Journal of Marine Science* v. 69, pp. 1303–1316. doi: 10.1093/icesjms/fss063

Danovaro, R., Pusceddu, A. 2007. Biodiversity and ecosystem functioning in coastal lagoons: Does microbial diversity play any role? *Estuarine Coastal and Shelf Science* v. 75 pp. 4-12.

Daunt, F., Mitchell, I. 2013. Impacts of climate change on seabirds. *MCCIP Science Review 2013*: 125-133.

Davenport, J. 2017. Crying a river: how much salt-laden jelly can a leatherback turtle really eat? Journal of Experimental Biology v. 220, pp. 1737-1744. doi:10.1242/jeb.155150

Davenport, J., Jones, T.T., Work, T.M., Balazs. 2015. Topsy-turvy: turning the counter-current heat exchange of leatherback turtles upside down. *Biology Letters.* doi: 10.1098/rsbl.2015.0592

Darwin, C. 1842. *On the Structure and Distribution of Coral Reefs.* London: Smith, Elder. Darwin, C. 1989. *The Voyage of the Beagle: Charles Darwin’s Journal of Researches,* J. Browne and M. Neve, eds. New York: Penguin Books.

Dauer, D. M. 1983. Functional morphology and feeding behavior of *Scolelepis squamata* (Polychaeta: Spionidae). *Marine Biology*, v. 77, pp. 279–285.

Dauvin, J.-C. 1998. The fine sand *Abra alba* community of the Bay of Mordaix twenty years after the *Amoco Cadiz* oil spill. *Marine Pollution Bulletin*, v. 36, pp. 669–676.

Davenport, J. 1998. Temperature and the life-history strategies of sea turtles. *Journal of Thermal Biology*, v. 22, pp. 479–488.

Davis, A. L., K. N. Thomas, F. E. Goetz, B. H. Robison, S. Johnsen, and K. J. Osbom. 2020. Ultra-black camouflage in deep-sea fishes. *Current Biology* 30: 1-7. doi: 10.1016/j.cub.2020.06.044

Davis AL, Sutton TT, Kier WM, Johnsen S. 2020 Evidence that eye-facing photophores serve as a reference for counterillumination in an order of deep-sea fishes. Proc. R. Soc. B 287: 20192918. doi: 10.1098/rspb.2019.2918

Dawidowicz, P., and C. J. Loose. 1992. Cost of swimming by *Daphnia* during diel vertical migration. *Limnology and Oceanography*, v. 37, pp. 665–669.

Dawson, E. Y. 1966. *Marine Biology: An Introduction.* New York: Holt, Rinehart and Winston.

Day, J. W., Jr., C. A. S. Hall, W. M. Kemp, and A. Yanez-Arancibia. 1989. *Estuarine Ecology*. New York: Wiley.

Dayton, P. K. 1971. Competition, disturbance and community organization: The provision and subsequent utilization of space in a rocky intertidal community. *Ecological Monographs*, v. 41, pp. 351–389.

Dayton, P. K. 1985. The ecology of kelp communities. *Annual Review of Ecology and Systematics*, v. 16, pp. 215–245.

Dayton, P. K., and R. R. Hessler. 1972. Role of biological disturbance in maintaining diversity in the deep sea. *Deep-Sea Research*, v. 19, pp. 199–208.

Dayton, P. K., and J. S. Oliver. 1977. Antarctic soft-bottom benthos in oligotrophic and eutrophic environments. *Science*, v. 197, pp. 55–58.

Dayton, P. K., and M. J. Tegner. 1984. Catastrophic storms, El Niño, and patch stability in a southern California kelp community. *Science*, v. 224, pp. 283–285.

Dayton, P. K., S. F. Thrush, M. T. Agardy, and R. J. Hofman. 1995. Environmental effects of marine fishing. *Aquatic Conservation: Marine and Freshwater Ecosystems*, v. 5, pp. 205–232.

de Baar, H. J. W., et al. 2005. Synthesis of iron fertilization experiments: From the iron age in the age of enlightenment. *Journal of Geophysical Research*, C09S16. doi: 10.1029/2004JC002601.

de Bruyn, P. J. N., C. A. Tosh, M. N. Bester, E. Z. Cameron, T. McIntyre, and I. S. Wilkinson. 2011. Sex at sea: Alternative mating system in an extremely polygynous mammal. *Animal Behaviour*, v. 82, pp. 445–451.

de Forges, B. R., J. A. Koslow, and G. C. B. Poor. 2000. Diversity and endemism of the benthic seamount fauna in the southwest Pacific. *Nature*, v. 405, pp. 944–947.

Deacon, M. 1971. *Scientists and the Sea: 1650–1900: A Study of Marine Science.* London: Academic Press.

De’ath, G., Lough, J.M., Fabricius, K.E., 2009. Declining coral calcification on the Great Barrier Reef. *Science* v. 323, pp.116-119.

deBruin, A., B. W. Ibelings, and E. Van Donk. 2003. Molecular techniques in phytoplankton research: From allozyme electrophoresis to genomics. *Hydrobiologia*, v. 491, pp. 47–63.

Deegan, L. A., et al. 2007. Susceptibility of salt marshes to nutrient enrichment and predator removal. *Ecological Applications*, v. 17 (suppl.), pp. 42–63.

Deegan, L.A., Johnson, D.S., Warren, R.S., Peterson, B.J., Fleeger, J.W., Fagherazzi, S., Wollheim, W.M. 2012. Coastal eutrophication as a driver of salt marsh loss. *Nature* v. 490, pp. 388-392.

DeLong, E. F., et al. 2006. Community genomics among stratified microbial assemblages in the ocean’s interior. *Science*, v. 311, pp. 496–503.

DeLong, E. F., G. S. Wickham, and N. R. Pace. 1989. Phylogenetic stains: Ribosomal RNA- based probes for the identification of single cells. *Science*, v. 243, pp. 1360–1363.

DeLong, E. F., and A. A. Yayanos. 1985. Adaptation of the membrane lipids of a deep-sea bacterium to changes in hydrostatic pressure. *Science*, v. 228, pp. 1101–1103.

DeLong, R. L., and B. S. Stewart. 1991. Diving patterns of northern elephant bulls. *Marine Mammal Science*, v. 7, pp. 369–384.

Dennison, W. C., and R. S. Alberte. 1982. Photosynthetic responses of *Zostera marina* L. (eel- grass) to in situ manipulations of light intensity. *Oecologia*, v. 55, pp. 137–144.

Dennison, W. C., R. C. Aller, and R. S. Alberte. 1987. Sediment ammonium availability and eelgrass (*Zostera marina*) growth. *Marine Biology*, v. 94, pp. 469–477.

Denny, M. 1985. Wave forces on intertidal organisms: A case study. *Limnology and Oceanography*, v. 30, pp. 1171–1187.

Denny, M., and D. Wethey. 2001. Physical processes that generate patterns in marine communities. In M. D. Bertness, S. M. Gaines, and M. E. Hixon, eds., *Marine Community Ecology.* Sunderland, MA: Sinauer Associates, pp. 3–37.

Denny, M. W. 1988. *Biology and the Mechanics of the Wave-Swept Environment.* Princeton, NJ: Princeton University Press.

Denny, M. W. 1993. *Air and Water: The Biology and Physics of Life’s Media.* Princeton NJ: Princeton University Press.

Denny, M. W., T. L. Daniel, and M. A. R. Koehl. 1985. Mechanical limits to size in wave-swept organisms. *Ecological Monographs*, v. 55, pp. 69–102.

Denny, M. W., and M. F. Shibata. 1989. Consequences of surf-zone turbulence for settlement and external fertilization. *American Naturalist*, v. 134, pp. 859–889.

Denton, E. J., and J. B. Gilpin-Brown. 1961. The distribution of gas and liquid within the cuttlebone. *Journal of the Marine Biological Association of the United Kingdom*, v. 41, pp. 365–381.

Desantis, L. R. G., S. Bhotika, K. Williams, and F. E. Putz. 2007. Sea-level rise and drought interactions accelerate forest decline on the Gulf coast of Florida, USA. *Global Change Biology*, v. 13, pp. 2349–2360.

Dethier, M. N., D. O. Duggins, and T. F. Mumford, Jr. 1989. Harvesting of non-traditional marine resources in Washington State: Trends and concerns. *Northwest Environment*, v. 5, pp. 71–87.

Dewees, C. M. 1996. Summary of individual quota systems and their effects on New Zealand and British Columbia fisheries. National Academy of Science International Conference on Ecosystem Management for Sustainable Marine Fisheries. *National Research Council, Ocean Studies Board*, February 19–24, Monterey, CA.

De Wit, P., Palumbi, S.R. 2012. Transcriptome-wide polymorphisms of red abalone (*Haliotis rufescens*) reveal patterns of gene flow and local adaptation. *Molecular Ecology*. doi: 10.1111/mec.12081

DeWitt, T. J., A. Sih, and D. S. Wilson. 1998. Costs and limits of phenotypic plasticity. *Trends in Ecology and Evolution*, v. 13, pp. 77–81.

Dial, R., and J. Roughgarden. 1998. Theory of marine communities: The intermediate disturbance hypothesis. *Ecology*, v. 79, pp. 1412–1424.

Distel, D. L., H. Felbeck, and C. Cavanaugh. 1994. Evidence for phylogenetic congruence among sulfur-oxidizing chemoautotrophic bacterial endosymbionts and their bivalve host. *Journal of Molecular Evolution*, v. 38, pp. 533–542.

Dixon, G. B. et al. 2015. Genomic determinants of coral heat tolerance across latitudes. *Science* v. 348, pp. 1460-1462.

Dixson, D.L., Abrego, D., and Hay, M.E. 2014. Chemically mediated behavior of recruiting corals and fishes: A tipping point the may limit reef recovery. *Science* v. 345, pp. 892-897.

Doall, M. H., S. P. Colin, J. R. Strickler, and J. Yen. 1998. Locating a mate in 3D: The case of *Temora longicornis. Philosophical Transactions of the Royal Society of London B*, v. 353, pp. 681–689.

Doherty, P. J. 1983. Diel, lunar and seasonal rhythms in the reproduction of two tropical damselfishes: *Pomacentrus flavicauda* and *P. wardi. Marine Biology*, v. 75, pp. 115–124.

Doherty, P. J., and D. McB. Williams. 1988. The replenishment of coral reef fish populations. *Oceanography and Marine Biology Annual Review*, v. 26, pp. 487–551.

Dollar, S. J. 1982. Wave stress and coral community structure in Hawaii. *Coral Reefs*, v. 1, pp. 71–81.

Doniol-Valcroze, T., V. Lesage, J. Giard, and R. Michaud. 2011. Optimal foraging theory predicts diving and feeding strategies of the largest marine predator. *Behavioral Ecology*. doi: 10.1093/beheco/arr03

Donner, S. D., et al. 2005. Global assessment of coral bleaching and required rates of adaptation under climate change. *Global Change Biology*, v. 11, pp. 2251–2265.

Donner, S. D., W. J. Skirving, C. M. Little, M. Oppenheimer, and O. Hoegh-Guldberg. 2005. Global assessment of coral bleaching and required rates of adaptation under climate change. *Global Change Biology*, v. 11, pp. 2251–2265.

Dorgan, K. M., P. A. Jumars, B. D. Johnson, and B. P. Boudreau. 2006. Macrofaunal burrowing: The medium is the message. *Oceanography and Marine Biology: An Annual Review*, v. 4, pp. 85–121.

Dorgan, K. M., P. A. Jumars, B. Johnson, B. P. Boudreau, and E. Landis. 2005. Burrow extension by crack propagation. *Nature*, v. 433, p. 475.

Douglas, R. H., J. C. Partridge, K. Dulai, D. Hunt, C. W. Mullineaux, A. Y. Tauber, and P. H. Hynninen. 1998. Dragon fish see using chlorophyll. *Nature*, v. 393, pp. 423–424.

Drazen, and Sutton, T.T. 2017. Dining in the deep: the feeding ecology of deep-sea fishes. *Annual Review of Marine Science* v. 9, pp. 337-366.

Duarte, C. M. 2000. Marine biodiversity and ecosystem services: An elusive link. *Journal of* *Experimental Marine Biology and Ecology*, v. 250, pp. 117–131.

Dubinsky, E. A., Conrad, M. E., Chakraborty, R., Bill, M., Borglin, S. E., Hollibaugh, J. T., et al. 2013. Succession of hydrocarbon-degrading bacteria in the aftermath of the deepwater horizon oil spill in the Gulf of Mexico. *Environmental Science and Technology* v. 47, pp. 10860–10867.

Duda, T. F., Jr., and A. J. Kohn. 2005. Species-level phylogeography and evolutionary history of the hyperdiverse marine gastropod genus *Conus*. *Molecular Phylogenetics and Evolution*, v. 34, pp. 257–272.

Duda, T. F., Jr., and S. R. Palumbi. 1999. Molecular genetics of ecological diversification: Duplication and rapid evolution of toxin genes of the venomous gastropod *Conus. Proceedings of the National Academy of Sciences, USA*, v. 96, pp. 6820–6823.

Duda, T. F., Jr., and E. Rolãn. 2005. Explosive radiation of Cape Verde *Conus*, a marine species flock. *Molecular Ecology*, v. 14, pp. 267–272.

Dudgeon, S. R., I. R. Davison, and R. L. Vadas. 1989. Effect of freezing on photosynthesis of intertidal macroalgae: Relative tolerance of *Chondrus crispus* and *Mastocarpus stellatus* (Rhodophyta). *Marine Biology*, v. 101, pp. 107–114.

Duffy, J. E. 1993. Host use patterns and demography in a guild of tropical sponge-dwelling shrimps. *Marine Ecology Progress Series*, v. 90, pp. 127–138.

Duffy, J. E. 1996a. Eusociality in a coral reef shrimp. *Nature*, v. 381, pp. 512–514.

Duffy, J. E. 1996b. Species boundaries, specialization, and the radiation of sponge-dwelling alpheid shrimp. *Biological Journal of the Linnaean Society*, v. 58, pp. 307–324.

Duffy, J. E. 2006. Biodiversity and the functioning of seagrass ecosystems. *Marine Ecology—Progress Series*, v. 311, pp. 233–250.

Duffy, J. E., and M. E. Hay. 1990. Seaweed adaptations to herbivory. *BioScience*, v. 40, pp. 368–375.

Duffy, J. E., C. L. Morrison, and R. Rios. 2000. Multiple origins of eusociality among sponge- dwelling shrimps. *Evolution*, v. 54, pp. 503–516.

Dugan, J. E., and G. E. Davis. 1993. Applications of marine refugia to coastal fisheries management. *Canadian Journal of Fisheries and Aquatic Sciences*, v. 50, pp. 2049–2042.

Dugdale, R. C., and J. J. Goering. 1967. Uptake of new and regenerated forms of nitrogen in primary productivity. *Limnology and Oceanography,* v. 12, pp. 196–206.

Dugdale, R. C., and F. Wilkerson. 1992. Nutrient limitation of new production in the sea. In P. G. Falkowski and A. D. Woodhead, eds., *Primary Productivity and Biogeochemical Cycles in the Sea.* New York: Plenum, pp. 107–122.

Duggins, D. O. 1983. Starfish predation and the creation of mosaic patterns in a kelp-dominated community. *Ecology*, v. 64, pp. 1610–1619.

Duggins, D. O., C. A. Simenstad, and J. A. Estes. 1989. Magnification of secondary production by kelp detritus in coastal marine ecosystems. *Science*, v. 245, pp. 170–173.

Dugolinsky, B. K., Margolis, S. V., and Dudley, W. C. (1977). Biogenic influence on growth of manganese nodules. *Journal of Sedimentary Petrology* 47: 428e445.

Dulvy, N. K., R. P. Freckleton, and N. V. C. Polunin. 2004. Coral reef cascades and the indirect effects of predator removal by exploitation. *Ecology Letters*, v. 7, pp. 410–416.

Dunlap, W. C., and B. E. Chalker. 1986. Identification and quantification of near-UV absorbing compounds (S-320) in a hermatypic scleractinian. *Coral Reefs*, v. 5, pp. 155–159.

Dunn, C. W. 2017. Ctenophore trees. Nature Ecology and Evolution. [doi:10.1038/s41559-017-0359-4](http://dx.doi.org/10.1038/s41559-017-0359-4)

Dunn, C. W., et al. 2008. Broad phylogenomic sampling improves resolution of the animal tree of life. *Nature*, v. 452, pp. 745–749.

Dunson, W. A., ed. 1975. The *Biology of Sea Snakes.* Baltimore: University Park Press.

Dutkiewicz, A., Judge, A., Muller, D. 2020. Environmental predictors of deep-sea polymetallic nodule occurrence in the global ocean. *Geology* v. 48, pp. 293-297. doi: 10.1130/G46836.1

Dybas, C. L. 2006. On a collision course: Ocean plankton and global change. *BioScience*, v. 56, pp. 642–646.

Dyer, K. R. 1997. *Estuaries: A Physical Introduction*. Chichester, UK: Wiley. Dyer, K. R. 1998. *Estuaries: A Physical Introduction.* Hoboken, NJ: Wiley.

**E**

Eakin C. M., et al. 2010. Caribbean corals in crisis: Record thermal stress, bleaching, and mortality in 2005. *PLoS ONE*, v. 5, no. 11: e13969. doi: 10.1371/journal.pone.0013969

Eastman, J. T. 1993. *Antarctic Fish Biology.* San Diego, CA: Academic Press.

Ebeling, A. W., D. R. Laur, and R. J. Rowley. 1985. Severe storm disturbances and reversal of community structure in a southern California kelp forest. *Marine Biology*, v. 84, pp. 287–294.

Eckelbarger, K. J., and J. P. Grassle. 1987. Interspecific variation in genetical spine, sperm, and larval morphology in six sibling species of *Capitella. Bulletin of the Biological Society of Washington*, no. 7, pp. 62–76.

Eckman, J. E. 1983. Hydrodynamic processes affecting benthic recruitment. *Limnology and Oceanography*, v. 28, pp. 241–257.

Eckman, J. E. 1996. Closing the larval loop: Linking larval ecology to the population dynamics of marine benthic invertebrate. *Journal of Experimental Marine Biology and Ecology*, v. 200, pp. 207–237.

Eckman, J. E., and D. O. Duggins. 1991. Life and death beneath macrophyte canopies: Effects of understory kelps on growth rates and survival of marine, benthic suspension feeders. *Oecologia*, v. 87, pp. 473–487.

Eckman, J. E., A. R. M. Nowell, and P. A. Jumars. 1981. Sediment destabilization by animal tubes. *Journal of Marine Research*, v. 39, pp. 361–374.

Edgar, G.J., et al. 2014. Global conservation outcomes depend on marine protected areas with five key features. *Nature* v. 506, pp. 216-220.

Edmands, S. 2001. Phylogeography of the intertidal copepod *Tigriopus californicus* reveals substantially reduced population differentiation at northern latitudes. *Molecular Ecology*, v. 10, pp. 1743.

Edmunds, P. J., and R. C. Carpenter. 2001. Recovery of *Diadema antillarum* reduces macroalgal cover and increases abundance of juvenile corals on a Caribbean reef. *Proceedings of the National Academy of Sciences*, v. 98, pp. 5067–5071.

Edwards, M., Beaugrand, G., John, A.W.G., Johns, D.G., Licandro, P., McQuatters-Gollop, A. & Reid, P.C. 2009. *Ecological Status Report: results from the CPR survey 2007/2008. SAHFOS Technical Report*, v. 6, pp. 1-12. Plymouth, U.K. ISSN 1744-0750.

Eisenlord, M. E., Groner, M.L., Yoshioka, R.M., Elliott, J., Fradkin, S., Turner, M., Pyne, K., Rivlin, N. van Hooidonk, R., Harvell, C. D. 2016. Ochre star mortality during the 2014 wasting disease epizootic: role of population size structure and temperature. *Proceedings of the Royal Society B*. doi: 10.1098/rstb.2015.0212

Ekstrom, J. A., Suatoni, L., Cooley, S. R., et al. Vulnerability and adaptation of US shellfisheries to ocean acidification. *Nature Climate Change*, v. 5, pp. 207-214. doi: 10.1038/nclimate2508

Eldredge, N. 1992. *Systematics, Ecology, and the Biodiversity Crisis.* New York: Columbia University Press.

Ellingson, R. A., and P. J. Krug. 2006. Evolution of poecilogony from planktotrophy: Cryptic speciation, phylogeography, and larval development in the gastropod genus *Alderia. Evolution*, v. 60, pp. 2293–2310.

Ellingson, R.A., Krug, P.J. 2015. Reduced genetic diversity and increased reproductive isolation follow population-level loss of larval dispersal in a marine gastropod. *Evolution*, v. 70, pp. 18–37.

Ellis, R. 1998. *The Search for the Giant Squid.* New York: Knopf.

Ellison, A. M. 1987. Effects of competition, disturbance, and herbivory on *Salicornia europaea*. *Ecology*, v. 68, pp. 576–586.

Ellison, A. M., and E. J. Farnsworth. 1993. Seedling survivorship, growth, and response to disturbance in Belizean mangal. *American Journal of Botany*, v. 80, pp. 1137–1145.

Elmgren, R. 1989. Man’s impact on the ecosystem of the Baltic Sea: Energy flows today and at the turn of the century. *Ambio*, v. 18, pp. 326–332.

Elner, R. W. 1978. The mechanics of predation by the shore crab, *Carcinus maenas* (L.), on the edible mussel, *Mytilus edulis* (L.). *Oecologia*, v. 36, pp. 333–344.

Elner, R. W., and A. Campbell. 1981. Force, function and mechanical advantage in the American lobster *Homarus americanus* (Decapoda: Crustacea). *Journal of Zoology, London*, v. 193, pp. 269–286.

Elner, R. W., and R. N. Hughes. 1978. Energy maximization in the shore crab *Carcinus maenas* (L.). *Journal of Animal Ecology*, v. 47, pp. 103–116.

Elner, R. W., and R. L. Vadas. 1990. Inference in ecology: The sea urchin phenomenon in the northwestern Atlantic. *American Naturalist*, v. 136, pp. 108–125.

Emig, C. C. 1982. The biology of the Phoronida. *Advances in Marine Biology*, v. 19, pp. 1–89.

Emlet, R. B., and R. R. Strathmann. 1985. Gravity, drag, and feeding currents of small zooplankton. *Science*, v. 228, pp. 1016–1017.

Endean, R. 1977. *Acanthaster planci* infestations of reefs of the Great Barrier Reef. In D. L. Taylor, ed., *Proceedings of the Third International Coral Reef Symposium*, v. 1: *Biology*. Miami: Rosenstiel School of Marine and Atmospheric Science, pp. 185–191.

Endler, J. M. 1980. Natural selection on color patterns in *Poecilia reticulata. Evolution*, v. 34, pp. 76–91.

Enfield, D. B. 1988. Is El Niño becoming more common? *Oceanography*, November, pp. 23–59.

Engler, R. E. 2012. The complex interaction between marine debris and toxic chemicals in the ocean. *Environmental Science and Technology*. doi: 10.1021/es3027105

Enright, J. T. 1977. Diurnal vertical migration: Adaptive significance and timing. I: Selective advantage: A metabolic model. *Limnology and Oceanography*, v. 22, pp. 873–886.

Epifanio, C. E., and R. W. Garvine. 2001. Larval transport on the Atlantic continental shelf of North America: A review. *Estuarine, Coastal and Shelf Science*, v. 52, pp. 51–77.

Eppley, R. W., J. N. Rogers, and J. J. McCarthy. 1969. Half-saturation constants for uptake of nitrate and ammonium by various phytoplankton. *Limnology and Oceanography*, v. 14, pp. 912–920.

Eppley, R. W., and W. H. Thomas. 1969. Comparison of half-saturation constants for growth and nitrate uptake of marine phytoplankton. *Journal of Phycology*, v. 5, pp. 375–379.

Erlandsson, C. P., A. Stigebrandt, and L. Arneborg. 2006. The sensitivity of minimum oxygen concentrations in a fjord to changes in biotic and abiotic external forcing. *Limnology and Oceanography*, v. 51, pp. 631–638.

Erwin, D. H. 2006. *Extinction: How Life on Earth Nearly Ended 250 Million Years Ago.* Princeton, NJ: Princeton University Press.

Erwin, D. et al. 2011. The Cambrian conundrum: Early divergence and later ecological success in the early history of animals. *Science* v. 334 pp. 1091-1097.

Esaias, W., G. Feldman, C. R. McClain, and R. Evans. 1986a. Global distribution of marine primary production derived from CZCS observations for 1969. *Eos*, v. 68, p. 1703.

Esaias, W., G. C. Feldman, C. R. McClain, and J. A. Elrod. 1986b. Monthly satellite-derived phytoplankton pigment distribution for the North Atlantic basin. *Eos*, v. 68, pp. 835–837.

Esch, G. W., A. O. Bush, and J. M. Aho, eds. 1990. *Parasite Communities: Patterns and Processes.* London: Chapman & Hall.

Espinel-Velasco N, Hoffmann L, Agüera A, Byrne M, and others. 2018. Effects of ocean acidification on the settlement and metamorphosis of marine invertebrate and fish larvae: a review. Mar Ecol Prog Ser 606:237-257. doi: 10.3354/meps12754

Essington, T. E., A. H. Beaudreau, and J. Wiedenmann. 2006. Fishing through marine food webs. *Proceedings of the National Academy of Sciences, USA*, v. 103, pp. 3171–3175.

Estes, J. A., et al. 2011. Trophic downgrading of planet Earth. *Science*, v. 333, pp. 301–306.

Estes, J. A., and D. O. Duggins. 1995. Sea otters and kelp forests in Alaska: Generality and variation in a community ecological paradigm. *Ecological Monographs*, v. 65, pp. 75–100.

Estes, J. A., and J. F. Palmisano. 1974. Sea otters: Their role in structuring nearshore communities. *Science*, v. 185, pp. 1058–1060.

Estes, J. A., N. S. Smith, and J. F. Palmisano. 1978. Sea otter predation and community organization in the western Aleutian Islands, Alaska. *Ecology*, v. 59, pp. 822–833.

Estes, J. A., and P. D. Steinberg. 1988. Predation, herbivory, and kelp evolution. *Paleobiology*, v. 14, pp. 19–36.

Estes, J. A., M. T. Tinker, T. M. Williams, and D. F. Doak. 1998. Killer whale predation on sea otters linking oceanic and nearshore ecosystems. *Science*, v. 282, pp. 473–476.

Etter, R. J., and J. F. Grassle. 1992. Patterns of species diversity in the deep sea as a function of sediment particle size diversity. *Nature*, v. 360, pp. 576–578.

Etter, R. J., M. A. Rex, M. C. Chase, and J. M. Quattro. 1999. A genetic dimension to deep-sea biodiversity. *Deep-Sea Research I*, v. 46, pp. 1095–1099.

Etter, R. R., M. A. Rex, M. C. Chase, and J. M. Quattro. 2005. Population differentiation decreases with depth in deep-sea bivalves. *Evolution*, v. 59, pp. 1479–1491.

Evans, D. H., P. M. Piermarini, and K. P. Choe. 2005. The multifunctional fish gill: Dominant sites of gas exchange, osmoregulation, acid-base regulation and excretion of nitrogenous waste. *Physiological Review*, v. 85, pp. 97–177.

**F**

Falkowski, P. G. 1984. Physiological responses of phytoplankton to natural light regimes. *Limnology and Oceanography*, v. 6, pp. 295–307.

Falkowski, P. G., ed. 1980. *Primary Productivity in the Sea.* New York: Plenum.

Falkowski, P.G. et al. 1988. The fate of a spring phytoplankton bloom: export or oxidation? Continental Shelf Research, v. 8, pp. 457-484.

Falkowski, P., et al. 2000. The global carbon cycle: A test of our knowledge of earth as a system. *Science*, v. 290, pp. 291–296.

Falkowski, P. G., R. T. Barber, and V. Smetacek. 1998. Biogeochemical controls and feedbacks on ocean primary production. *Science*, v. 281, pp. 200–206.

Falkowski, P. G., Z. Dubinsky, L. Muscatine, and J. W. Porter. 1984. Light and the bioenergetics of a symbiotic coral. *BioScience*, December, pp. 705–709.

Falkowski, P. G., R. M. Greene, and R. J. Geider. 1992. Physiological limitations of phytoplankton productivity in the ocean. *Oceanography*, v. 5, pp. 84–91.

Falkowski, P. G., Y. Kim, Z. Kolber, C. Wilson, C. Wirick, and R. Cess. 1992. Natural versus anthropogenic factors affecting low-level cloud albedo over the North Atlantic. *Science*, v. 256, pp. 1311–1313.

Falkowski, P. G., and C. Wilson. 1992. Phytoplankton productivity in the North Pacific Ocean since 1900 and implications for absorption of anthropogenic CO2. *Nature*, v. 358, pp. 741–743.

Falkowski, P. G., and A. D. Woodhead, eds. 1992. *Primary Productivity and Biogeochemical Cycles in the Sea.* New York: Plenum.

FAO, 2016. The State of World Fisheries and Aquaculture. Rome. <http://www.fao.org/3/a-i5555e.pdf>

Farrington, J. W. 1991. Biogeochemical processes governing exposure and uptake of organic pollutant compounds in aquatic organisms. *Environmental Health Perspectives*, v. 90, pp. 75–84.

Fauchald, K. 1974. Polychaete phylogeny: A problem in protostome evolution. *Systematic Zoology*, v. 23, pp. 493–506.

Feary, D. A., G. R. Almany, M. I. McCormick, and G. P. Jones. 2007. Habitat choice, recruitment and the response of coral reef fishes to coral degradation. *Oecologia*, v. 153, pp. 727–737.

Feder, H. M. 1966. Cleaning symbioses in the marine environment. In S. M. Henry, ed., *Symbiosis.* London: Academic Press, pp. 327–380.

Feder, H. M. 1972. Escape responses in marine invertebrates. *Scientific American*, v. 227, pp. 92–100.

Feder, H. M. 1982. Escape responses in marine invertebrates. In *Life in the Sea.* San Francisco: W. H. Freeman, pp. 163–170.

Felbeck H., and J. Jarchow. 1998. Carbon release from purified chemoautotrophic bacterial symbionts of the hydrothermal vent tubeworm *Riftia pachytpila. Physiological Zoology*, v. 71, pp. 294–302.

Feldheim, K.A., Gruber, S.H. DiBattista, J.D., Babcock, E.A., Kessel, S.T., and Hendry, A.P. 2014. Two decades of genetic profiling yields first evidence of natal philopatry and long-term fidelity to parturition sites in sharks. Molecular Ecology 23:110-117.

Felsenstein, J. 2004. *Inferring Phylogenies.* Sunderland MA: Sinauer Associates.

Fenchel, T. 1965. Feeding biology of the sea-star *Luidia sarsi* Duben and Koren. *Ophelia,* v. 2, pp. 223–236.

Fenchel, T. 1972. Aspects of decomposer food chains in marine benthos. *Verhandlungen der Deutschen Gesellschaft für Zoologie*, v. 65, pp. 14–22.

Fenchel, T. 1975. Factors determining the distribution patterns of mud snails. *Oecologia*, v. 20, pp. 1–17.

Fenchel, T. 1978. The ecology of micro- and meiobenthos. *Annual Review of Ecology and Systematics*, v. 9, pp. 99–121.

Fenchel, T. 1988. Marine plankton food chains. *Annual Review of Ecology and Systematics*, v. 19, pp. 19–38.

Fenchel, T. 1993. Methanogenesis in marine shallow water sediments: The quantitative role of anaerobic protozoa with endosymbiotic methanogenic bacteria. *Ophelia*, v. 37, pp. 67–82.

Fenchel, T., and C. Bernard. 1993. Endosymbiotic purple non-sulfur bacteria in an anaerobic ciliated protozoan. *FEMS Microbiology Letters*, v. 110, pp. 21–25.

Fenchel, T., and H. Blackburn. 1979. *Bacteria and Mineral Cycling.* Berlin: Springer-Verlag.

Fenchel, T., King, G., Blackburn, H. 2012. *Bacterial Biogeochemistry: The Ecophysiology of Mineral Cycling*. Academic Press, London, 3rd Edition.

Fenchel, T., and R. Riedl. 1970. The sulfide system: A new biotic community underneath the oxidized layer of marine sand bottoms. *Marine Biology*, v. 7, pp. 255–268.

Fenchel, T. M., C. P. McRoy, J. C. Ogden, P. Parker, and W. E. Rainey. 1979. Symbiotic cellulose degradation in green turtles. *Applied Environmental Microbiology*, v. 37, pp. 348–350.

Feyrer, L.J., Duffus, D. A. 2015. Threshold foraging by gray whales in response to fine scale variations in mysid density. Marine Mammal Science v. 31, pp. 560-578.

Field, C. B., M. J. Behrenfeld, J. T. Randerson, and P. Falkowski. 1998. Primary production of the biosphere: Integrating terrestrial and oceanic components. *Science*, v. 281, pp. 235–238.

Field, K. G., G. J. Olsen, D. J. Lane, S. J. Giovannoni, M. T. Ghiselin, E. C. Raff, N. R. Pace, and R. A. Raff. 1988. Molecular phylogeny of the animal kingdom. *Science*, v. 239, pp. 748–753.

Filbee-Dexter, K., and Scheibling, R.E. 2014. Sea urchin barrens as alternative stable states of collapsed kelp ecosystems. *Marine Ecology Progress Series* v. 495, pp. 1-25.

Finkbeiner, E. M., B. P. Wallace, J. E. Moore, R L. Lewison, L. B. Crowder, and A. J. Read. 2011. Cumulative estimates of sea turtle bycatch and mortality in USA fisheries between 1990 and 2007. *Biological Conservation*, v. 144, pp. 2719–2727.

Finley, C., Oreskes, N. 2013. Maximum sustained yield: a policy disguised as science. ICES *Journal of Marine Science* v. 70, pp. 245-250.

Fish, F. E. 1998. Imaginative solutions by marine organisms for drag reduction, *Proceedings of International Symposium on Seawater Drag Reduction*, pp. 443–450, Newport, RI, July 1998. Arlington, VA: Office of Naval Research.

Fisher, N. S.; Beaugelin-Seiller, K.; Hinton, T. G.; Baumann, Z.; Madigan, D. J.; Garnier-Laplace, J. 2013. Evaluation of radiation doses and associated risk from the Fukushima nuclear accident to marine biota and human consumers of seafood. *Proc. Natl. Acad. Sci. U. S. A.* v. 110, pp.10670−10675.

Fisher, W. K., and G. E. MacGinitie. 1928. The natural history of an echiuroid worm. *Annual Magazine of Natural History*, Series 10(1), p. 204.

Flammang, B.E., Lauder, G.V., Troolin, D.R., T. Strand 2011. Volumetric imaging of shark tail hydrodynamics reveals a three-dimensional dual-ring vortex wake structure. *Proceedings of the Royal Society B* 278, 3670–3678. doi: 10.1098/rspb.2011.0489

Fleming, I. A. 1996. Reproductive strategies of Atlantic salmon: Ecology and evolution. *Reviews in Fish Biology and Fisheries*, v. 6, pp. 379–416.

Fletcher, R. I. 1985. Risk analysis for fish diversion experiments: Pumped intake systems. *Transactions of the American Fisheries Societies*, v. 114, pp. 652–694.

Fodrie, F.J., Heck, K.L. Jr. 2011. Response of coastal fishes to the Gulf of Mexico oil disaster. *PLoS One*. doi: 10.1371/journal.pone.0021609

Folt, C.L., Burns, C.W. 1999. Biological drivers of zooplankton patchiness. *Trends in Ecology and Evolution* v. 14, pp. 300-305.

Fonseca, M. S., J. C. Zieman, G. W. Thayer, and J. S. Fisher. 1983. The role of current velocity in structuring eelgrass (*Zostera marina* L.) meadows. *Estuarine and Coastal Shelf Science*, v. 17, pp. 367–380.

Food and Agriculture Organization, United Nations. 2000. *The State of World Fisheries and Aquaculture.* New York: United Nations, pp. 1–158.

Forbes, V. E., and T. L. Forbes. 1994. *Ecotoxicology in Theory and Practice.* London: Chapman & Hall.

Forcada, J., P. N. Trathan, K. Reid, E. J. Murphy, and J. P. Croxall. 2006. Contrasting population changes in sympatric penguin species in association with climate warming. *Global Change Biology*, v. 12, pp. 411–423.

Ford, J. B. 1991. Vocal traditions among resident killer whales (*Orcinus orca*) in coastal waters of British Columbia. *Canadian Journal of Zoology*, v. 69, pp. 1454–1483.

Ford, M. J., M. D. Hanson, J. A. Hempelmann, K. L. Ayres, C. K. Emmons, G. S. Schorr, G. S., R. W. Baird, K. C. Balcomb, S. K. Wasser, K. M. Parsons, and K. Balcomb-Barton. 2011. Inferred paternity and male reproductive success in a killer whale (*Orcinus orca*) population. *Journal of Heredity*, v. 102, pp. 537–553.

Ford, M.J. et al. 2016. Estimation of a killer whale (*Orcinus orca*) population’s diet using sequencing analysis of DNA from feces. *PLoS ONE*. doi: 10.1371/journal.pone.0144956

Ford, S. E., and H. H. Haskin. 1987. Infection and mortality patterns in strains of oysters *Crassostrea virginica* selected for resistance to the parasite *Haplosporidium nelsoni* (MSX). *Journal of Parasitology*, v. 73, pp. 368–376.

Ford, S. E., and R. Smolowitz. 2007. Infection dynamics of an oyster parasite in its newly explanded range. *Marine Biology*, v. 151, pp. 119–133.

Ford, T. E. 1993. *Aquatic Microbiology: An Ecological Approach.* Boston: Blackwell Scientific.

Fourqurean, J.W., Kendrick, G.A., Collins, L.S., Chambers, R.M., Vanderlift, M.A.2012. Carbon, nitrogen and phosphorus storage in subtropical seagrass meadows: examples from Florida Bay and Shark Bay. *Marine and Freshwater Research* v. 63, pp. 967-983.

Fossë, J. H., P. B. Mortensen, and D. M. Furevik. 2002. The deep-water coral *Lophelia pertusa* in Norwegian waters: Distribution and fishery impacts. *Hydrobiologia*, v. 471, pp. 1–12.

Foster, S. 1990. Courting disaster in cannibal territory. *Natural History,* November, pp. 52–60.

Fowler, A.E. et al. 2016. Opening Pandora’s bait box: a potent vector for biological invasions of live marine species. Diversity and Distributions v. 2, p. 30-42.

France, S. C., R. R. Hessler, and R. C. Vrijenhoek. 1992. Genetic differentiation between spatially-disjunct populations of the deep-sea, hydrothermal vent–endemic amphipod *Ventiella sulfuris. Marine Biology*, v. 114, pp. 551–559.

Francis, L. 1973. Intraspecific aggression and its effect on the distribution of *Anthopleura elegantissima* and some related sea anemones. *Biological Bulletin*, v. 144, pp. 73–92.

Francis, L. 1991. Sailing downwind: Aerodynamic performance of the *Velella* sail. *Journal of Experimental Biology*, v. 158, pp. 117–132.

Franklin, H. B. 2007. *The Most Important Fish in the Sea.* Washington, DC: Island Press.

Franklin, J. F. 1993. Preserving biodiversity: Species, ecosystems, or landscapes. *Ecological Applications*, v. 2, pp. 202–205. [See also other articles in the journal issue of *Ecological Applications*, v. 3, no. 2.]

Fraser, K. A., V. M. Adams, R. L. Pressey, and J. M. Pandolfi. 2019. Impact evaluation and conservation outcomes in marine protected areas: A case study of the Great Barrier Reef Marine Park. *Biological Conservation* 238. doi: 10.1016/j.biocon.2019.07.030

Frederiksen, M., Anker-Nielssen, T., Beaugrand, G., and Wanless, S. 2013. Climate, copepods and seabirds in the boreal northeast Atlantic – current state and future outlook. *Global Change Biology* 19: 364-372. doi: 10.1111/gcb.12072

Freeman, C. J., and R. W. Thacker. 2011. Complex interactions between marine sponges and their symbiotic microbial communities. *Limnology and Oceanography* 56:1577-1586.

Freestone, A. L., R. W. Osman, G. M. Ruiz, and M. E. Torchin. 2011. Stronger predation in the tropics shapes species richness patterns in marine communities. *Ecology*, v. 92, pp. 983–993.

Freitas, V., J. Campos, M. Fonds, and H. W. Van der Veer. 2007. Potential impact of temperature change on epibenthic predator-bivalve prey interactions in temperate estuaries. *Journal of Thermal Biology*, v. 32, pp. 328–340.

Frîchette, M., C. A. Butman, and W. R. Geyer. 1989. The importance of boundary layer flows in supplying phytoplankton to the benthic suspension feeder, *Mytilus edulis* L. *Limnology and Oceanography*, v. 34, pp. 19–36.

Frisch, A. et al. 2016. Reassessing the trophic role of reef sharks as apex predators on coral reefs. *Coral Reefs* 35: 459-472.

Frost, B. W. 1972. Effects of size and concentration of food particles on the feeding behavior of the marine planktonic copepod *Calanus pacificus. Limnology and Oceanography*, v. 17, pp. 805–815.

Frost, B. W. 1991. The role of grazing in nutrient-rich areas of the open sea. *Limnology and Oceanography*, v. 36, pp. 1616–1630.

Fuchs, H. L., Chant, R. J., Hunter, E. J., Curchitser, E. N., Gerbi, G. P. & Chen, E. Y. 2020. Wrong-way migrations of benthic species driven by ocean warming and larval transport. *Nature Climate Change*. doi: 10.1038/s41558-020-0894-x

Fuhrman, J. 1992. Bacterioplankton roles in cycling of organic matter. In P. G. Falkowski and A. D. Woodhead, eds., *Primary Productivity and Biogeochemical Cycles in the Sea.* New York: Plenum, pp. 361–383.

Fuhrman, J. A. 1999. Marine viruses and their biogeochemical and ecological effects. *Nature*, v. 399, pp. 541–548.

Fuhrman, J. A., and D. G. Capone. 1991. Possible biogeochemical consequences of ocean fertilization. *Limnology and Oceanography*, v. 36, pp. 1951–1959.

Fuhrman, J. A., K. McCallum, and A. A. Davis. 1992. Novel major archaebacterial group from marine plankton. *Nature*, v. 356, pp. 148–149.

Fuiman, L. A., and R. S. Batty. 1997. What a drag it is getting cold: Partitioning the physical and physiological effects of temperature on fish swimming. *Journal of Experimental Biology*, v*.* 200, pp. 1745–1755.

Fujiwara, M., and H. Caswell. 2001. Demography of the endangered North Atlantic right whale. *Nature*, v. 414, pp. 537–541.

Fukami, H., A. F. Budd, D. R. Levitan, J. A. Jara, R. Kersanach, and N. Knowlton. 2004. Geographic differences in species boundaries among members of the *Montastraea annularis* complex based on molecular and morphological markers. *Evolution*, v. 58, pp. 324–337.

Furness, R. W., and P. Monaghan. 1987. *Seabird Ecology.* Glasgow: Blackie. Futuyma, D. J. 2009. *Evolution,* 2nd ed. Sunderland, MA: Sinauer Associates.

**G**

Gage, J. D. 1996. Why are there so many species in deep-sea sediments? *Journal of Experimental Marine Biology and Ecology*, v. 200, pp. 257–286.

Gage, J. D., and P. A. Tyler. 1991. *Deep-Sea Biology: A Natural History of Organisms at the Deep-Sea Floor.* Cambridge: Cambridge University Press.

Gagnaire PA, Normandeau E, Cote C, Hansen MM, Bernatchez L. 2012. The genetic consequences of spatially varying selection in the panmictic American eel (*Anguilla rostrata*). *Genetics* 190: 725\_U703. doi: 10.1534/genetics.111.134825

Gaines, S. D., and M. D. Bertness. 1992. Dispersal of juveniles and variable recruitment in sessile marine species. *Nature*, v. 360, pp. 579–580.

Gaines, S. D., and J. Roughgarden. 1987. Fish in offshore kelp forests affect recruitment to intertidal barnacle populations. *Science*, v. 235, pp. 479–481.

Galstoff, P.S., Brown, H.H., Smith, C.L., and Walton Smith, F.G. 1939. Sponge mortality in the Bahamas. *Nature* v. 143, pp. 807–808.

Gandolfi, J. M., S. R. Connolly, D. J. Marshall, A. L. Cohen. 2011. Projecting coral reef futures under global warming and ocean acidification. *Science*, v. 333, pp. 418–422.

Gardiner, J.M., Whitney, N.M., and Hueter, R.E. 2015. Smells like home: The role of Olfactory Cues in the Homing Behavior of Blacktip Sharks, *Carcharhinus limbatus*. *Integrative and Comparative Biology* 55: 495-506.

Garland, M.A., Stillman, J.H., Tomanek, L. 2015. The proteomic response of cheliped myofibril tissue in the eurythermal porcelain crab *Petrolisthes cinctipes* to heat shock following acclimation to daily temperature fluctuations. *Journal of Experimental Biology* v.218, pp. 388-403.

Garrison, T. 2007. *Oceanography: An Invitation to Marine Science.* St. Paul, MN: Brooks/Cole.

Garside, C.J., Glassby, T.M., Coleman, M.A., Kelaher, B.P., Bishop, M.J. 2014. The frequency of connection of coastal water bodies to the ocean predicts Carcinus maenas invasion. *Limnology and Oceanography*, v. 59, pp. 1288-1296.

Gasol and Kirchman. 2018*. Microbial Ecology of the Oceans*. Wiley-Blackwell.

Gaston, K. J. 1991. The magnitude of global insect species richness. *Conservation Biology*, v. 5, pp. 283–296.

Gattuso, J.-P., M. Frankignoulle, I. Bourge, S. Romaine, and R. W. Buddemeier. 1998. Effect of calcium carbonate saturation of seawater on coral calcification. *Global and Planetary Change*, v. 18, pp. 37–46.

Gausepohl, F. et al 2020. Scars in the abyss: reconstructing sequence, location and temporal change of the 78 plough tracks of the 1989 DISCOL deep-sea disturbance experiment in the Peru Basin. *Biogeosciences*, 17, 1463–1493. doi: 10.5194/bg-17-1463-2020

Geller, J. B., E. D. Walton, E. D. Grosholz, and G. M. Ruiz. 1997. Cryptic invasions of the crab *Carcinus* detected by molecular phylogeography. *Molecular Ecology*, v. 6, pp. 101–106.

George, J.A., Lonsdale, D.J., Merlo, L.R., Gobler, C.J. 2015. The interactive roles of temperature, nutrients, and zooplankton grazing in controlling the winter–spring phytoplankton bloom in a temperate, coastal ecosystem, Long Island Sound. *Limnology and Oceanography* v. 60, pp. 110-126.

Georgiou, L., et al. 2015. pH homeostasis during coral calcification in a free ocean CO2 enrichment (FOCE) experiment, Heron Island reef flat, Great Barrier Reef. *Proceedings of the National Academy of Science* v. 112, pp. 13219–13224.

Gerhart, D. J. 1984. Prostaglandin A2: An agent of chemical defense in the gorgonian *Plexaura homomalla. Marine Ecology—Progress Series*, v. 19, pp. 181–187.

Gerhart, D. J. 1991. Emesis, learned aversion, and chemical defense in octocorals: A central role for prostaglandins? *American Journal of Physiology*—*Regulatory Integrative, and Comparative Physiology*, v. 260, pp. R839–R843.

Gerritsen, J. A., F. Holland, and D. E. Irvine. 1994. Suspension-feeding bivalves and the fate of primary production: An estuarine model applied to Chesapeake Bay. *Estuaries*, v. 17, pp. 403–416.

Ghiselin, M. T. 1987. Evolutionary aspects of marine invertebrate reproduction. In A. C. Giese, J. C. Pearse, and V. B. Pearse, eds., *Reproduction of Marine Invertebrates*, v. IX: *General Aspects: Seeking Unity in Diversity.* Palo Alto, CA: Blackwell Scientific, pp. 609–665.

Gibbons, M. J. 1993. Vertical migration and feeding of *Euphausia lucens* at two 72h stations in the southern Benguela upwelling region. *Marine Biology*, v. 116, pp. 257–268.

Gibbs, A. G., and G. N. Somero, 1990. Na+-K+ -adenosine triphosphatase activities in gills of marine teleost fishes: Changes with depth, size and locomotory activity level. *Marine Biology*, v. 106, pp. 315–321.

Gilfillan, E. S., D. S. Page, E. J. Harner, and P. D. Boehm. 1995. Shoreline ecology program for Prince William Sound, Alaska, following the *Exxon Valdez* oil spill: Part 3—biology. In P. G. Wells, J. N. Butler, and J. S. Hughes, eds., *Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters.* Philadelphia: American Society for Testing and Materials, pp. 398–481.

Gili, J.-M., W. E. Arntz, A. Palanques, C. Orejas, A. Clarke, P. Dayton, E. Isla, et al. 2006. A unique assemblage of epibenthic sessile suspension feeders with archaic features in the high-Antarctic. *Deep-Sea Research Part II*, v. 53, pp.1029–1052.

Gilman, E. L. 2011. Bycatch governance and best practice mitigation technology in global tuna fisheries. *Marine Policy*, v. 11, pp. 590–609.

Giribet, G., Edgecome, G.D. 2020. *The Invertebrate Tree of Life*. Princeton University Press, Princeton N.J.

Gittings, S. R., G. S. Boland, K. J. P. Deslarzes, C. L. Combs, B. S. Holland, and T. S. Bright. 1992. Mass spawning and reproductive viability of reef corals at the east Flower Garden Bank, northwest Gulf of Mexico. *Bulletin of Marine Science*, v. 51, pp. 420–428.

Glaessner, M. F. 1984. *The Dawn of Animal Life: A Biohistorical Study.* Cambridge: Cambridge University Press.

Glaessner, M. F., and M. Wade. 1966. The late Precambrian fossils from Ediacara, south Australia. *Palaeontology*, v. 9, pp. 599–628.

Glantz, M. H. 1996. *El Niño’s Impact on Climate and Society.* New York: Cambridge University Press.

Gleason, M. et al. 2013. Designing a network of marine protected areas in California: Achievements, costs, lessons learned, and challenges ahead. *Ocean and Coastal Management* v. 74, pp. 90-101.

Glud, R.N., Wenzhöfer, F. Middelboe, M., Oguri, K., Turnwitsch, R., Canfield, D.E., Kitazato, H. 2013. High rates of microbial carbon turnover in sediments in the deepest oceanic trench on Earth. *Nature Geoscience* v. 6, pp. 284–288.

Glynn, P. W. 1976. Some physical and biological determinants of coral community structure in the eastern Pacific. *Ecological Monographs*, v. 46, pp. 431–436.

Glynn, P. W. 1988. El Niño–Southern Oscillation 1982–1983: Nearshore population, community, and ecosystem responses. *Annual Review of Ecology and Systematics*, v. 19, pp. 309–345.

Glynn, P. W. 1990. Feeding ecology of selected coral-reef macroconsumers: Patterns and effect on coral community structure. In Z. Dubinsky, ed., *Coral Reefs.* Amsterdam: Elsevier, pp. 365–400.

Glynn, P. W. 1993. Coral reef bleaching: Ecological perspectives. *Coral Reefs*, v. 12, pp. 1–17.

Glynn, P. W., and L. D’Croz. 1990. Experimental evidence for high temperature stress as the cause of El Niño–coincident coral mortality. *Coral Reefs*, v. 8, pp. 181–191.

Gobler, C. J., S. Deonarine, J. Leigh-Bell, M. Downes Gastrich, O. R. Anderson, and S. W. Sanudo-Wilhelmy, 2004. Ecology of phytoplankton communities dominated by *Aureococcus anophagefferens*: The role of viruses, nutrients, and microzooplankton grazing. *Harmful Algae*, v. 3, pp. 471–483.

Golden, C. D., Seto, K.L., Dey, M. M., Chen, O. L., Gephart, J. A. & Myers, S. S. 2017. Does aquaculture support the needs of nutritionally vulnerable nations? *Frontiers in Marine Science,* 4: 159. doi: 10.3389/fmars.2017.00159

Gorbunov, M. Y., and P. G. Falkowski. 2002. Photoreceptors in the cnidarian hosts allow symbiotic corals to sense blue moonlight. *Limnology and Oceanography*, v. 37, pp. 309–315.

Goreau, T. F. 1959. The ecology of Jamaican coral reefs. I. Species composition and zonation. *Ecology*, v. 40, pp. 67–90.

Goreau, T. F., and N. I. Goreau. 1959. The physiology of skeleton formation in corals. II. Calcium deposition by hermatypic corals under various conditions in the reef. *Biological Bulletin*, v. 117, pp. 239–250. [The classic paper on the role of zooxanthellae in coral calcification.]

Goreau, T. F., and L. Land. 1974. Fore-reef morphology and depositional processes, north Jamaica. In L. F. Laporte, ed., *Reefs in Time and Space*, Society of Economic Paleontology and Mineralogy, Special Paper 18, pp. 77–89.

Gosling, E. 2003. *Bivalve Molluscs: Biology, Ecology, and Culture.* Oxford: Fishing News Books, Blackwell.

Gosselin, M., M. Levasseur, P. A. Wheeler, R. A. Horner, and B. C. Booth. 1997. New measurements of phytoplankton and ice algal production in the Arctic Ocean. *Deep-Sea Research II*, v. 44, pp. 1623–1644.

Gougeon, R.C., Mángano, M.G., Buatois, L.A., Narbonne, G.M., Laing, B.A., 2018. Early Cambrian origin of the shelf sediment mixed layer. *Nature Communications* 9, p. 1909.

Gould, S. J. 1989. *Wonderful Life: The Burgess Shale and the Meaning of History.* New York: Norton.

Grabowski, J. H. 2004. Habitat complexity disrupts predator-prey interactions but not the trophic cascade on oyster reefs. *Ecology*, v. 85, pp. 995–1004.

Graf, G. 1989. Benthic–pelagic coupling in a deep-sea benthic community. *Nature*, v. 341, pp. 437–439.

Graham, K. R., and K. P. Sebens. 1996. The distribution of marine invertebrate larvae near vertical surfaces in the rocky subtidal zone. *Ecology*, v. 77, pp. 933–949.

Graham, L. E., and L. W. Wilcox. 2000. *Algae.* Englewood Cliffs, NJ: Prentice-Hall.

Graham, N. A. J., S. K. Wilson, S. Jennings, N. V. C. Polunin, J. Robinson, J. P. Bijoux, and T. M. Daw. 2007. Lag effects in the impacts of mass coral bleaching on coral reef fish. *Fisheries, and Ecosystems Conservation Biology*, v. 21, pp. 1291–1300.

Graham, N.A.J., Jennings, S., MacNeil. A., Mouillot, D., Wilson, S.K. 2015. Predicting climate-driven regime shifts versus rebound potential in coral reefs. *Nature* v. 518, pp. 94-97.

Grainger, R., V. M. Peddemors, D. Raubenheimer, and G. E. Macchovsky-Capuska. 2020. Diet Composition and Nutritional Niche Breadth Variability in Juvenile White Sharks (*Carcharodon carcharias*). *Frontiers in Marine Science*. doi: 10.3389/fmars.2020.00422

Granados-Cifuentes, C., Neigel, J., Leberg, P., Rodriguez-Linetty, P. 2015. Genetic diversity of free-living *Symbiodinium* in the Caribbean: The importance of habitats and seasons. *Coral Reefs* v. 34, pp. 927-939.

Grassle, J. F. 1987. The ecology of deep-sea hydrothermal vent communities. *Advances in Marine Biology*, v. 23, pp. 301–362.

Grassle, J. F. 1989. Species diversity in deep sea communities. *Trends in Ecology and Evolution*, v. 4, pp. 12–15.

Grassle, J. P., and J. F. Grassle. 1976. Sibling species in the marine pollution indicator *Capitella* (Polychaeta). *Science*, v. 192, pp. 567–569.

Grassle, J. F., and N. J. Maciolek. 1992. Deep-sea species richness regional and local estimates from quantitative bottom samples. *American Naturalist*, v. 139, pp. 313–341.

Grassle, J. F., and L. S. Morse-Porteus. 1987. Macrofaunal colonization of disturbed deep-sea environments and the structure of deep-sea benthic communities. *Deep-Sea Research*, v. 34, pp. 1911–1950.

Grassle, J. F., and H. L. Sanders. 1973. Life histories and the role of disturbance. *Deep-Sea Research*, v. 20, pp. 643–659.

Gray, H., G. L. Lattin, and C. J. Moore. 2012. Incidence, mass and variety of plastics ingested by Laysan (*Phoebastria immutabilis*) and Black-footed Albatrosses (*P. nigripes*) recovered as by-catch in the North Pacific Ocean. *Marine Pollution Bulletin*, v. 64, pp. 2190–2192.

Gray, J. S. 1989. Effects of environmental stress on species rich assemblages. *Biological Journal of the Linnaean Society*, v. 37, pp. 19–32.

Grebmeier, J. M., and J. P. Barry. 1991, The influence of oceanographic processes on pelagic- benthic coupling in polar regions: A benthic perspective. *Journal of Marine Systems*, v. 2, pp. 495–518.

Greene, C.H. 2008. Arctic climate change and its impacts on the Ecology of the North Atlantic. *Ecology*, v. 89, pp. 524-538.

Greene, C.H. 2012. The winters of our discontent. *Scientific American* v. 307, pp. 50-55.

Greene, C.H., et al. 2013. Remote climate forcing of decadal-scale regime shifts in Northwest Atlantic shelf ecosystems. *Limnology and Oceanography* v. 58, pp. 803-816.

Greening, H. S., L. M. Cross, and E. T. Sherwood. 2011. A multiscale approach to seagrass recovery in Tampa Bay, Florida. *Ecological Restoration*, v. 29, pp. 82–93.

Gregg, W. W., M. E. Conkright, P. Ginoux, J. E. O’Reilly, and N. W. Casey. 2003. Ocean primary production and climate: Global decadal changes. *Geophysical Research Letters*, v. 30, pp. 3-1 to 3-4.

Gregory, A.C. et al. 2019. Marine DNA Viral Macro- and Microdiversity from Pole to Pole. 2019 *Cell*, v. 177, pp. 1109-1123.

Greytak, S. R., D. Champlin, and G. V. Callard. 2005. Isolation and characterization of two cytochrome P450 aromatase forms in killifish (*Fundulus heteroclitus*): Differential expression in fish from polluted and unpolluted environments. *Aquatic Toxicology*, v. 71, pp. 371–389.

Grigg, R. W., and D. Epp. 1989. Critical depth for the survival of coral islands: Effects on the Hawaiian archipelago. *Science*, v. 243, pp. 638–641.

Groombridge, B. 1992. *Global Biodiversity: A Status of the Earth’s Living Resources.* London: Chapman & Hall.

Grosberg, R. K. 1987. Limited dispersal and proximity-dependent mating success in the colonial ascidian *Botryllus schlosseri. Evolution*, v. 41, pp. 372–384.

Grosberg, R. K., and J. F. Quinn. 1986. The genetic control and consequences of kin recognition by the larvae of a colonial marine invertebrate. *Nature*, v. 322, pp. 456–459.

Grosholz, E. D., and G. M. Ruiz. 1996. Predicting the impact of introduced marine species: Lessons from the multiple invasions of the European green crab *Carcinus maenas. Biological Conservation*, v. 78, pp. 59–66.

Gross, M. R., R. M. Coleman, and R. M. McDowall. 1988. Aquatic productivity and the evolution of diadromous fish migration. *Science*, v. 239, pp. 1291–1293.

Grutter, A. 1996. Parasite removal rates by the cleaner wrasse *Labroides dimidiatus. Marine Ecology—Progress Series*, v. 130, pp. 61–70.

Gubbay, S., ed. 1995. *Marine Protected Areas: Principles and Techniques for Management.* London: Chapman & Hall.

Guinotte, J. M., J. Orr, Cairns, S. A. Freiwald, L. Morgan, and R. George. 2006. Will human- induced changes in seawater chemistry alter the distribution of deep-sea scleractinian corals. *Frontiers in Ecology and the Environment*, v. 4, pp. 141–146.

Gulland, J. A. 1972. *The Fish Resources of the Ocean.* London: Fishing News Books.

Gulland, J. A. 1974. *The Management of Marine Fisheries.* Seattle: University of Washington Press.

Gutt, J. 2007. Antarctic macro-zoobenthic communities: a review and an ecological classification. *Antarctic Science* 19, pp. 165–182.

**H**

Haasch, M. L., R. Prince, P. J. Wejksnora, K. R. Cooper, and J. J. Lech. 1993. Caged and wild fish: Induction of hepatic cytochrome P450 (CYP1A1) as an environmental biomonitor. *Environmental Toxicology and Chemistry*, v. 12, pp. 885–895.

Haddock, S. H. G., C. W. Dunn, P. R. Pugh, and C. E. Schnitzler. 2005. Bioluminescent and red- fluorescent lures in a deep-sea siphonophore. *Nature*, v. 309, p. 263.

Haddock, S.H.G., Moline, M.A., Case, J.F. 2015. Bioluminescence in the sea. *Annual Review of Marine Science*, v. 2, pp. 443-493.

Haefner, B. 2003. Drugs from the deep: Marine natural products as drug candidates. *Drug Discovery Today*, v. 8, pp. 536–544.

Haines, E. B. 1979. Interactions between Georgia salt marshes and coastal waters: A changing paradigm. In R. J. Livingston, ed., *Ecological Processes in Coastal and Marine Systems.* New York: Plenum, pp. 35–46.

Hall, N.M., Berry, K.L.E., Rintoul, L., and Hoogenboom. M.O. 2015. Microplastic ingestion by scleractinian corals. *Marine Biology*. doi: 10.1007/s00227-015-2619-7

Halanych, K. M., T. J. Dahlgren, and D. McHugh. 2002. Unsegmented annelids? Possible origins of four lophotrochozoan worm taxa. *Integrative and Comparative Biology*, v. 42, pp. 678–684.

Halpern, B. S. 2003. The impact of marine reserves: Do reserves work and does reserve size matter? *Ecological Applications*, v. 13, pp. S117–S137.

Halpern, B. S., et al. 2008. A global map of human impact on marine ecosystems. *Science*, v. 319, pp. 948–951.

Hamilton, C., Lydersen, C., Ims, R.A., Kovacs, K.M. 2015. Predictions replaced by facts: a keystone species' behavioural responses to declining arctic sea-ice. *Biology Letters* v. 11: 20150803.

Hamilton, P. V. 1976. Predation on *Littorina irrorata* (Mollusca: Gastropoda) by *Callinectes sapidus* (Crustacea; Portunidae). *Bulletin of Marine Science*, v. 26, pp. 403–409.

Hamner, W. M. 1988. Biomechanics of filter feeding in the Antarctic krill *Euphausia superba*: Review of past work and new observations. *Journal of Crustacean Biology*, v. 8, pp. 149–163.

Hanlon, R. T., and J. B. Messenger. 1996. *Cephalopod Behaviour.* Cambridge: Cambridge University Press.

Hansen, J. E. 2005. A slippery slope: How much global warming constitutes “dangerous anthropogenic interference”? *Climatic Change*, v. 68, pp. 269–279.

Hansen, J., M. Sato, R. Ruedy, K. Lo, D. W. Lea, and M. Medina-Elizade. 2006. Global temperature change. *Proceedings of the National Academy of Sciences (USA)*, v. 103, pp. 14288–14293.

Hanski, I. 1991. Single-species metapopulation dynamics: Concepts, models and observations. *Biological Journal of the Linnaean Society*, v. 42, pp. 17–38.

Hanski, I. 1998. Metapopulation dynamics. *Nature*, v. 396, pp. 41–49.

Harbison, G. R., L. P. Madin, and N. R. Swanberg. 1978. On the natural history and distribution of oceanic ctenophores. *Deep-Sea Research*, v. 25, pp. 233–256.

Harden Jones, F. R. 1968. *Fish Migration*, 2nd ed. London: Edward Arnold.

Hardy, A. C. 1954. *The Open Sea, Its Natural History: The World of Plankton.* London: Collins. Hardy, A. C., and R. Bainbridge. 1954. Experimental observations on vertical migrations of plankton animals. *Journal of the Marine Biological Association, United Kingdom*, v. 33, pp. 409–448.

Hare, S.R., Mantua, N.J., Franis, R.C. 1999. Inverse Production Regimes: Alaska and West Coast Pacific Salmon. *Fisheries* v. 24, pp. 6-14.

Hargrave, B. T. 1970. The utilization of benthic microflora by *Hyalella azteca. Journal of Animal Ecology*, v. 39, pp. 427–437.

Harland, W. B., R. L. Armstrong, A. V. Cox, L. E. Craig, A. G. Smith, and D. G. Smith. 1989. *A Geologic Time Scale*. Cambridge: Cambridge University Press.

Harris, C. M., McTigue, N. D., McClelland, J. W. & Dunton, K. H. 2018. Do high Arctic coastal food webs rely on a terrestrial carbon subsidy? *Food Webs*. doi: 10.1016/j.fooweb.2018.e00081

Harrison, B. K., Zhang, H., Berelson, W. & Orphan, V. J. 2009. Variations in Archaeal and bacterial diversity associated with the sulfate-methane transition zone in continental margin sediments (Santa Barbara Basin, California). *Applied and Environmental Microbiology,* 75, 1487-1499. doi: 10.1128/AEM.01812-08

Harrison, P., and C. C. Wallace. 1990. Reproduction, dispersal and recruitment of scleractinian corals. In Z. Dubinsky, ed., *Coral Reefs.* Amsterdam: Elsevier, pp. 133–207.

Harrison, P., R. Babcock, G. D. Bull, J. Oliver, C. Wallace, and B. Willis. 1984. Mass spawning in tropical reef corals. *Science*, v. 223, pp. 1186–1189.

Harrison, P. G., and K. H. Mann. 1975. Detritus formation from eelgrass (*Zostera marina* L.): The relative effects of fragmentation, leaching and decay. *Limnology and Oceanography*, v. 20, pp. 924–934.

Harrison, R. J., ed. 1972. *Functional Anatomy of Marine Mammals.* New York: Academic Press. Harrold, C., and D. C. Reed. 1985. Food availability, sea urchin grazing, and kelp forest community structure. *Ecology*, v. 66, pp. 1160–1169.

Hartig, E. K., V. Gornitz, A. Kolker, F. Mushacke, and D. Fallon. 2002. Anthropogenic and climate-change impacts on salt marshes of Jamaica Bay. *Wetlands*, v. 22, pp. 71–89.

Harvell, C. D. 1990. The ecology and evolution of inducible defenses. *Quarterly Review of Biology*, v. 65, pp. 323–340.

Harvell, C.D., Kim, K., Burkholder, J.M., Colwell, R.R., Epstein, P.R., Grimes, D.J., et al. 1999. Emerging marine diseases-climate links and anthropogenic factors. *Science* v. 285, p. 1505–1510.

Harvell, C.D., et al., 2019. Disease epidemic and a marine heat wave are associated with the continental-scale collapse of a pivotal predator (*Pycnopodia helianthoides*). *Science Advances* Vol. 5, no. 1, eaau7042. doi: 10.1126/sciadv.aau7042

Hastings, D., and S. Emerson. 1988. Sulfate reduction in the presence of low oxygen levels in the waters of the Cariaco Trench. *Limnology and Oceanography*, v. 33, pp. 391–396.

Hastings, J. W. 1971. Light to hide by: Ventral luminescence to camouflage the silhouette. *Science*, v. 173, pp. 1016–1017.

Hawkins, S. J., and R. G. Hartknoll. 1983. Grazing of intertidal algae by marine invertebrates. *Oceanography and Marine Biology Annual Review*, v. 21, pp. 195–282. [This is a comprehensive review with extensive references.]

Hay, M. E. 1991. Marine-terrestrial contrasts in the ecology of plant chemical defenses against herbivores. *Trends in Ecology and Evolution*, v. 6, pp. 362–365.

Hay, M. E. 2009. Marine chemical ecology: Chemical signals and cues structure marine populations, communities, and ecosystems. *Annual Review of Marine Science*, v. 1, pp. 193–212.

Hay, M. E., J. E. Duffy, and W. Fenical. 1990. Host–plant specialization decreases predation in a marine amphipod: An herbivore in plant’s clothing. *Ecology*, v. 71, pp. 733–743.

Hay, M. E., and W. Fenical. 1988. Marine plant-herbivore interactions: The ecology of chemical defense. *Annual Review of Ecology and Systematics*, v. 19, pp. 111–145.

Hay, M. E., W. Fenical, and K. Gustafson. 1987. Chemical defense against diverse coral-reef herbivores. *Ecology*, v. 68, pp. 1581–1591.

Hay, M. E., Q. E. Kappel, and W. Fenical. 1994. Synergisms in plant defenses against herbivores: Interactions of chemistry, calcification, and plant quality. *Ecology*, v. 75, pp. 1714–1726.

Hayden, B. P., G. C. Ray, and R. Dolan. 1984. Classification of coastal and marine environments. *Environmental Conservation,* v. 11, pp. 199–207.

Hays, G.C. 2003. A review of the adaptive significance and ecosystem consequences of zooplankton diel vertical migrations. *Hydrobiologia* v. 503, pp. 163-170.

Hazen, E. L., et al. 2012. Predicted habitat shifts of Pacific top predators in a changing climate. *Nature Climate Change*. doi: :10.1038/nclimate1686

Hazen, E.L., Friedlaender, A.S., Goldbogen, J.A. 2015. Blue whales (*Balaenoptera musculus*) optimize foraging efficiency by balancing oxygen use and energy gain as a function of prey density. *Science Advances*. doi: 10.1126/sciadv.1500469

Hazen, T., et al. 2010. Deep-sea oil plume enriches indigenous oil-degrading bacteria. *Science* v. 220, pp. 204–208.

Heck, K. L., Jr., J. R. Pennock, J. F. Valentine, L. D. Coen, and S. A. Sklenar. 2000. Effects of nutrient enrichment and small predator density on seagrass ecosystems: An experimental assessment. *Limnology and Oceanography*, v. 45, pp. 1041–1057.

Heck, K. L., Jr., and J. F. Valentine. 2006. Plant-herbivore interactions in seagrass meadows. *Journal of Experimental Marine Biology and Ecology*, v. 330, pp. 420–436.

Hecker, B. 1985. Fauna from a cold sulfur-seep in the Gulf of Mexico: Comparison with hydrothermal vent communities and evolutionary implications. *Bulletin of the Biological Society of Washington*, v. 6, pp. 465–473.

Hedgecock, D., Pudovkin, A. 2011. Sweepstakes reproductive success in highly fecund marine fish and shellfish: a review and commentary. *Bulletin of Marine Science* 87: 971-1002.

Hein, M., and K. Sand-Jensen. 1997. CO2 increases oceanic primary production. *Nature,* v. 388, pp. 526–527.

Heithaus, M. R., L. M. Dill, G. J. Garshall, and B. Buhleier. 2002. Habitat use and foraging behvior of tiger sharks (*Galeocerdo cuvier*) in a seagrass ecosystem. *Marine Biology* 140: 237-248.

Heithaus, M. R., A. J. Wirsing, and L. M. Dill. 2012. The ecological importance of intact top-predator populations: a synthesis of 15 years of research in a seagrass ecosystem. *Marine and Freshwater Research* 63: 1039-1050.

Helmuth, B. 1999. Thermal biology of rocky intertidal mussels: Quantifying body temperatures using climatological data. *Ecology*, v. 80, pp. 15–34.

Helmuth, B., C. D. G. Harley, P. M. Halpin, M. O’Donnell, G. E. Hofmann, and C. A. Blanchette. 2002. Climate change and latitudinal patterns of intertidal thermal stress. *Science*, v. 298, pp. 1015–1017.

Hemming, M. A., and C. M. Duarte. 2000. *Seagrass Ecology.* Cambridge: Cambridge University Press.

Henry, L.-A., and J. M. Roberts. 2007. Biodiversity and ecological composition of macrobenthos on cold-water coral mounds and adjacent off-mound habitat in the bathyal Porcupine Seabight, NE Atlantic. *Deep-Sea Research I*, v. 54, pp. 654–672.

Henry, L.-A., and J. M. Roberts. 2016. Global biodiversity in cold-water coral reef ecosystems. In: *Marine Animal Forests*, S. Rossi, ed. Springer International Publ. Co. Switzerland. pp. 1-21. doi: 10.1007/978-3-319-17001-5\_6-1

Herring, P. J., A. K. Campbell, M. Whitfield, and L. Maddock, eds. 1990. *Light and Life in the Sea.* Cambridge: Cambridge University Press.

Herring, P. J., and E. A. Widder. 2004. Bioluminescence of deep-sea coronate medusae (Cnidaria: Scyphozoa). *Marine Biology* v. 146, pp. 39-51.

Hessler, R. R., C. L. Ingram, A. A. Yayanos, and B. R. Burnett. 1978. Scavenging amphipods from the floor of the Philippine Trench. *Deep-Sea Research*, v. 25, pp. 1029–1047.

Hessler, R.R., Isaacs J.D., Mills, E.L. 1972. Giant amphipod from the abyssal Pacific Ocean. *Science* v. 175, pp. 636-637.

Hessler, R. R., and P. A. Jumars. 1974. Abyssal community analysis from replicate box cores in the central north Pacific. *Deep-Sea Research*, v. 21, pp. 185–209.

Heyward, A. J., and A. P. Negri. 1999. Natural inducers for coral larval metamorphosis. *Coral Reefs*, v. 18, pp. 273–279.

Higham, T. E., S. W. Day, and P. C. Wainwright. 2006. Multidimensional analysis of suction feeding performance in fishes: Fluid speed, acceleration, strike accuracy and the ingested volume of water. *Journal of Experimental Biology*, v. 209, pp. 2713–2725.

Highsmith, R. C., and K. O. Coyle. 1993. Production of Arctic amphipods relative to grey whale energy requirements. *Marine Ecology—Progress Series, USA*, v. 83, pp. 141–150.

Hilborn, R. 2006. Faith-based fisheries. *Fisheries*, v. 31, pp. 554–555.

Hilborn, R. 2007. Reinterpreting the state of fisheries and their management. *Ecosystems*, v. 10, pp. 1362–1369.

Hill, A. E., J. Brown, and L. Fernand. 1996. The western Irish Sea gyre: A retention system for Norway lobster (*Nephrops norvegicus*)? *Oceanologica Acta*, v. 19, pp. 357–368.

Hinke, J. T., K. Salwicka, S. G. Trivelpiece, G. M. Watters, and W. Z. Trivelpiece. 2007. Divergent responses of *Pygoscelis* penguins reveal a common environmental driver. *Oecologia*, v. 143, pp. 845–855.

Hiscock, K., A. Southward, I. Tittley, and S. Hawkins. 2004. Effects of changing temperature on benthic marine life in Britain and Ireland. *Aquatic Conservation*, v. 14, pp. 333–362.

Hixon, M. A., and M. Carr. 1997. Synergistic predation, density dependence, and population regulation in marine fish. *Science*, v. 277, pp. 946–949.

Hobbie, J. E., ed. 2000. *Estuarine Science: A Synthetic Approach to Research and Practice*. Washington, DC: Island Press.

Hobbie, J. E., and P. J. LeB. Williams. 1984. *Heterotrophic Activity in the Sea.* New York: Plenum.

Hoch, J.M., Schneck, D.T., Neufeld, C.J. 2016. Ecology and evolution of phenotypic plasticity in the penis and cirri of barnacles. *Integrative and Comparative Biology*. doi: 10.1093/icb/icw006

Hochachka, P. W. 1992. Metabolic biochemistry and the making of mesopelagic mammals. *Experientia*, v. 48, pp. 570–575.

Hoegh-Guldberg, O. 1999. Climate change, coral bleaching and the future of the world’s coral reefs. *Marine and Freshwater Research*, v. 50, pp. 839–866.

Hoegh-Guldberg, O., et al. 2007. Coral reefs under rapid climate change and ocean acidification. *Science*, v. 318, pp. 737–742.

Hoekstra, H.E., et al. 2005. A single amino acid polymorphism contributes to adaptive beach mouse color pattern. *Science,* v. 313, pp. 101-104.

Hoelzel, A. R., ed. 1991. *Genetic Ecology of Whales and Dolphins.* Cambridge: International Whaling Commission.

Hofmann, G. E., and G. N. Somero. 1996. Interspecific variation in thermal denaturation of proteins in the congeneric mussels *Mytilus trossulus* and *M. galloprovincialis*: Evidence from the heat-shock response and protein ubiquitination. *Marine Biology*, v. 126, pp. 65–75.

Hofmann, G.E., and A.E. Todgham. 2010. Living in the now: physiological mechanisms to tolerate a rapidly changing environment. *Ann. Rev. Physiol.* v. 72, pp. 127-145.

Holbrook, S. J., and R. J. Schmitt. 2005. Growth, reproduction and survival of a tropical sea anemone (Actiniaria): Benefits of hosting anemonefish. *Coral Reefs*, v. 24, pp. 67–73.

Honda, M.C., et al. 2009. Application of underwater optical data to estimation of primary productivity. *Deep-Sea Research*, v. I. doi: 10.1016/j.dsr.2009.08.009

Honjo, T. 1994. The biology and prediction of representative red tides associated with fish kills in Japan. *Review of Fisheries Science*, v. 2, pp. 225–253.

Houde, E. D. 1987. Fish early life dynamics and recruitment variability. *American Fishery Society Symposium*, v. 2, pp. 17–29.

Houde, E. D., and R. C. Schekter. 1980. Feeding by marine fish larvae: Developmental and functional responses. *Environmental Biology of Fishes*, v. 5, pp. 315–334.

Houghton, J. T., Y. Ding, D. J. Griggs, M. Noguer, P. J. van der Linden, X. Dai, K. Maskell, and C. A. Johnson, eds., *Climate Change 2001: The Scientific Basis.* Cambridge: Cambridge University Press, pp. 1–83.

Houghton, J. D. R., T. K. Doyle, M. W. Wilson, J. Davenport, and G. C. Hays. 2006. Jellyfish aggregations and leatherback turtle foraging patterns in a temperate coastal environment. *Ecology*, v. 87, pp. 1967–1972.

Houghton, R. A., and G. M. Woodwell. 1989. Global climatic change. *Scientific American*, v. 260, pp. 36–44.

Hourdez, S., and R. E. Weber. 2005. Molecular and functional adaptations in deep-sea hemoglobins. *Journal of Inorganic Biochemistry*, v. 99, pp. 130–141.

Hoving, H. J. T., and B. H. Robison. 2012. Vampire squid: detritivores in the oxygen minimum zone. *Proceedings of the Royal Society B*. doi: 10.1098/rspb.2012.1357

Howarth, R. W., and R. Marino. 2006. Nitrogen as the limiting nutrient for eutrophication in coastal marine ecosystems: Evolving views over three decades. *Limnology and Oceanography*, v. 51, pp. 364–376.

Howes, E.L., Joos, F., Eakin, C.M., Gattuso, J.-P. 2015. An updated synthesis of the observed and projected impacts of climate change on the chemical, physical and biological processes in the oceans. *Frontiers in Marine Science*. doi: 10.3389/fmars.2015.00036

Hsieh, C., C. S. Reiss, J. R. Hunter, J. R. Beddington, R. M. May, and G. Sugihara. 2006. Fishing elevates variability in the abundance of exploited species. *Nature*, v. 443, pp. 859–862.

Hsü, K. J. 1983. *The Mediterranean Was a Desert.* Princeton, NJ: Princeton University Press. Hubert, S., and D. Hedgecock. 2004. Linkage maps of microsatellite DNA markers for the Pacific Oyster *Crassostrea gigas. Genetics*, v. 168, pp. 351–362.

Hueter, R. 1998. Philopatry, natal homing and localised stock depletion in sharks. *Shark News* v. 12, pp. 1-2.

Hughes, B.B, R. Eby. E. van Dyke, M.T. Tinker, C.I. Marks, K.S. Johnson, K. Wasson. 2013. Recovery of a top predator mediates negative eutrophic effects on seagrass. *Proceedings of the National Academy of Sciences of the United States of America*, v. 110, pp. 15313-15318.

Hughes, D. J., and R. N. Hughes. 1986. Life history variation in *Celloporella* *hyalina* (Bryozoa). *Proceedings of the Royal Society of London B*, v. 228, pp. 127–132.

Hughes, D.J., Campbell, D.A., Doblin, M.A., Kromkamp, J.C., Lawrenz, E., Moore, C.M. Oxborough, K., Prasil, O. Raalph, P.J. Alvarez, M.F. Suggett, D.J. 2018. Roadmaps and detours: Active chlorophyll‑a assessments of primary productivity across marine and freshwater systems. *Environmental Science and Technology* v. 52, pp. 12039-12054.

Hughes, G. M., and A. V. Grimstone. 1965. The fine structure of the secondary lamellae of the gills of *Gaddus pollachius. Quarterly Journal of Microscopical Science*, v. 106, pp. 343–353.

Hughes, R. N. 1980. Optimal foraging theory in the marine context. *Oceanography and Marine Biology Annual Reviews*, v. 18, pp. 423–481.

Hughes, R. N. 1989. *A Functional Biology of Clonal Organisms.* London: Chapman & Hall.

Hughes, R. N., and R. W. Elner. 1979. Tactics of a predator, *Carcinus maenas*, and morphological responses of the prey, *Nucella lapillus. Journal of Animal Ecology*, v. 48, pp. 65–78.

Hughes, T. P. 1994. Catastrophes, phase shifts, and large-scale degradation of a Caribbean coral reef. *Science*, v. 265, pp. 1547–1550.

Hughes, T. P., A. H. Baird, E. A. Dinsdale, N. A. Moltschaniwskyj, M. S. Pratchett, J. E. Tanner, and B. L. Willis. 2000. Supply-side ecology works both ways: The link between benthic adults, fecundity, and larval recruits. *Ecology*, v. 81, pp. 2241–2249.

Hughes, T. P., A. H. Baird, E. A. Dinsdale, N. A. Moltschaniwsky, M. S. Pratchett, J. E. Tanner, and B. L. Willis. 2012. Assembly rules of reef corals are flexible along a step climatic gradient. *Current Biology*, v. 22, no. 8, pp. 736–74. doi: 10.1016/j.cub.2012.02.068

Hughes, T.P. et al. 2018. Spatial and temporal patterns of mass bleaching of corals in the Anthropocene. *Science* v. 359, pp. 80-83.

Hughes T.P., Kerry J.T. Álvarez-Noriega M., Álvarez-Romero J.G., Anderson K.D., Baird A.H., Babcock R.C., Beger M., Bellwood D.R., Berkelmans R. et al. 2017. Global warming and recurrent mass bleaching of corals. *Nature* 543: 373-377.

Hunt, K. E., R.M. Rolland, S. D. Kraus, S. K. Wasser. 2006. Analysis of fecal glucocorticoids in the North Atlantic right whale (*Eubalaena glacialis*). *General and Comparative Endocrinology*, v. 148, pp. 260–272.

Hunter, T. 1989. Suspension feeding in oscillating flow: The effect of colony morphology and flow regime on plankton capture by the hydroid *Obelia longissima. Biological Bulletin*, v. 176, p. 41–49.

Hurlbert, S. H. 1971. The nonconcept of species diversity: A critique and alternative parameters. *Ecology*, v. 52, pp. 577–586.

Hurrell, J.W., Kushnir, Y., Visbeck, M., Ottersen, G. 2003. An Overview of the North Atlantic Oscillation. In: The North Atlantic Oscillation: Climate Significance and Environmental Impact (eds. Hurrell, J. W., Kushnir, Y., Ottersen, G., Visbeck, M.), pp. 1–35. Oxford University Press, Oxford.

Huston, M. 1979. A general hypothesis of species diversity. *American Naturalist*, v. 113, pp. 81–101.

Hutchings, P., and P. Saenger. 1987. *Ecology of Mangroves*. St. Lucia: University of Queensland Press.

Hyman, L. 1940–1966. *The Invertebrates*, v. 1–6. New York: McGraw-Hill. [This is the definitive treatise on invertebrates that has been written in English.]

Hyman, L. 1955. *The Invertebrates: Echinodermata.* New York: McGraw-Hill.

**I**

Ibarbalz, F. M. et al. 2019. Global trends in marine plankton diversity across kingdoms of life. Cell 179, 1084–1097.e21

Iglesias-Rodriguez, M. D., et al. 2008. Phytoplankton calcification in a high-CO2 world. *Science*, v. 320, pp. 336–340.

Iizumi, H., A. Hattori, and C. P. McRoy. 1980. Nitrate and nitrite in interstitial waters of eelgrass beds in relation to the rhizosphere. *Journal of Experimental Marine Biology and Ecology*, v. 47, pp. 191–201.

Innes, D. J., and L. E. Haley. 1977. Inheritance of a shell-color polymorphism in the mussel. *Journal of Heredity*, v. 68, pp. 203–204.

Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, S. Solomon et al., eds. Cambridge: Cambridge University Press.

IPCC. 2014. Climate Change 2014. Synthesis Report. on line <https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf>

Irlandi, E. A., and C. H. Peterson. 1991. Modification of animal habitat by large plants: Mechanisms by which seagrasses influence clam growth. *Oecologia*, v. 87, pp. 307–318.

Isaacs, L. D., and R. A. Schwartzlose. 1975. Active animals of the deep-sea floor. *Scientific American*, v. 233, pp. 85–91.

Iverson, S. J., C. P. McRoy, and G. J. Divoky. 2008. Tracing carbon flow in an arctic marine food web using fatty acid-stable isotope analysis. *Oecologia* 157:111-129.

**J**

Jablonski, D. 1993. The tropics as a source of evolutionary novelty through geological time. *Nature*, v. 364, pp. 142–144.

Jablonski, D., K. Roy, and J. W. Valentine. 2006. Out of the tropics: Evolutionary dynamics of the latitudinal diversity gradient. *Science,* v. 314, pp. 102–106.

Jackson, J. B. C., P. Jung, A. G. Coates, and L. S. Collins. 1993. Diversity and extinction of tropical American mollusks and emergence of the Isthmus of Panama. *Science*, v. 260, pp. 1624–1626.

Jackson, R.L., Gabric, A.J., Cropp, R., Woodhouse, M.T. 2020. Dimethylsulfide (DMS), marine biogenic aerosols and the ecophysiology of coral reefs. Biogeosciences 17: 2181-2204.

Jambeck, J.R. et al. 2015. Plastic waste inputs from land into the ocean. *Science* v. 347, pp. 768-771.

Jangoux, M., and J. M. Lawrence. 1982. *Echinoderm Nutrition.* Rotterdam: Balkema.

Janik, V. M., L. S. Sayigh, and R. S. Wells. 2006. Signature whistle shape conveys identity information to bottlenose dolphins. *Proceedings of the National Academy of Science USA*, v. 103, pp. 8293–8297.

Jannasch, H. W. 1987. Effects of hydrostatic pressure on growth of marine bacteria. In H. W. Jannasch, R. E. Marquis, and A. M. Zimmerman, eds., *Current Perspectives in High Pressure Biology.* London: Academic Press, pp. 1–14.

Jannasch, H. W. 1989. Serendipity in deep-sea microbiology: Lessons from the *Alvin* lunch. *Oceanus*, v. 31, pp. 28–33.

Jannasch, H. W., K. Eimhjellen, C. Wirsen, and A. Farmanfarmaian. 1971. Microbial degradation of organic matter in the deep sea. *Science*, v. 171, pp. 672–675.

Jenkins, S. R. 2005. Larval habitat selection, not larval supply, determines settlement patterns and adult distribution in two chthamalid barnacles. *Journal of Animal Ecology*, v. 74, pp. 893–904.

Jennings, R.M., Etter, R.J., Ficarra, L. 2013. Population differentiation and species formation in the deep sea: The potential role of environmental gradients and depth. PLoS One. doi: 10.1371/journal.pone.0077594

Jenny, M.J. et al. 2007. A cDNA Microarray for *Crassostrea virginica* and *C. gigas.* *Marine Biotechnology* v. 9, pp. 577-591.

Jensen, P. R., K. M. Jenkins, D. Porter, and W. Fenical. 1998. Evidence that a new antibiotic flavone glycoside chemically defends the sea grass *Thalassia testudinum* against zoosporic fungi. *Applied and Environmental Microbiology*, v. 64, pp. 1490–1496.

Jiang, L.-Q., R. A. Feely, B. R. Carter, D. J. Greeley, D. K. Gledhill, and K. M. Arzayus. 2015. Climatological distribution of aragonite saturation state in the global oceans. *Global Biogeochemical Cycles*. 29:1656-1673. doi: 10.1002/2015GB005198

Johansen, M.P., Ruedig, E., Tagami, K., Uchida, S. Higley, K., Beresford, N.A. 2014. Radiological dose rates to marine fish from the Fukushima DaiichiAccident: The first three years across the North Pacific. *Environmental Science and Technology* v. 49, pp. 1277−1285.

Johansson, G., and P. Snoeijs. 2002. Macroalgal photosynthetic responses to light in relation to thallus morphology and depth zonation. *Marine Ecology Progress Series*, v. 244, pp. 63–72.

Johnson, D.S. 2014. Fiddler on the roof: A northern range extension for the marsh fiddler crab, *Uca pugnax*. Journal of Crustacean Biology, v. 34, pp 671-673.

Johnson, M. S. 1971. Adaptive lactate dehydrogenase variation in the crested blenny *Anoplarchus. Heredity*, v. 27, pp. 205–226.

Johnson, N. A., J. W. Campbell, T. S. Moore, M. A. Rex, R. J. Etter, C. R. McClain, and M. D. Dowell. 2007. The relationship between the standing stock of deep-sea macrobenthos and surface production in the western North Atlantic. *Deep-Sea Research I*, v. 54, pp. 1350–1360.

Jokela, J., C. M. Lively, M. F. Dybdahl, and J. A. Fox. 1997. Evidence for a cost of sex in the freshwater snail *Potamopyrgus antipodarum. Ecology*, v. 48, pp. 452–460.

Jones, A. M., C. Brown, and S. Gardner. 2011. Tool use in the tuskfish *Choerodon schloenleinii. Coral Reefs*, v. 30, p. 865.

Jones, B. W., Nishiguchi., M.K. 2004. Counterillumination in the bobtail squid, *Euprymna scolopes* (Mollusca: Cephalopoda). *Marine Biology* v. 144 pp. 1151–1155.

Jones DOB, Kaiser S, Sweetman AK, Smith CR, Menot L, Vink A, et al. 2017. Biological responses to disturbance from simulated deep-sea polymetallic nodule mining. *PLoS ONE* 12(2): e0171750. doi: 10.1371/journal.pone.0171750

Jones, J., Allam, B., Pales Espinosa, E. 2020. Particle selection in suspension-feeding bivalves. Does one model fit all? *Biological Bulletin* v. 238, pp.

Jones, M. L., and S. L. Gardiner. 1989. On the early development of the Vestimentiferan tube worm *Ridgeia* sp. and observations of the nervous system and trophosome of *Ridgeia* sp. and *Riftia pachyptila. Biological Bulletin*, v. 177, pp. 254–276.

Jones, P. D., T. M. L. Wigley, and P. B. Wright. 1986. Global temperature variations between 1861 and 1984. *Nature*, v. 322, pp. 430–434.

Jones, S. J., N. Mieszkowska, and D. S. Wethey. 2009. Linking thermal tolerances and biogeography: *Mytilus edulis* (L.) at its southern limit on the east coast of the United States. *Biological Bulletin*, v. 217, pp. 73–85.

Joos, F. G., K. Plattner, T. F. Stocker, O. Marchal, and A. Schmittner. 1999. Global warming and marine carbon cycle feedbacks on future atmospheric CO2 *Science*, v. 284, pp. 464–487.

Jørgensen, C. B. 1966. *Biology of Suspension Feeding.* Oxford: Pergamon Press.

Jørgensen, C. B. 1990. *Bivalve Filter-Feeding: Hydrodynamics, Bioenergetics, Physiology and Ecology.* Fredensborg, Denmark: Olsen and Olsen.

Jørgensen, L.L., Planque, B., Thangstad, T.H., Certain, G. 2015. Vulnerability of megabenthic species to trawling int the Barents Sea. ICES *Journal of Marine Science* doi: 10.1093/icesjms/fsv107.

Jorgensen, S. J., et al. 2010. Philopatry and migration of Pacific white sharks. *Proceedings of the Royal Society B*, v. 277, pp. 679–688.

Joughin, I., Smith, B.E., Medley, B. 2014. Marine ice sheet collapse potentially under way for the Thwaites Glacier Basin, West Antarctica. *Science* v. 344, pp. 735-738.

Judge, M. L. 1988. The effects of increased drag on *Lottia gigantea* (Sowerby 1834) foraging behavior. *Functional Ecology*, v. 2, pp. 363–369.

Judge, M. L., J. F. Quinn, and C. L. Wolin. 1988. Variability in recruitment of *Balanus glandula* (Darwin, 1854) along the central California coast. *Journal of Experimental Marine Biology and Ecology*, v. 119, pp. 235–251.

Jumars, P. A. 1992. *Concepts in Biological Oceanography: An Interdisciplinary Primer.* New York: Oxford University Press.

Jumars, P. A. 2007. Habitat coupling by mid-latitude subtidal marine-mysids: Import-subsidized omnivores. *Oceanography and Marine Biology, An Annual Review*, v. 45, pp. 85–138.

**K**

Kaji, T., Anker, A., Wirkner, C. S. & Palmer, A. R. 2018. Parallel saltational evolution of ultrafast movements in snapping shrimp claws. *Current Biology,* 28, 106-113.e4.

Kamel, S. J., and R. K. Grosberg. 2012. Exclusive male care despite extreme female promiscuity and low paternity in a marine snail. *Ecology Letters*, published online, August 2012.

Kammermans, P., H. W. van der Veer, L. Karcsmarski, and G. W. Douglas. 1994. Competition in deposit- and suspension-feeding bivalves: Experiments in controlled outdoor environments. *Journal of Experimental Marine Biology and Ecology*, v. 162, pp. 113–135.

Kamrin, M. A., and R. K. Ringer. 1994. PCB residues in mammals: A review. *Toxicology and Environmental Chemistry*, v. 41, pp. 63–84.

Kane, I.A., et al. 2020. Seafloor microplastic hotspots controlled by deep-sea circulation. *Science* v. 368, p. 1140-1145.

Kappes, M.A., Shaffer, S.A., Tremblay, Y., Foley, D.G., Palacios, D.M., Robinson, P.W., Bograd, S.J., Costa, D. P. 2010. Hawaiian albatrosses track interannual variability of marine habitats in the North Pacific. *Progress in Oceanography* v. 86, pp. 246–260.

Kapsenberg, L., A. Miglioli, M. C. Bitter, E. Tambutte, R. Dumollard, and J.-P. Gattuso. 2018. Ocean pH fluctuations affect mussel larvae at key developmental transitions. *Proceedings of the Royal Society B* 285: 20182381. doi: 10.1098/rspb.2018.2381

Karl, D. M. 1987. Bacterial production at deep-sea hydrothermal vents and cold seeps: Evidence for chemosynthetic primary production. In M. Fletcher, T. R. Gary, and J. G. Jones, eds., *Symposium of the Society of General Microbiology*, v. 41. Cambridge: Cambridge University Press, pp. 319–359.

Karl, D. M., C. O. Wirsen, and H. W. Jannasch. 1980. Deep-sea primary production at the Galapagos hydrothermal vents. *Science*, v. 207, pp. 1345–1347.

Karlson, A. M. L., C. A. Pilditch, P. K. Probert, D. Leduc, and C. Savage. 2020. Large infaunal bivalves determine comnunity uptake of macroalgal detritus and food web pathways. *Ecosystems*. doi: 10.1007/s10021-020-00524-5

Karlson, R. K., H. V. Cornell, and T. P. Hughes. 2004. Coral communities are regionally enriched along an oceanic biodiversity gradient. *Nature*, v. 429, pp. 867–870.

Karplus, I. R. 1974. The burrows of alpheid shrimp with gobiid fish in the northern Red Sea. *Marine Biology*, v. 24, pp. 259–268.

Kaushal, S. S., et al. 2010. Rising stream and river temperatures in the US. *Frontiers in Ecology and the Environment*, v. 8, pp. 461–466.

Kautsky, N., P. Rönnbäck, M. Tedengrena, and M. Troella. 2000. Ecosystem perspectives on management of disease in shrimp pond farming. *Aquaculture*, v. 191, pp. 145–161.

Kay, A. M., and A. J. Butler. 1983. ‘Stability’ of the fouling communities on the pilings of two piers in South Australia. *Oecologia*, v. 56, pp. 58–66.

Kay, A. M., and M. J. Keough. 1981. Occupations of patches in the epifaunal communities on pier pilings and the bivalve *Pinna bicolor* at Edithburgh, South Australia. *Oecologia*, v. 48, pp. 123–130.

Kelaher, B. P., and J. S. Levinton. 2003. Variation in detrital enrichment causes spatiotemporal variation in soft-sediment assemblages. *Marine Ecology—Progress Series*, v. 261, pp. 85–97.

Kelaher, B. P., J. S. Levinton, and J. M. Hoch. 2003. Foraging by the mud snail, *Ilyanassa obsoleta* (Say), modulates spatial variation in benthic community structure. *Journal of Experimental Marine Biology and Ecology*, v. 292, pp. 139–157.

Kelaher, B.P., Page, A., Dasey, M., Maguire, D., Reid, A., Jordan, A., Colement, M.A. 2015. Strengthened enforcement enhances marine sanctuary performance. *Global Ecology and Conservation* v. 3, pp. 503-510.

Kennedy, V. S., R. I. E. Newell, and A. E. Eble, eds. 1996. *The Eastern Oyster Crassostrea virginica.* College Park, MD: Maryland Sea Grant.

Kennett, J. 1982. *Marine Geology.* Englewood Cliffs, NJ: Prentice Hall.

Kenworthy, W. J., and J. P. Reid. 2003. Can the calcifying macroalga *Halimeda opuntia* increase CO2 availability and enhance the growth of *Thalassia testudinum? Gulf of Mexico Science*, v. 21, pp. 101–102.

Keough, M. J. 1984. Effects of patch size on the abundance of sessile marine invertebrates. *Ecology*, v. 65, pp. 423–437.

Keough, M. J. 1989. Dispersal of the bryozoan *Bugula neritinea* and effects of adults on newly metamorphosed juveniles. *Marine Ecology—Progress Series*, v. 57, pp. 163–172.

Keser, M., J. T. Swenarton, and J. F. Foertch. 2005. Effects of thermal input and climate change on growth of *Ascophyllum nodosum* (Fucales, Phaeophyceae) in eastern Long Island Sound (USA). *Journal of Sea Research*, v. 54, pp. 211–220.

Kessler, J. D., D. L. Valentine, M. C. Redmond, M. Du, E. W. Chan, S. D. Mendes, E. W. Quiroz, C. J. Villanueva, S. S. Shusta, L. M. Werra, S. Yvon-Lewis, and T. C. Weber. 2011. A persistent oxygen anomaly reveals the fate of spilled methane in the deep Gulf of Mexico. *Science*, v. 331, pp. 312–315.

Killen, S. S., S. Marras, J. F. Steffensen, and D. J. McKenzie. 2011. Aerobic capacity influences the spatial position of individuals within fish schools. *Proceedings of the Royal Society B*, published online, June 2011.

Kim, S.L., Oliver, J.S. 1989. Swarming benthic crustaceans in the Bering and Chukchi seas and their relation to geographic patterns in gray whale feeding. *Canadian Journal of Zoology*, v. 67, pp. 1531-1542.

Kimmerer, W. J. 2006. Response of anchovies dampens effects of the invasive bivalve *Corbula amurensis* on the San Francisco Estuary foodweb. *Marine Ecology Progress Series*, v. 324, pp. 207–218.

King, G.M., Kostka, J.E., Hazen, T.C., Sobecky, P.A. 2015. Microbial Responses to the Deepwater Horizon Oil Spill: From Coastal Wetlands to the Deep Sea. *Annual Reviews in Marine Science*, v. 7 pp.377–401.

King, J. E. 1983. *Seals of the World*, 2nd ed. Ithaca, NY: Cornell University Press.

King, N., C. T. Hittinger, and S. B. Carroll. 2003. Evolution of key cell signaling and adhesion protein families predates animal origins. *Science*, v. 301, pp. 361–363.

Kinne, O. 1970. Non-genetic adaptation to temperature and salinity. *Helgolénd Wissenschaften Meeresuntersuchungen*, v. 10, pp. 433–458.

Kinzie, R. A., III. 1993. Effects of ambient levels of solar ultraviolet radiation on zooxanthellae and photosynthesis of the reef coral *Montipora verrucosa. Marine Biology*, v. 116, pp. 319–327.

Kirkpatrick, M. 1982. Sexual selection and the evolution of female choice. *Evolution*, v. 36, pp. 1–12.

Kirwan, M. L., A. B. Murray, J. P. Donnelly, and D. R. Corbett. 2011. Rapid wetland expansion during European settlement and its implication for marsh survival under modern sediment delivery rates. *Geological Society of America Bulletin*, v. 39, pp. 507–510.

Kjerfve, B., ed. 1988a. *Hydrodynamics of Estuaries*, v. 1: *Estuarine Physics.* Boca Raton, FL: CRC Press.

Kjerfve, B., ed. 1988b. *Hydrodynamics of Estuaries*, v. 2: *Estuarine Case Studies.* Boca Raton, FL: CRC Press.

Klerks, P. L., and J. S. Levinton. 1989. Rapid evolution of resistance to extreme metal pollution in a benthic oligochaete. *Biological Bulletin*, v. 176, pp. 135–141.

Klerks, P., and J. S. Levinton. 1992. Evolution of resistance and changes in community composition in metal-polluted environments. In R. Dallinger and P. S. Rainbow, eds., *Ecotoxicology of Metals in Invertebrates.* Boca Raton, FL: Lewis Publishers, pp. 223–241.

Klerks, P. L., and J. S. Weis. 1987. Genetic adaptation to heavy metals in aquatic organisms: A review. *Environmental Pollution*, v. 45, pp. 173–205.

Klimley, P. 1999. Sharks beware. *American Scientist*, v. 87, pp. 488–491.

Klumpp, D. W., B. L. Bayne, and A. J. S. Hawkins. 1992. Nutrition of the giant clam *Tridacna gigas* (L.). I. Contribution of filter feeding and photosynthesis to respiration and growth. *Journal of Experimental Marine Biology and Ecology*, v. 155, pp. 105–122.

Knauss, J. A. 1996. *Introduction to Physical Oceanography*, 2nd ed. Englewood Cliffs, NJ: Prentice Hall.

Knott, K. E., E. J. Balser, W. B. Jaeckle, and G. A. Wray. 2003. Identification of asteroid genera with species capable of larval cloning. *Biological Bulletin*, v. 204, pp. 246–255.

Knowlton, N. 1993. Sibling species in the sea. *Annual Review of Ecology and Systematics*, v. 24, pp. 189–216.

Knowlton, N. 2001. Sea urchin recovery from mass mortality: New hope for Caribbean coral reefs? *Proceedings of the National Academy of Sciences, USA*, v. 98, pp. 4822–4824.

Knowlton, N., and J. B. C. Jackson, 2008. Shifting baselines, local impacts, and global change on coral reefs. *PLoS Biology*, v. 6, no. 2: e54. doi: 10.1371/journal.pbio.0060054

Knowlton, N., J. L. Maté, H. M. Guzmán, R. Rowan, and J. Jarra. 1997. Direct evidence for reproductive isolation among the three species of the *Montastrea annularis* complex in Central America (Panamá and Honduras). *Marine Biology*, v. 127, pp. 705–711.

Knowlton, N., L. A. Weigt, L. A. Solarzano, E. K. Mills, and E. Bermingham. 1993. Divergence in proteins, mitochondrial DNA, and reproductive compatibility across the Isthmus of Panama. *Science*, v. 260, pp. 1629–1632.

Koblentz-Mishke, I. J., V. V. Volkovinsky, and J. B. Kabanova. 1970. Plankton primary production in the world ocean. In W. S. Wooster, ed., *Scientific Exploration of the South Pacific.* Washington, DC: National Academy of Sciences, pp. 183–193.

Koch, A. L., A. Carr, and D. W. Ehrenfeld. 1969. The problem of open-sea navigation: The migration of the green turtle to Ascension Island. *Journal of Theoretical Biology*, v. 22, pp. 163–179.

Koehl, M. A. R. 1976a. Mechanical design in sea anemones on the flow forces that they encounter. *Journal of Experimental Biology*, v. 69, pp. 87–105.

Koehl, M. A. R. 1976b. Mechanical design in sea anemones. In G. O. Mackie, ed., *Coelenterate Ecology and Behavior.* New York: Plenum, pp. 23–31.

Koehl, M. A. R., and J. R. Strickler. 1981. Copepod feeding currents: Food capture at low Reynolds number. *Limnology and Oceanography*, v. 26, pp. 1062–1073.

Koehl, M. A. R., and S. A. Wainwright. 1977. Mechanical adaptations of a giant kelp. *Limnology and Oceanography*, v. 22, pp. 1067–1071.

Koenig, C., F. C. Coleman, A.-M. Eklund, J. Schull, and J. Ueland. 2007. Mangroves as essential nursery habitat for Goliath grouper (*Epinephelus itajara*). *Bulletin of Marine Science*, v. 80, pp. 567–585.

Kohlmeyer, J., and E. Kohlmeyer. 1979. *Marine Mycology: The Higher Fungi.* New York: Academic Press.

Kohn, A. J. 1967. Environmental complexity and species diversity in the gastropod genus *Conus* on Indo-West Pacific platforms. *American Naturalist*, v. 101, pp. 251–259.

Kolber, Z. S., R. T. Barber, K. H. Conle, S. E. Fitzwater, R. M. Greene, K. S. Johnson, S. Lindley, and P. G. Falkowski. 1994. Iron limitation of phytoplankton photosynthesis in the equatorial Pacific Ocean. *Nature*, v. 371, pp. 145–149.

Komar, P. D. 1998. *Beach Processes and Sedimentation*, 2nd ed. Englewood Cliffs, NJ: Prentice Hall.

König, S., Gros, O., Heiden, S. et al. 2017. Nitrogen fixation in a chemoautotrophic lucinid symbiosis. *Nature Microbiology* 2, 16193. doi: 10.1038/nmicrobiol.2016.193

Kortsch, S., Primicerio, R., Beuchel, F. Renaud, P. E., Rodrigues, J., Lonne, O. J., and B. Gulliksen. 2012. Climate-driven regime shifts in Arctic marine benthos. *Proceedings of the National Academy of Science*, v. 109, pp. 14052–14057.

Kovach, R. P., A. J. Gharrett, and D. A. Tallmon. 2012. Genetic change for earlier migration timing in a pink salmon population. *Proceedings of the Royal Society of London B*, published online, doi: 10.1098/rspb.2012.1158

Kozloff, E. N. 1990. *Invertebrates.* Philadelphia: Saunders.

Kozmik, Z. 2005. *Pax* genes in eye development and evolution. *Current Opinion in Genetics and Development*, v. 15, pp. 430–438.

Kraeuter, J. N., S. Buckner, and E. N. Powell. 2005. A note on a spawner-recruit relationship for a heavily exploited bivalve: The case of northern quahogs (hard clams), *Mercenaria mercenaria* in Great South Bay New York. *Journal of Shellfish Research*, v. 24, pp. 1043–1052.

Krebs, C. J. 1994. *Ecology: The Experimental Analysis of Distribution and Abundance.* New York: HarperCollins.

Krebs, J. R., and N. B. Davies. 1997. *Introduction to Behavioural Ecology,* 4th ed. Sunderland, MA: Sinauer Associates.

Krieger, K. J., and B. L. Wing. 2002. Megafauna associations with deepwater corals (*Primnoa* spp.) in the Gulf of Alaska. *Hydrobiologia*, v. 471, pp. 83–90.

Krkosek, M., J. S. Ford, A. Morton, S. Lele, R. A. Myers, and M. A. Lewis. 2007. Declining wild salmon populations in relation to parasites from farm salmon. *Science*, v. 318, pp. 1772–1775.

Kumar, G. & Cocour, M. 2017. Applications of next-generation sequencing in fisheries research: A review. *Fisheries Research,* 186, 11-22.

Kurdziel, J. P., and L. L. Knowles. 2002. The mechanisms of morph determination in the amphipod *Jassa:* Implications for the evolution of alternative male phenotypes. *Proceedings of the Royal Society B*, v. 269, pp. 1749–1754.

Kuris, A. M. 1974. Trophic interactions: Similarity of parasitic castrators to parasitoids. *Quarterly Review of Biology*, v. 49, 129–148.

Kurlansky, M. 1997. *Cod: A Biography of the Fish That Changed the World.* New York: Walker and Co.

Kvitek, R., J. D. Goldberg, G. J. Smith, G. J., Doucette, and M. W. Silver. 2008. Domoic acid contamination within eight representative species from the benthic food web of Monterey Bay, California, USA. *Marine Ecology Progress Series*, v. 367, pp. 35–47.

**L**

LaBarbera, M. L. 1978. Particle capture by a Pacific brittle star: Experimental test of the aerosol suspension feeding model. *Science*, v. 201, pp. 1147–1149.

LaBarbera, M. L. 1984. Feeding currents and particle capture mechanisms in suspension feeding animals. *American Zoologist*, v. 24, pp. 71–84.

Lafferty, K.D. 1993. Effects of parasitic castration on growth, reproduction and population dynamics of the marine snail *Cerithidea californica*. *Marine Ecology Progress Series*, v. 96, pp. 229-237.

Laffoley, D. 1995. Techniques for managing marine protected areas: Zoning. In S. Gubbay, ed., *Marine Protected Areas: Principles and Techniques for Management.* London: Chapman & Hall, pp. 103–118.

LaJeunesse, T.C., et al. 2018. Systematic Revision of Symbiodiniaceae highlights the antiquity and diversity of coral endosymbionts. *Current Biology* v. 28, pp. 2570-2580.

Lake, J. A. 1989. Origin of multicellular animals. In B. Fernholm, K. Bremer, and H. Jurnvall, eds., *The Hierarchy of Life.* Amsterdam: Elsevier, pp. 273–278.

Lalli, C. M., and T. R. Parsons. 1997. *Biological Oceanography: An Introduction.* Oxford: Butterworth Heinemann.

Lam, V., Cheung, W., Reygondeau, G. et al. 2016. Projected change in global fisheries revenues under climate change. *Sci Rep* 6, 32607. doi: 10.1038/srep32607

Lamendella, R. et al. 2014. Assessment of the Deepwater Horizon oil spill impact on Gulf coast microbial communities. *Frontiers in Microbiology.* [Doi: 10.3389/fmicb.2014.00130](http://dx.doi.org/10.3389/fmicb.2014.00130)

Landry, M. R. 1977. A review of important concepts in the trophic organization of pelagic ecosystems. *Helgoländer Wissenschaften Meers untersuchungen*, v. 30, pp. 8–17.

Lang, J. C. 1973. Interspecific aggression by scleractinian corals. 2. Why the race is not only to the swift. *Bulletin of Marine Science, Gulf and Caribbean*, v. 23, pp. 260–279.

Larkin, P. A. 1977. An epitaph for the concept of maximum sustainable yield. *Transactions of the American Fisheries Society*, v. 106, pp. 1–11.

Larkum, A. W. D., R. J. Orth, and C. M. Duarte. 2006. *Seagrasses: Biology, Ecology and Conservation.* Dordrecht, The Netherlands: Springer.

Laroche, O., Kersten, O., Smith, C. R. & Goetze, E. 2020. Environmental DNA surveys detect distinct metazoan communities across abyssal plains and seamounts in the western Clarion Clipperton Zone. *Molecular Ecology,* doi: 10.1111/mec.15484

Larsson, A. I., and P. R. Jonsson. 2006. Barnacle larvae actively select flow environments supporting post-settlement growth and survival. *Ecology*, v. 87, pp. 1960–1966.

Lasker, H. R. 1985. Prey preference and browsing pressure of the butterfly fish *Chaetodon capistratus* on Caribbean gorgonians. *Marine Ecology—Progress Series*, v. 21, pp. 213–220.

Lassen, H. H. 1975. The diversity of freshwater snails in view of the equilibrium theory of biogeography. *Oecologia*, v. 19, pp. 1–8.

Laubier, A., and L. Laubier. 1993. Marine crustacean farming: Present status and perspectives. *Aquatic Living Resources*, v. 6, pp. 319–329.

Lauder, G. V., and E. G. Drucker. 2002. Force, fishes, and fluids: Hydrodynamic mechanisms of aquatic locomotion. *News in Physiological Science*, v. 17, pp. 235–240.

Lauder G.V. 2015. Fish locomotion: recent advances and new directions. *Annual Review of Marine Science,* v. 7, pp. 521-545.

Lawrence, J. 1987. *A Functional Biology* *of Echinoderms.* North Ryde, Australia: Croom Helm.

Lawton, J. H., and R. M. May, eds. 1995. *Extinction Rates.* Oxford: Oxford University Press.

Le Bris, A., et al. 2018. Climate vulnerability and resilience in the most valuable North American fishery. *Proceedings of the national Academy of Sciences* v. 115, pp. 1831-1836.

Le Goff-Vitry, M. C., O. G. Pybus, and A. D. Rogers. 2004. Genetic structure of the deep-sea coral *Lophelia pertusa* in the northeast Atlantic revealed by microsatellites and internal transcribed spacer sequences. *Molecular Ecology*, v. 13, pp. 537–549.

Leahy, J. G., and R. R. Colwell. 1990. Microbial degradation of hydrocarbons in the environment. *Microbiological Reviews*, v. 54, pp. 305–315.

Leandro, L. F., R. M. Rolland, P. B. Roth, N. Lundholm, Z. Wang, and G. J. Doucette, 2010. Exposure of the North Atlantic right whale *Eubalaena glacialis* to the marine algal biotoxic domoic acid. *Marine Ecology—Progress Series*, v. 398, pp. 297–303.

Leber, K. M. 1985. The influence of predatory decapods, refuge, and microhabitat selection on seagrass communities. *Ecology*, v. 66, pp. 1951–1964.

Ledlie, M. H., N. A. J. Graham, J. C. Bythell, S. K. Wilson, S. Jennings, N. V. C. Polunin, and J. Hardcastle. 2007. Phase shifts and the role of herbivory in the resilience of coral reefs. *Coral Reefs*, v. 26, pp. 641–653.

Lee, R. E. 2008. *Phycology*, 4th ed. Cambridge: Cambridge University Press.

Lee, R. F., and M. E. Frischer. 2004. The decline of the blue crab. *American Scientist*, v. 92, pp. 548–553.

Lefcheck, J. S., R. J. Orth, W. C. Dennison, D. J. Wilcox, R. R. Murphy, J. Keisman, C. Gurbisz, M. Hannam, J. B. Landry, K. A. Moore, C. J. Patrick, J. Testa, D. E. Weller, and R. A. Batiuk. 2018. Long-term nutrient reductions lead to the unprecedented recovery of a temperate coastal region. *Proceedings of the National Academy of Sciences*. 115: 3658–3662.

Lembi, C. A., and J. R. Waaland, eds. 1988. *Algae and Human Affairs.* Cambridge: Cambridge University Press.

Lenihan, H. S., and C. H. Peterson. 1998. How habitat degradation through fishery disturbance enhances impacts of hypoxia on oyster reefs. *Ecological Applications*, v. 8, pp. 128–140.

Lenoir, J., Bertrand, R., Comte, L. et al. 2020. Species better track climate warming in the oceans than on land. *Nature Ecol. Evol.* doi: 10.1038/s41559-020-1198-2

Lenz, P., D. K. Hartline, J. Purcell, and D. Macmillian, eds. 1996. *Zooplankton: Sensory Ecology and Physiology.* Amsterdam: Gordon and Breach.

Leonard, G. H., J. M. Levine, P. R. Schmidt, and M. D. Bertness. 1998. Flow-driven variation in intertidal community structure in a marine estuary. *Ecology*, v. 79, pp. 1395–1411.

Lesser MP, Slattery, M. 2013. Ecology of Caribbean sponges: Are top-down or bottom-up processes more important? *PLoS ONE* 8: e79799.

Lesser, M. P., J. D. Witman, and K. P. Sebens. 1994. Effects of flow and seston availability on scope for growth of benthic suspension-feeding invertebrates from the Gulf of Maine. *Ecology*, v. 187, pp. 319–335.

Lessios, H. A. 1988. Mass mortality of *Diadema antillarum* in the Caribbean: What have we learned? *Annual Review of Ecology and Systematics*, v. 19, pp. 371–393.

Lessios, H. A., D. R. Robertson, and J. D. Cubit. 1984. Spread of *Diadema* mass mortality through the Caribbean. *Science*, v. 226, pp. 335–337.

Lester, S. E., B. S. Halpern, K. Grorud-Colvert, J. Lubchenco, B. I. Ruttenbrerg, S. D. Gaines, S. Airame, and R. R. Warner. 2009. Biological effects within no-take marine reserves: a global synthesis. *Marine Ecology Progress Series* 384: 33-46.

Lever, M. A., et al. 2013. Evidence for microbial carbon and sulfur cycling in deeply buried ridge flank basalt. *Science*, v. 339, pp. 1305–1308.

Leversee, G. J. 1976. Flow and feeding in fan-shaped colonies of a gorgonian coral, *Leptogorgia. Biological Bulletin*, v. 151, pp. 344–356.

Levin, L. A. 1984. Multiple patterns of development in *Streblospio benedicti* Webster (Spionidae) from three coasts of North America. *Biological Bulletin*, v. 166, pp. 494–508.

Levin, L. A. 1986. The influence of tides on larval availability in shallow waters overlying a mudflat. *Bulletin of Marine Science*, v. 39, pp. 224–233.

Levin, L. A. 2018. Manifestation, drivers, and emergence of open ocean deoxygenation. *Annual Review of Marine Science* 10: 229-260.

Levin, S. A., M. A. Harwell, J. R. Kelly, and K. D. Kimball, eds. 1988. *Ecotoxicology: Problems and Approaches.* Berlin: Springer-Verlag.

Levin, L. A., T. Sinicrope, and J. Hewitt. 1998. Macrobenthos of *Spartina foliosa* (Pacific cordgrass) salt marshes in Southern California: Community structure and comparison to a Pacific mudflat and *Spartina alterniflora* (Atlantic smooth cordgrass) marsh. *Estuaries*, v. 21, pp. 129–144.

Levin, L. A., and T. S. Talley. 2002. Natural and manipulated sources of heterogeneity controlling early faunal development of a salt marsh. *Ecological Applications*, v. 10, pp. 1785–1802.

Levinton, J. S. 1972. Stability and trophic structure in deposit feeding and suspension feeding communities. *American Naturalist*, v. 106, pp. 472–486.

Levinton, J. S. 1979. A theory of diversity equilibrium and morphological evolution. *Science*, v. 204, pp. 335–336.

Levinton, J.S. 1983. The latitudinal compensation hypothesis: Data and a model based upon energy budgets. I. Interspecific comparison of *Ophryotrocha* (Polychaeta, Dorvilleidae). *Biological Bulletin* v. 165, pp. 686-698.

Levinton, J. S. 1991. Variable feeding behavior in three species of *Macoma* (Bivalvia: Tellinacea) as a response to water flow and sediment transport. *Marine Biology*, v. 110, pp. 375–383.

Levinton, J. S. 1992. The big bang of animal evolution. *Scientific American*, November, pp. 84–91.

Levinton, J. S. 2001. *Genetics, Paleontology, and Macroevolution*, 2nd ed. New York: Cambridge University Press.

Levinton, J. S. 2008. The Cambrian explosion: How do we use the evidence? *BioScience*, v. 58, pp. 855–864.

Levinton, J. S., and J. Mackie. 2013. Latitudinal diversity relationships of fiddler crabs: Biogeographic differences united by temperature. *Global Ecology and Biogeography*. In press.

Levinton, J. S., and J. Mackie. 2013. Latitudinal diversity relationships of fiddler crabs: Biogeographic differences united by temperature. *Global Ecology and Biogeography*, doi: 10.1111/geb.12064

Levinton, J. S., and M. McCartney. 1991. Use of photosynthetic pigments in sediments as a tracer for sources and fates of macrophyte organic matter. *Marine Ecology—Progress Series*, v. 78, pp. 87–96.

Levinton, J.S. and R. Monahan. 1983. The latitudinal compensation hypothesis: Data and a model based upon energy budgets. II. Intraspecific comparison among subspecies of Ophryotrocha puerilis (Polychaeta, Dorvilleidae). *Biological Bulletin,* v. 165, pp. 699–707.

Levinton, J. S., and S. T. Pochron. 2008. Temporal and geographic trends in mercury concentrations in muscle tissue in five species of Hudson River, USA, fishes. *Environmental Toxicology and Chemistry*, v. 27, pp. 1691–1697.

Levinton, J. S., C. Sturmbauer, and J. Christy. 1996. Molecular data and biogeography: Resolution of a controversy over evolutionary history of a pan-tropical group of invertebrates. *Journal of Experimental Marine Biology and Ecology*, v. 203, pp. 117–131.

Levinton, J. S., E. Suatoni, W. Wallace, R. Junkins, B. P. Kelaher, and B. J. Allen. 2003. Rapid loss of genetically based resistance to metals after the cleanup of a Superfund site. *Proceedings of the National Academy of Sciences USA*, v. 100, pp. 9889–9891.

Levinton, J. S., and J. R. Waldman, eds. 2006. *The Hudson River Estuary*. New York: Cambridge University Press.

Levitan, D. R. 1996. Effects of gamete traits on fertilization in the sea and the evolution of sexual dimorphism. *Nature*, v. 382, pp. 153–155.

Levitan, D. R. 2000. Optimal egg size in marine invertebrates: Theory and phylogenetic analysis of the critical relationship between egg size and development time in echinoids. *American Naturalist*, v. 156, pp. 175–192.

Levitan, D. R., et al. 2004. Mechanisms of reproductive isolation among sympatric broadcast- spawning corals of the *Montastrea annularis* complex. *Evolution*, v. 58, pp. 308–323.

Levitan, D. R., and D. L. Ferrell. 2006. Selection on gamete recognition proteins depends on sex, density, and genotype frequency. *Science*, v. 312, pp. 268–269.

Levitan, D. R., and C. Peterson. 1995. Sperm limitation in the sea. *Trends in Ecology and Evolution*, v. 10, pp. 228–231.

Levitan, D. R., M. A. Sewell, and F.-C. Chia. 1992. How distribution and abundance influence fertilization success in the sea urchin *Strongylocentrotus franciscanus. Ecology*, v. 73, pp. 248–254.

Levy, O., Appelbaum, L., Leggat, W., Gothlif, Y., Hayward, D.C., Miller, D.J., Hoegh Guldberg, O. 2007. Light-responsive cryptochromes from a simple multicellular animal, the coral Acropora millepora. *Science* v. 318, pp. 467-470.

Lewis, J. R. 1964. *The Ecology of Rocky Shores*. London: English University Press.

Lewis, K.L., van Dijken, G.L., Arrigo, G.L. 2020. Changes in phytoplankton concentration now drive increased Arctic primary production. *Science* 369: 198-202.

Lewitus, A.J. et al. 1999. Mixotrophy and nitrogen uptake by Pfiesteria piscicida (Dinophyceae). *Journal of Phycology*, v. 35, pp.1430-1437.

Lively, C. M. 1996. Host-parasite coevolution and sex. *BioScience*, v. 46, pp. 107–114. Lively, C. M., C. Craddock, and R. C. Vrijenhoek. 1990. Red Queen hypothesis supported by parasitism in sexual and clonal fish. *Nature*, v. 344, pp. 864–866.

Li, X.-Y., Li, B., Sun, X.-L. 2014. Effects of a coastal power plant thermal discharge on phytoplankton community structure in Zhanjiang Bay, China. *Marine Pollution Bulletin*, v. 81, pp. 210-217.

Li, L., Connors, M. J., Kolle, M., England, G. T., Speiser, D. I., Xiao, X., Aizenberg, J., and Ortiz, C. 2015. Multifunctionality of chiton biomineralized armor with an integrated visual system. *Science* v. 350, pp. 952-956.

Liu, Y.-C., Liu, T.-H., Yu, C.-C., Su, C.-H., Chiao, C.-C. 2017. Mismatch between the eye and the optic lobe in the giant squid *R. Soc*. open sci.4170289. doi: 10.1098/rsos.170289

Lively, C. M., M. F. Dybdahl, J. Jokela, E. E. Osnas, and L. F. Delph. 2004. Host sex and local adaptation by parasites in a snail–trematode interaction. *American Naturalist*, v. 164, pp. S6–S18.

Lively, C. M., P. T. Raimondi, and L. F. Delph. 1993. Intertidal community structure: Space–time interactions in the northern Gulf of California. *Ecology*, v. 74, pp. 162–173.

Lizotte, M. P. 2001. The contributions of sea ice algae to Antarctic marine primary production. *American Zoologist*, v. 41, pp. 57–73.

Lobban, C. S., and P. J. Harrison. 1994. *Seaweed Ecology and Physiology.* New York: Cambridge University Press.

Lohmann, K. J. 1991. Magnetic orientation by hatchling loggerhead sea turtles (*Caretta caretta*). *Journal of Experimental Biology*, v. 155, pp. 37–49.

Lohmann, K. J., S. D. Cain, S. A. Dodge, and C. M. F. Lohmann. 2001. Regional magnetic fields as magnetic markers for sea turtles. *Science*, v. 294, pp. 364–366.

Lohmann, K. J., and C. M. F. Lohmann. 1996. Detection of magnetic field intensity by sea turtles. *Nature*, v. 380, pp. 59–61.

Lohmann, K. J., and C. M. F. Lohmann. 1998. Migratory guidance mechanisms in marine turtles. *Journal of Avian Biology*, v. 29, pp. 585–596.

Lohmann, K. J., C. M. F. Lohmann, L. M. Ehrhart, D. A. Bagley, and T. Swing. 2004. Animal behaviour: Geomagnetic map used in sea-turtle navigation. *Nature*, v. 428, pp. 909–910.

Lohrer, A. M., and R. B. Whitlatch. 2002. Interactions among aliens: Apparent replacement of one exotic species by another. *Ecology*, v. 83, pp. 719–732.

Longhurst, A. 1998. Cod: Perhaps if we all stood back a bit? *Fisheries Research*, v. 38, pp. 101–108.

Longhurst, A. 2007. Doubt and certainty in fishery science: Are we really headed for a global collapse of stocks? *Fisheries Research*, v. 86, pp. 1–5.

Lopez, G. R., and J. S. Levinton. 1987. Ecology of deposit-feeding animals in marine sediments. *Quarterly Review of Biology*, v. 62, pp. 235–260.

Lopez, G. R., G. L. Taghon, and J. S. Levinton, eds. 1989. *Ecology of Marine Deposit Feeders.* New York: Springer-Verlag.

Lopez, J. V., R. Kersanach, S. A. Rehner, and N. Knowlton. 1999. Molecular determination of species boundaries in corals: Genetic analysis of the *Montastrea annularis* complex using amplified fragment length polymorphisms and a microsatellite marker. *Biological Bulletin*, v. 196, pp. 80–93.

Lopez-Duarte, P. C., and R. Tankersley. 2007. Circatidal swimming behaviors of fiddler crab *Uca pugilator* larvae from different tidal regimes. *Marine Ecology— Progress Series*, v. 343, pp. 207–220.

Lubchenco, J. 1980. Algal zonation in the New England rocky intertidal community: An experimental analysis. *Ecology*, v. 61, pp. 333–344.

Lubchenco, J., and J. Cubit. 1980. Heteromorphic life histories of certain marine algae as adaptations to variations in herbivory. *Ecology*, v. 61, pp. 676–687.

Luckenbach, M. W., L. D. Coen, P. G. Ross, and J. A. Stephen. 2005. Oyster reef habitat restoration: Relationships between oyster abundance and community development. *Journal of Coastal Research*, v. 40, pp. 64–78.

Ludwig, D., R. Hilborn, and C. Walters. 1993. Uncertainty, resource exploitation and conservation: Lessons from history. *Science*, v. 260, pp. 17–18.

Lugendo, B., I. Nagelkerken, G. Kruitwagen, G. van der Velde, and Y. D. Mgaya. 2007. Relative importance of mangroves as feeding habitats for fishes: A comparison between mangrove habitats with different settings. *Bulletin of Marine Science*, v. 80, pp. 497–512.

Lundin, J.J. et al. 2015. Persistent organic pollutant determination in killer whale scat samples: Optimization of a gas chromatography/mass spectrometry method and application to field samples. *Archives of Environmental Contamination and Toxicology.* doi: 10.1007/s00244-015-0218-8

Luttinger, N. 1997. Community-based coral reef conservation in the Bay Islands of Honduras. *Ocean & Coastal Management*, v. 36, pp. 11–22.

Lutz, R. A., L. W. Fritz, and R. M. Cerrato. 1988. A comparison of bivalve (*Calyptogena magnifica*) growth at two deep-sea hydrothermal vents in the eastern Pacific. *Deep-Sea Research*, v. 35, pp. 1793–1810.

Lutz, R. A., D. Jablonski, and R. D. Turner. 1984. Larval development and dispersal at deep-sea hydrothermal vents. *Science*, v. 226, pp. 1451–1454.

Lutz, R. A., T. M. Shank, D. J. Fornari, R. M. Haymon, M. D. Lilley, K. L. Von Damm, and D. Desbruyeres. 1994. Rapid growth at deep-sea vents. *Nature*, v. 371, pp. 663–664.

Lynch, H., R. Naveen, P.H. Trathan, and W. F Fagan. 2012. Spatially integrated assessment reveals widespread changes in penguin populations on the Antarctic Peninsula. *Ecology*, v. 93, pp. 1367–1377.

**M**

Mabardy, R.A., Waldbusser, G.G., Conway, F., Olsen, C.S. 2015. Perception and response of the U.S. west coast shellfish industry to ocean acidification: The voice of the canaries in the coal mine. *Journal of Shellfish Research* v. 34, pp. 565-572.

MacArthur, R. H., and E. O. Wilson. 1967. *The Theory of Island Biogeography.* Princeton, NJ: Princeton University Press.

MacKenzie, B. R., H. Gislason, C. Mollman, and F. W. Koster. 2007. Impact of 21st century climate change on the Baltic Sea fish community and fisheries. *Global Change Biology*, v. 13, pp. 1348–1367.

Macpherson, E. 2002. Large-scale species-richness gradients in the Atlantic Ocean. *Proceedings of the Royal Society of London B*, v. 269, pp. 1715–1720.

Madigan, D. J., Z. Bauman, and N. S. Fisher. 2012. Pacific bluefin tuna transport Fukushima- derived radionuclides from Japan to California. *Proceedings of the National Academy of Sciences USA*, published online, doi: 10.1073/pnas.1204859109

Madin E.M.P., Harborne A.R., Harmer A.M.T., Luiz O.J., Atwood T.B., Sullivan B.J., Madin J.S. 2019 Marine reserves shape seascapes on scales visible from space. *Proc. R. Soc. B* 286: 20190053. doi: 10.1098/rspb.2019.0053

Mahadevan, A., E. D’Asaro, C. Lee, M. J. Perry. 2012. Eddy-driven stratification initiates North Atlantic spring phytoplankton blooms. *Science*, v. 337, pp. 54–58.

Maier, I., M. C. Hertweck, and W. Boland. 2001. Stereochemical specificity of lamoxirene, the sperm-releasing pheromone in kelp (Laminariales, Phaeophyceae). *Biological Bulletin*, v. 201, pp. 121–125.

Maitland, D. P. 1986. Crabs that breathe air with their legs—*Scopimera* and *Dotilla. Nature*, v. 319, pp. 493–495.

Maldanado, A. et al. 2016. Biochemical mechanisms for geographical adaptations to novel toxin exposures in butterflyfish. *PLoS One*. doi: 10.1371/journal.pone.0154208

Mallekh, R., and J. P. LaGardére. 2002. Effect of temperature and dissolved oxygen concentration on the metabolic rate of the turbot and the relationship between metabolic scope and feeding demand. *Journal of Fish Biology*, v. 60, pp. 1105–1115.

Malone T. C., W. M. Kemp, H. W. Ducklow, R. Boynton, J. N. Tuttle, and B. Jonas. 1986. Lateral variation in the production and fate of phytoplankton in a partially stratified estuary. *Marine Ecology Progress Series*, v. 32, pp. 149–160.

Mangel, M. 1993. Effects of high-seas driftnet fisheries on the northern right whale dolphin *Lissodelphis borealis. Ecological Applications*, v. 3, pp. 221–229.

Mann, K. H., and R. B. Clark. 1978. Long-term effects of oil spills on marine intertidal communities. *Journal of the Fisheries Research Board of Canada*, v. 35, pp. 791–816.

Mann, J., Stanton, M.A., Patterson, E.M., Bienenstock, E.J., Singh, L.O. 2012. Social networks reveal cultural behaviour in tool-using dolphins. *Nature Communications*. doi: 10.1038/ncomms1983

Mann, R., and E. N. Powell. 2007. Why oyster restoration goals in the Chesapeake Bay are not and probably cannot be achieved. *Journal of Shellfish Research*, v. 26, pp. 905–917.

Manning, T. J., et al. 2005. Identifying bryostatins and potential precursors from the bryozoan *Bugula neritina*. *Natural Product Research*, v. 19, pp. 467–491.

Marcinek, D. J., J. Bonaventura, J. B. Wittenberg, and B. A. Block. 2001. Oxygen affinity and amino acid sequence of myoglobins from endothermic and ectothermic fish. *American Journal of Physiology*, v. 280, pp. R1123–1133.

Marinelli, R., Woodin, S.A. 2002. Experimental evidence for linkages between infaunal recruitment, disturbance, and sediment surface chemistry. *Limnology and Oceanography* v. 47, pp. 221-229.

Martin, J. H. 1991. The case for iron. *Limnology and Oceanography*, v. 36, pp. 1793–1802.

Martin, J. H. 1992. Iron as a limiting factor in oceanic productivity. In P. G. Falkowski and A. D. Woodhead, eds., *Primary Productivity and Biogeochemical Cycles in the Sea.* New York: Plenum, pp. 123–137.

Martin, J. H., and S. E. Fitzwater. 1988. Iron deficiency limits phytoplankton growth in the northeast Pacific subarctic. *Nature*, v. 331, pp. 341–343.

Martineu, P., S. K. Juniper, C. R. Fisher, and G. J. Massoth. 1997. Sulfide binding in the body fluids of hydrothermal vent alvinellid polychaetes. *Physiological Zoology*, v. 70, pp. 578–588.

Martínez B, Radford B, Thomsen MS et al. 2018. Distribution models predict large contractions of habitat-forming seaweeds in response to ocean warming. *Divers Distrib* 24: 1350–1366.

Mason, O. U., et al. 2012. Metagenome, metatranscriptome and single-cell sequencing reveal microbial response to Deepwater Horizon oil spill. *The ISME Journal*, v. 6, pp. 1715–1727.

Mate, B.R., Lagerquist, B.A., Colambokidis, J. 1999. Movements of north Pacific blue whales during the feeding season off southern California and their southern fall migration. *Marine Mammal Science* v. 15, pp. 1246-1257.

Matozzo, V., Febrello, J. & Marin, M. G. 2020. The effects of Glyphosate and Its commercial formulations to marine invertebrates: A review. *Jouirnal of Marine Science and Engineering,* 8. doi: 10.3390/jmse8060399

Matsumoto, K., and J. I. Sarmiento. 2008. A corollary to the silicic acid leakage hypothesis. *Paleooceanography*, v. 23, PA2203, published online, doi: 10.1029/2007PA001515.

Maxmen, A, 2016. Why watching comb jellies poop has stunned evolutionary biologists. doi: 10.1126/science.aaf9822

May, R. M. 1973. *Stability and Complexity in Model Ecosystems.* Princeton, NJ: Princeton University Press.

May, R. M. 1990. How many species? *Philosophical Transactions of the Royal Society B*, v. 330, pp. 293–304.

May, R. M. 1992. How many species inhabit the Earth? *Scientific American*, v. 267, pp. 42–48.

Mayer, L. M., P. A. Jumars, G. L. Taghon, and S. A. Macko. 1993. Low-density particles as potential nitrogenous foods for benthos. *Journal of Marine Research*, v. 51, pp. 373–389.

Mayer, L. M., and D. L. Rice. 1992. Early diagenesis and protein: A seasonal study. *Limnology and Oceanography*, v. 37, pp. 280–295.

Mayer, L. M., L. L. Schick, T. Sawyer, C. J. Plante, P. A. Jumars, and R. F. L. Self. 1995. Bioavailable amino-acids in sediments—A biomimetic, kinetics-based approach. *Limnology and Oceanography*, v. 40, pp. 511–520.

Mayer, L. M., L. L. Schick, R. F. L. Self, P. A. Jumars, R. H. Findlay, Z. Chen, and S. Sampson. 1997. Digestive environments of benthic macroinvertebrate guts: Enzymes, surfactants and dissolved organic matter. *Journal of Marine Research*, v. 55, pp. 785–812.

Maynard Smith, J. 1971. What use is sex? *Journal of Theoretical Biology*, v. 30, pp. 319–335.

Maynard Smith, J. 1989. *Evolutionary Genetics.* Oxford: Oxford University Press.

Mazurais, D., Darias, M., Zambonino-Infante, J.L., Cahu, C.L. 2011. Transcriptomics for understanding marine fish larval development. *Revue Canadienne de Zoologie* v. 89, pp. 599-611.

McAffee, D. & Connellm, S. D. 2020. Cuing oyster recruitment with shell and rock: implications for timing reef restoration. *Restoration Ecology,* doi: 10.1111/rec.13134

McAllister, D. E. 1967. The significance of ventral bioluminescence in fishes. *Journal of the Fisheries Research Board of Canada*, v. 24, pp. 537–554.

McCarthy, J. J., and J. C. Goldman. 1979. Nitrogenous nutrition of phytoplankton in nutrient- depleted waters. *Science*, v. 203, pp. 670–672.

McCave, I. N., ed. 1976. *The Benthic Boundary Layer.* New York: Plenum. McClain, C. 2010. An empire lacking food. *American Scientist*, v. 98, pp. 470–477.

McClain, C. R., L. Lundsten, M. Ream, J. Barry, and A. DeVogelaere. 2009. Endemicity, biogeography, composition, and community structure on a northeast Pacific Seamount. *PLoS ONE* 4(1): e4141. doi: 10.1371/journal.pone.0004141

McConaugha, J. R. 1988. Export and reinvasion of larvae as regulators of estuarine decapod populations. *American Fisheries Society Symposium*, v. 3, pp. 90–103.

McDowall, R.M. 2008. Why are so many boreal freshwater fishes anadromous? Confronting ‘conventional wisdom’. *Fish and Fisheries*, v. 9, pp. 208-213.

McEdward, L., ed. 1995. *Ecology of Marine Invertebrate Larvae.* Boca Raton, FL: CRC Press. McElroy, A. E., J. W. Farrington, and J. M. Teal. 1989. Bioavailability of polycyclic aromatic hydrocarbons in the aquatic environment. In U. Varanasi, ed., *Metabolism of Polycyclic Aromatic Hydrocarbons in the Aquatic Environment.* Boca Raton, FL: CRC Press, pp. 1–39.

McElroy, M. B. 1983. Marine biological controls on atmospheric CO2 and climate. *Nature*, v. 302, pp. 328–329.

McGrady-Steed, J., P. M. Harris, and P. J. Morin. 1997. Biodiversity regulates ecosystem predictability. *Nature*, v. 390, pp. 162–165.

McKillup, S. C., and A. J. Butler. 1979. Modification of egg production and packaging in response to food availability by *Nassarius pauperatus. Oecologia*, v. 43, pp. 221–231.

McKillup, S. C., and R. V. McKillup. 2000. The effects of two parasitoids on the life history and metapopulation structure of the intertidal snail *Littoraria filosa* in different-sized patches of mangrove forest. *Oecologia*, v. 123, pp. 525–534.

McLain, D. K., and A. E. Pratt. 2007. Approach of females to magnified reflections indicates that claw size of waving fiddler crabs correlates with signaling effectiveness. *Journal of Experimental Marine Biology and Ecology*, v. 343, pp. 227–238.

McClanahan, T.R., Mangi, S. 2000. Spillover of exploitable fishes from a marine park and its effect on the adjacent fishery. *Ecological Applications*, v. 10, pp. 1792-1805.

McLaren, I. A. 1963. Effects of temperature on growth of zooplankton and the adaptive value of vertical migrations. *Journal of the Fisheries Research Board of Canada*, v. 20, pp. 685–727.

McLusky, D. S. 1989. *The Estuarine Ecosystem*. Glasgow and London: Blackie.

McMahon, K. W., W. G. Ambrose, Jr., B. J. Johnson, M.-Y. Sun, G. R. Lopez, L. M. Clough, and M. L. Carroll. 2006. Benthic community response to ice algae and phytoplankton in Ny Ålesund, Svalbard. *Marine Ecology Progress Series*, v. 310, pp. 1–14.

McNeil, B. I., and R. J. Matear. 2006. Projected climate change impact on oceanic acidification*. Carbon Balance and Management*, v. 1. Open access: http://www.cbmjournal.com/content/1/1/2

Meglitsch, P. A., and F. R. Schram. 1991. *Invertebrate Zoology*, 3rd ed. London and New York: Oxford University Press.

Mehta, R. S., and P. C. Wainwright. 2007. Raptorial jaws in the throat help moray eels swallow large prey. *Nature*, v. 449, pp. 79–82.

Menge, B. A. 1976. Organization of the New England rocky intertidal community: Role of predation, competition, and environmental heterogeneity. *Ecological Monographs*, v. 46, pp. 355–393.

Menge, B. A. 1991a. Relative importance of recruitment and other causes of variation in rocky intertidal community structure. *Journal of Experimental Marine Biology and Ecology*, v. 146, pp. 69–100.

Menge, B. A. 1991b. Generalizing from experiments: Is predation strong or weak in the New England rocky intertidal? *Oecologia*, v. 88, pp. 1–8.

Menge, B. A., et al. 2003. Coastal oceanography sets the pace of rocky intertidal community dynamics. *Proceedings of the National Academy of Science USA*, v. 100, pp. 12229–12234.

Menge, B. A., B. A. Daley, P. A. Wheeler, E. Dahlhof, E. Sanford, and P. T. Strub. 1997. Benthic–pelagic links and rocky intertidal communities: Bottom-up effects on top-down control? *Proceedings of the National Academy of Science USA*, v. 94, pp. 14530–14535.

Menge, B. A., and J. Lubchenco. 1981. Community organization in temperate and tropical rocky intertidal habitats: Prey refuges in relation to consumer pressure gradients. *Ecological Monographs* v. 51, pp. 429–450.

Menzies, R. J., R. Y. George, and G. T. Rowe. *Abyssal Environment and Ecology of the World Oceans.* New York: Wiley-Interscience.

Merriman, D. 1965. Edward Forbes—Manxman. *Progress in Oceanography*, v. 3, pp. 191–206.

Metz, E. C., G. Gómez-Gutiérrez, and V. D. Vacquier. 1998. Mitochondrial DNA and bindin gene sequence evolution among allopatric species of the sea urchin genus *Arbacia. Molecular Biology and Evolution*, v. 15, pp. 185–195.

Metz, E. C., and S. R. Palumbi. 1996. Positive selection and sequence rearrangements generate extensive polymorphism in the gamete recognition protein bindin. *Molecular Biology and Evolution*, v. 13, pp. 397–406.

Meyer, C. P., J. B. Geller, and G. Paulay. 2005. Fine scale endemism on coral reefs: Archipelagic differentiation in turbinid gastropods. *Evolution*, v. 59, pp. 113–125.

Meyer, J. N., D. E. Nacci, and R. T. DiGiulio. 2002. Cytochrome P4501A (CYP1A) in killifish (*Fundulus heteroclitus*): Heritability of altered expression and relationship to survival in contaminated sediments. *Toxicological Sciences*, v. 68, pp. 69–81.

Meyer-Gutbrod, E., C.H. Greene, A.J. Pershing, and P. Sullivan. 2015. Climate-associated changes in prey availability drive reproductive dynamics of the North Atlantic right whale population. *Marine Ecology Progress Series* v. 535, pp. 243–258.

Meyer-Kaiser KS, Houlihan EP, Wheeler JD, McCorkle DC, Mullineaux LS. 2019. Behavioral response of eastern oyster *Crassostrea virginica* larvae to a chemical settlement cue is not impaired by low pH. *Mar Ecol Prog Ser* 623: 13-24. doi: 10.3354/meps13014

Meylan, A. B., B. W. Bowen, and J. C. Avise. 1990. A genetic test of the natal homing versus social facilitation models for green turtle migration. *Science*, v. 248, pp. 724–727.

Michaels, R.E., Zieman, J.C. 2013. Fiddler crab (*Uca* spp.) burrows have little effect on surrounding sediment oxygen concentrations. *Journal of Experimental Marine Biology and Ecology* 448: 104-114.

Micheli, F. 1993. Feeding ecology of mangrove crabs in northeastern Australia: Mangrove litter consumption by *Sesarma messa* and *Sesarma smithii*. *Journal of Experimental Marine Biology and Ecology*, v. 171, pp. 165–186.

Mihursky, J. A., and V. S. Kennedy. 1967. Water temperature criteria to protect aquatic life. *American Fishery Society Special Publication*, v. 4, pp. 20–32.

Mileikovsky, S. A. 1974. Types of larval development in marine bottom invertebrates: An ecological scheme. *Thallassia Jugoslavica*, v. 10, pp. 171–179.

Miller, C. B. 2004. *Biological Oceanography.* Oxford UK: Blackwell Science.

Miller, C. D., and F. J. Vernberg. 1968. Some thermal requirements of fiddler crabs of the temperate and tropical zones and their influence on geographic distribution. *American Zoologist*, v. 8, pp. 459–469.

Miller, R. J. 1985. Succession in sea urchin and seaweed abundance in Nova Scotia, Canada. *Marine Biology*, v. 84, pp. 275–286.

Miller, S. E., and M. G. Hadfield. 1990. Developmental arrest during larval life and life-span extension in a marine mollusc. *Science*, v. 248, pp. 356–358.

Mills, C. E. 2001. Jellyfish blooms: are populations increasing globally in response to changing ocean conditions? *Hydrobiologia*, v. 451, pp. 55–68.

Minegishi, Y., J. Aoyama, J. G. Inoue, M. Miya, M. Nishida, and K. Tsukamoto. 2005. Molecular phylogeny and evolution of the freshwater eels genus *Anguilla* based on the whole mitochondrial genome sequences. *Molecular Phylogenetics and Evolution*, v. 34, pp. 134–146.

Mislan, K.A.S., Wethey, D.S. 2015. A biophysical basis for patchy mortality during heat waves. *Ecology* v. 96, pp. 902-907.

Mitsiades, C. S., et al. 2008. Aplidin, a marine organism–derived compound with potent antimyeloma activity in vitro and in vivo. *Cancer Research*, v. 68, 5216.

Mitton, J. B. 1977. Shell color and pattern variation in *Mytilus edulis* and its adaptive significance. *Chesapeake Science*, v. 18, pp. 387–389.

Montagna, P. A., et. al. 2013. Deep-Sea benthic footprint of the Deepwater Horizon Blowout. *PLoS One.* http://journals.plos.org/plosone/article/asset?id=10.1371/journal.pone.0070540.PDF

Moeller, P. D. R. Moeller, K. R. Beauchesne, K. M. Huncik, W. C. Davis, S. J. Christopher, P. Riggs-Gelasco, and A. K. Gelasco. 2007. Metal complexes and free radical toxins produced by *Pfiesteria piscicida. Environmental Science and Technology*, v. 41, pp. 1166–1172.

Moitoza, D. J., and D. W. Phillips. 1979. Prey defense, predator preference, and nonrandom diet: The interactions between *Pycnopodia helianthoides* and two species of sea urchins. *Marine Biology*, v. 53, pp. 299–304.

Moody, K. E., and R. S. Steneck. 1993. Mechanisms of predation among large decapod crustaceans of the Gulf of Maine coast: Functional vs. phylogenetic patterns. *Journal of Experimental Marine Biology and Ecology*, v. 168, pp. 111–124.

Moore, J. E., B. P. Wallace, R. L. Lewison, R. Žydelis, T. M. Cox., and L. B. Crowder. 2009. *A review of marine mammal, sea turtle and seabird bycatch in USA fisheries and the role of policy in shaping management. Marine Policy*, v. 33, pp. 435–451.

Moore, J. K., et al. 1999. SeaWiFS satellite ocean color data from the Southern Ocean. *Geophysical Research Letters*, v. 26, pp. 1465–1468.

Moore, J. K., and M. R. Abbott. 2000. Phytoplankton chlorophyll distributions and primary production in the Southern Ocean. *Journal of Geophysical Research*, v. 105, pp. 28, 709–728, 722.

Moore, L. M., G. Rocap, and S. W. Chisholm. 1998. Physiology and molecular phylogeny of coexisting *Prochlorococcus* ecotypes. *Nature*, v. 393, pp. 464–467.

Moore, P. G., and R. Seed. 1985. *The Ecology of Rocky Shore Coasts*. London: Hodder and Stoughton Press.

Mora, C., S. Andréfouët, M. J. Costello, C. Kranenburg, A. Rollo, J. Veron, K. J. Gaston, and R. A. Meyers. 2006. Coral reefs and the global network of marine protected areas. *Science*, v. 312, pp. 1750–1751.

Moran, K. L, and K. A. Bjorndal. 2007. Simulated green turtle grazing affects nutrient composition of the seagrass *Thalassia testudinum. Marine Biology*, v. 150, pp. 1083–1092.

Moreale, S. J., G. J. Ruis, J. R. Spotila, and E. A. Standora. 1982. Temperature-dependent sex determination: Current practices threaten conservation of sea turtles. *Science,* v. 216*,* pp. 1245–1247.

Moreira, R., Pereiro, P., Canchaya, C., Posada, D., Figueras, A. Novoa, B. 2015. RNA-Seq in *Mytilus galloprovincialis*: comparative transcriptomics and expression profiles among different tissues. *BMC Genomics.* doi: 10.1186/s12864-015-1817-5

Morel, F. M. M., R. J. M. Hudson, and N. M. Price. 1991. Limitation of productivity by trace metals in the sea. *Limnology and Oceanography*, v. 36, pp. 1742–1755.

Morgan, S. G., and J. H. Christy. 1995. Adaptive significance of the timing of larval release by crabs. *American Naturalist*, v. 145, pp. 457–479.

Morgan, S. G., White, J. W., McAffee, S. T., Gaines, S. D. & Schmitt, R. J. 2011. Weak synchrony in the timing of larval release in upwelling regimes. *Marine Ecology Progress Series,* 425: 103-112. doi: 10.3354/meps08969

Morgan, S. P. 1990. Impact of planktivorous fishes on the dispersal, hatching and morphology of estuarine crab larvae. *Ecology*, v. 71, pp. 1639–1652.

Morgan, S. P., and J. H. Christy. 1994. Plasticity, constraint and optimality in reproductive timing. *Ecology*, v. 75, pp. 2185–2203.

Morris, I., ed. 1980. *The Physiological Ecology of Phytoplankton.* Berkeley: University of California Press.

Morrison, C. L., R. Rios, and J. E. Duffy. 2004. Phylogenetic evidence for an ancient rapid radiation of Caribbean sponge-dwelling snapping shrimps (*Synalpheus*). *Molecular Phylogenetics and Evolution*, v. 30, pp. 563–581.

Morton, J. E. 1979. *Molluscs*, 5th ed. London: Hutchinson.

Moss, S. T., ed. 1986. *Biology of Marine Fungi.* New York: Cambridge University Press.

Mota, C. F., Engelen, A. H., Serrão, E. & Pearson, G. A. 2015. Some don’t like it hot: microhabitat-dependent thermal and water stresses in a trailing edge population. *Functional Ecology,* 29, 640-649.

Mottier, A., et al. 2014. Effects of subchronic exposure to glyphosate in juvenile oysters (*Crassostrea gigas*): From molecular to individual levels. *Marine Pollution Bulletin* v. 95, pp. 665-677.

Mouritsen, L. T., and K. Richardson. 2003. Vertical microscale patchiness in nano- and microplankton distributions in a stratified estuary. *Journal of Plankton Research*, v. 25, pp. 783–797.

Moyle, P. B., and J. J. Cech, Jr. 1982. *Fishes: An Introduction to Ichthyology.* Englewood Cliffs, NJ: Prentice-Hall.

Mukai, H. 1993. Biogeography of the tropical seagrasses in the western Pacific. *Australian Journal of Marine and Freshwater Research*, v. 44, pp. 1–17.

Muller, R. D., M. Sdrolias, C. Gaina, B. Steinberger, and C. Heine. 2008. Long-term sea-level fluctuations driven by ocean basin dynamics. *Science*, v. 319, pp. 1357–1362.

Mullin, M. M. 1963. Some factors affecting the feeding of marine copepods of the genus *Calanus. Limnology and Oceanography*, v. 8, pp. 239–250.

Mullineaux, L. S., and C. A. Butman. 1990. Recruitment of encrusting benthic invertebrates in boundary-layer flows: A deep-water experiment on Cross Seamount. *Limnology and Oceanography*, v. 35, pp. 409–423.

Mullineaux, L. S., and C. A. Butman. 1991. Initial contact, exploration, and attachment of barnacle cyprids (*Balanus amphitrite*) settling in flow. *Marine Biology*, v. 110, pp. 93–103.

Mullineaux, L. S., and S. W. Mills. 1997. A test of the larval retention hypothesis in seamount- generated flows. *Deep Sea Research*, v. 44, pp. 45–70.

Mullineaux, L. S., S. W. Mills, A. K. Sweetman, A. H. Beaudreau, A. Metaxas, and H. L. Hunt. 2005. Vertical, lateral and temporal structure in larval distributions at hydrothermal vents. *Marine Ecology Progress Series*, v. 293, pp. 1–16.

Mullon, C., P. Fréon, and D. Pauly. 2005. The dynamics of collapse in world fisheries. *Fish and Fisheries*, v. 6, pp. 111–120.

Mumby, P. J., C. P. Dahlgren, A. R. Harborne, C. V. Kappel, F. Micheli, D. R. Brumbaugh, K. E. Holmes, and J. M. Mendes, K. Broad, J. N. Sanchirico, K. Buch, S. Box, R.W. Stoffle, and A. B. Gill. 2006. Fishing, trophic cascades, and the process of grazing on coral reefs. *Science*, v. 311, pp. 98–101.

Murphy, G. I. 1968. Pattern in life history and the environment. *American Naturalist*, v. 102, pp. 391–403.

Murphy, J.W.A., Spies, N.P., Richmond, R.H. 2018. Conservation of *Symbiodinium* spp. Clade in the coral *Pocillopora damicornis* during the 2014 mass bleaching event. *Peer J*. doi: 10.7287/peerj.preprints.26514v1

Murray, J. A., R. S. Hewes, and A. O. Dennis Willows. 1992. Water-flow sensitive pedal neurons in *Tritonia:* Role in rheotaxis. *Journal of Comparative Physiology A*, v. 171, pp. 373–385.

Muscatine, L. 1967. Glycerol excretion by symbiotic algae from corals and *Tridacna* and its control by the host. *Science,* 156: 516-519.

Myers, R. A., N. J. Barrowman, J. A. Hutchings, and A. A. Rosenberg. 1995. Population dynamics of exploited fish stocks at low population levels. *Science*, v. 269, pp. 1106–1108.

Myers, R. A., J. K. Baum, T. D. Shepherd, S. P. Powers, and C. H. Peterson. 2007. Cascading effects of the loss of apex predatory sharks from a coastal ocean. *Science*, v. 315, pp.1846–1850.

Myers, R. A., J. A. Hutchings, and N. J. Barrowman. 1997. Why do fish stocks collapse? The example of cod in Atlantic Canada. *Ecological Applications*, v. 7, pp. 91–106.

Myers, R. A., and B. Worm. 2003. Rapid worldwide depletion of predatory fish communities. *Nature*, v. 423, pp. 280–283.

Myhre, G., Myhre, C.E.L., Samset, B.H., Storelvmo, T. 2013. Aerosols and their relation to global climate and climate sensitivity. *Nature Education Knowledge* 4(5): 7.

**N**

Nacci, D. E., D. Champlin, L. Coiro, R. McKinney, and S. Jayaraman. 2002a. Predicting the occurrence of genetic adaptation to dioxinlike compounds in populations of the estuarine fish *Fundulus heteroclitus. Environmental Toxicology and Chemistry*, v. 21, pp. 1525–1532.

Nacci, D. E., T. R. Gleason, R. Gutjahr-Gobell, M. Huber, and W. R. Muhns, Jr. 2002b. Effects of chronic stress on wildlife populations: A population modeling approach and case study. In M. C. Newman, M. H. Roberts, Jr., and R. C. Hale, eds., *Coastal and Estuarine Risk Assessment.* Boca Raton, FL: Lewis Publishers, pp. 247–272.

Nagelkerken, I., et al. 1997. Widespread disease in Caribbean sea fans: 11. Patterns of infection and tissue loss. *Marine Ecology Progress Series*, v. 160, pp. 255–263.

Nakatani, H. Y. 1988. *Photosynthesis*. Carolina Biology Readers, edited by J. J. Head. Burlington, NC: Carolina Biological Supply Company, pp. 1–16.

National Research Council. 1985. *Oil in the Sea: Inputs, Fates, and Effects.* Washington, DC: National Academy Press.

National Research Council. 1990. *Decline of the Sea Turtles: Causes and Prevention.* Washington, DC: National Academy Press.

Naveen, R., H. J. Lynch, S. Forrest, T. Mueller, and M. Polito. 2012. First direct, site-wide penguin survey at Deception Island, Antarctica, suggests significant declines in breeding chinstrap penguins. *Polar Biology*, published online, doi: 10.1007/s00300-012-1230-3

Naylor, R. L., et al. 2000. Effect of aquaculture on world fish supplies. *Nature*, v. 405, pp. 1017–1024.

Needle, C. L. 2002. Recruitment models: Diagnosis and prognosis. *Reviews in Fish Biology and Fisheries*, v. 11, pp. 95–111.

Nelson, B. 1979. *Seabirds.* New York: A&W Publishers.

Nelson, K., and C. R. Fisher. 2000. Absence of cospeciation in deep-sea vestimentiferan tube worms and their bacterial endosymbionts. *Symbiosis*, v. 28, pp. 1–15.

Nelson-Smith, A. 1973. *Oil Pollution and Marine Ecology.* New York: Plenum.

Neubauer, P., Jensen, O.P., Hutchings, J.A., Baum, J.K. 2013. Resilience and recovery of overexploited marine populations. *Science* v. 340, pp. 347-349.

Neuheimer, A. B., R. E. Thresher, J. M. Lyle, and J. M. Semmens. 2011. Tolerance limit for fish growth exceeded by warming waters. *Nature Climate Change*, v. 1, pp. 110–113.

Nevitt, G. A. 2000. Olfactory foraging by Antarctic procellariiform seabirds: Life at high Reynolds numbers. *Biological Bulletin*, v. 198, pp. 245–253.

Nevitt, G. A., R. R. Veit, and P. M. Kareiva. 1995. Dimethyl sulphide as a foraging cue for Antarctic Procellariiform seabirds. *Nature*, v. 376, pp. 680–682.

Newell, N. D. 1971. An outline history of tropical organic reefs. *Novitates*, no. 2465, pp. 1–37.

Newell, R. C. 1979. *Biology of Intertidal Animals*, 3rd ed. Faversham, Kent, UK: Marine Ecological Surveys, Ltd.

Newell, R. I. E. 1988. Ecological changes in Chesapeake Bay: Are they the result of overharvesting the eastern oyster (*Crassostrea virginica*)? In M. P. Lynch, and E. C. Krome, eds., *Understanding the Estuary*, Publication 129. Gloucester Point, VA: Chesapeake Research Consortium.

Newell, R. I. E. 2004. Ecosystem influences of natural and cultured suspension-feeding bivalve molluscs. *Journal of Shellfish Research*, v. 23, pp. 51–61.

Newell, R. I. E., T. R. Fisher, R. R. Holyoke, and J. C. Cornwell. 2005. Influence of eastern oysters on nitrogen and phosphorus regeneration in Chesapeake Bay, USA. In R. Dame and S. Olenin, eds., *The Comparative Roles of Suspension Feeders in Ecosystems*. NATO Science Series IV—Earth and Environmental Sciences. Amsterdam: Springer, pp. 93–120.

Newell, R. I. E., and S. J. Jordan. 1983. Preferential ingestion of organic material by the American oyster *Crassostrea virginica. Marine Ecology Progress Series*, v. 13, pp. 47–53.

Nichols, D. 1969. *Echinoderms.* London: Hutchinson.

Nichols, F. H., J. K. Thompson, and L. E. Schemel. 1990. Remarkable invasion of San Francisco Bay (California, USA) by the Asian clam *Potamocorbula amurensis.* II. Displacement of a former community. *Marine Ecology—Progress Series*, v. 66, pp. 95–101.

Nicol, J. A. C. 1967. *The Biology of Marine Animals.* London: Sir Isaac Pitman and Sons. Nicotri, M. E. 1977. Grazing effects of four marine intertidal herbivores on the microflora. *Ecology*, v. 58, pp. 1020–1032.

Nielsen, C. 1995. *Animal Evolution: Interrelationships of the Living Phyla.* Oxford: Oxford University Press.

Nielsen, S. L., I. Thingstrup, and C. Wigand. 1999. Apparent lack of vesicular-arbuscular mycorrhizae (VAM) in the seagrasses *Zostera marina* L. and *Thalassia testudinum* Banks ex König. *Aquatic Botany*, v. 63, pp. 261–266.

Nikaido, M., A. P. Rooney, and N. Okada. 1999. Phylogenetic relationships among detartiodactyls based on insertions of short and long interspersed elements: Hippopotamuses are the closest extant relatives of whales. *Proceedings of the National Academy of Sciences*, v. 96, pp. 10261–10266.

Nilsson, D.-E., D. J. Warrant, S. Johnsen, R. Hanion, and N. Shasher. 2012. A unique advantage for giant eyes in giant squid. *Current Biology*, published online, doi: 10.1016/j.cub.2012.02.03

Niner, H.J. et al. 2018. Deep-Sea Mining with No Net Loss of Biodiversity—An Impossible Aim. *Front. Mar. Sci.*, 01 March 2018. doi: 10.3389/fmars.2018.00053

Nixon, S. W. 1980. Between coastal marshes and coastal waters—a review of twenty years of speculation and research on the role of salt marshes in estuarine productivity and water chemistry. In P. Hamilton and K. McDonald, eds., *Estuarine and Wetland Processes*. New York: Plenum, pp. 437–525.

Nixon, S. W., et al. 2004. A one hundred and seventeen year coastal water temperature record from Woods Hole, Massachusetts. *Estuaries*, v. 27, pp. 397–404.

Nixon, S. W., and C. A. Oviatt. 1973. Ecology of a New England salt marsh. *Ecological Monographs*, v. 43, pp. 463–498.

Noble, M., and L. S. Mullineaux. 1989. Internal tidal currents over the summit of Cross Seamount: *Deep Sea Research*, v. 36, pp. 1791–1802.

Nobre, C.R., Santana, M.F.M., Malui, A., Cortez, F.S., Cesar, A., Pereira, C.D.S., and Turra, A. 2015. Assessment of microplastic toxicity to embryonic development of the sea urchin *Lytechinus variegatus* (Echinodermata: Echinoidea). *Marine Pollution Bulletin* v. 92, pp. 99-104.

Nordberg, K. Gustafsson, M., Krantz, A.-L., 2000. Decreasing oxygen concentrations in the Gullmar Fjord, Sweden, as confirmed by benthic foraminifera, and the possible association with NAO. *Journal of Marine Systems* v. 23, pp. 303-316.

Norman, M. D., J. Finn, and T. Tregenza. 2001. Dynamic mimicry in an Indo-Malayan octopus. *Proceedings of the Royal Society of London B*, v. 268, pp. 1755–1758.

Norse, E., ed. 1993. *Global Marine Biological Diversity: A Strategy for Building Conservation into Decision Making.* Washington, DC: Island Press.

Norse, E., and L. Crowder, eds. 2005. *Marine Conservation Biology: The Science of Maintaining the Sea’s Biodiversity.* Washington, DC: Island Press.

Norton, S. F. 1988. Role of the gastropod shell and operculum in inhibiting predation by fishes. *Science*, v. 241, pp. 91–94.

Norton-Griffiths, M. 1967. Some ecological aspects of the feeding behaviour of the oystercatcher, *Haematopus ostralegus* on the edible mussel, *Mytilus edulis. Ibis*, v. 109, pp. 412–424.

**O**

O’Connell, M. T., T. D. Shepherd, A. M. O’Connell, and R. A. Myers. 2007. Long-term declines in two apex predators, bull sharks (*Carcharhinus leucas*) and alligator gar (*Atractosteus spatula*), in Lake Pontchartrain, an oligohaline estuary in southeastern Louisiana. *Estuaries and Coasts*, v. 30, pp. 567–574.

O’Connor, R. et al. 2014. Gill bacteria enable a novel digestive strategy in a wood-feeding mollusk. *Proceedings of the National Academy of Science*, v. 111 www.pnas.org/cgi/doi/10.1073/pnas.1413110111

O’Donnell, M.J., Todgham, A.E., Sewell, M.A., Hammond, L.M. Ruggiero, K., Fangue, N.A., Zippay, M.L., Hofmann, G.E. 2010. Ocean acidification alters skeletogenesis and gene expression in larval sea urchins. *Marine Ecology Progress Series* Vol. 398: 157–171. doi: 10.3354/meps08346

O’Dor, R. K., and D. M. Webber. 1986. The constraints on cephalopods: Why squid aren’t fish. *Canadian Journal of Zoology*, v. 64, pp. 1591–1605.

Ogden, J. C., R. A. Brown, and N. Salesky. 1983. Grazing by the echinoid *Diadema antillarum* Philippi: Formation of halos around West Indian patch reefs. *Science*, v. 182, pp. 715–717.

Ohman, M. D. 1990. The demographic benefits of diel vertical migration by zooplankton. *Ecological Monographs*, v. 60, pp. 257–281.

Okamura, B. 1987. Particle size and flow velocity induce an inferred switch in bryozoan suspension-feeding behavior. *Biological Bulletin*, v. 173, pp. 222–229.

Okamura, B. 1992. Microhabitat variation and patterns of colony growth and feeding in a marine bryozoan. *Ecology*, v. 73, pp. 1502–1513.

Okubo, A. 1984. Critical patch size for plankton and patchiness. In S. A. Levin and T. G. Hallam, eds., *Lecture Notes in Biomathematics*, v. 55. Berlin: Springer-Verlag, pp. 456–477.

Olafsson, E. B. 1986. Density dependence in suspension-feeding and deposit-feeding populations of the bivalve *Macoma balthica*: A field experiment. *Journal of Animal Ecology*, v. 55, pp. 517–526.

Oliveira, R. F., and M. R. Custodio. 1998. Claw size, waving display and female choice in the European fiddler crab, *Uca tangeri*. *Ethology, Ecology and Evolution*, v. 10, pp. 241–251.

Oliver, J., and R. Babcock. 1992. Aspects of the fertilization ecology of broadcast spawning corals: Sperm dilution effects and in situ measurements of fertilization. *Biological Bulletin (Woods Hole)*, v. 183, pp. 409–417.

Olivera, B. M. 2002. *Conus* venom peptides: Reflections from the biology of clades and species. *Annual Review of Ecology and Systematics*, v. 33, pp. 25–47.

Olli, K., P. Wassmann, M. Reigstad, T. N. Ratkova, E. Arashkevich, A. Pasternak, P. A. Matrai, J. Knulst, L. Tranvik, R. Klais, and A. Jacobsen. 2007. The fate of production in the central Arctic Ocean—top–down regulation by zooplankton expatriates? *Progress in Oceanography*, v. 72, pp. 84–113.

Olson, R. R. 1985. The consequences of short distance dispersal in a sessile marine invertebrate. *Ecology*, v. 66, pp. 30–39.

Olson, R. R. 1987. In situ culturing as a test of the larval starvation hypothesis for the crown-of- thorns starfish, *Acanthaster planci. Limnology and Oceanography*, v. 32, pp. 896–904.

Olson, R. R., and M. H. Olson. 1989. Food limitation of planktotrophic marine invertebrate larvae: Does it control recruitment success? *Annual Review of Ecology and Systematics*, v. 20, pp. 225–247.

Olivera BM. 2006. Conus peptides: biodiversity-based discovery and exogenomics. *J Biol Chem.* 281: 31173–31177.

Omori, M. 1974. The biology of pelagic shrimps in the ocean. *Advances in Marine Biology*, v. 12, pp. 233–324.

Open University. 1999. *Waves, Tides and Shallow-Water Processes.* Oxford: Butterworth- Heinemann.

Operational Science Advisory Team (OSAT). 2010. *Summary Report for Sub-sea and Sub- surface Oil and Dispersant Detection: Sampling and Monitoring.* New Orleans: Unified Area Command, pp. 1–68.

Orensanz, J. M., A. M. Parma, and O. O. Iribarne. 1991. Population dynamics and management of natural stocks. In S. E. Shumway, ed., *Scallops: Biology, Ecology and Aquaculture.* Amsterdam: Elsevier, pp. 625–713.

Orr, J. C., et al. 2005. Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. *Nature*, v. 437, pp. 681–686.

Orson, R. 1999. A paleoecological assessment of *Phragmites australis* in New England tidal marshes: Changes in plant community structure during the last millenium. *Biological Invasions*, v. 1, pp. 149–158.

Orson, R. A., R. S. Warren, and W. A. Niering. 1987. Development of a tidal marsh in a New England river valley. *Estuaries*, v. 10, pp. 20–27.

Ortega, L., Celentano, E., Delgado, E. & Defeo, O. 2016. Climate change influences on abundance, individual size and body abnormalities in a sandy beach clam. *Marine Ecology Progress Series,* 545: 203-213. doi: 10.3354/meps11643

Orth, R. J. 1977. The importance of sediment stability in seagrass communities. In B. Coull, ed., *Ecology of Marine Benthos.* Columbia: University of South Carolina Press, pp. 281–300.

Orth, R. J., et al. 2012. Seed addition facilitates eelgrass recovery in a coastal bay system. *Marine Ecology Progress Series*, v. 448, pp. 177-195.

Orth, R. J., and K. A. Moore. 1983. Chesapeake Bay: An unprecedented decline in submerged aquatic vegetation. *Science*, v. 222, pp. 51–53.

OSAT. 2011. *Summary Report for Sub-sea and Sub-surface Oil and Dispersant Detection: Ecotoxicity Addendum.* Published online,<http://www.restorethegulf.gov/release/2011/07/29/osat-summary-report-sub-sea-and-sub-> surface-oil-and-dispersant-detection-ecotoxic

Osman, R. W., R. B. Whitlatch, and R. N. Zajac. 1989. Effects of resident species on recruitment into a community: Larval settlement versus post-settlement mortality in the oyster *Crassostrea virginica. Marine Ecology—Progress Series*, v. 54, pp. 61–73.

**P**

Pace, M. L., J. J. Cole, S. R. Carpenter, and J. F. Kitchell. 1999. Trophic cascades in diverse

ecosystems. *Trends in Ecology and Evolution*, v. 14, pp. 483–488.

Paerl, H. W. 1988. Nuisance phytoplankton blooms in coastal, estuarine, and inland waters. *Limnology and Oceanography*, v. 33 (no. 4, part 2), pp. 823–847.

Paerl, H. W., R. L. Dennis, and D. R. Whitall. 2002. Atmospheric deposition of nitrogen: Implications for nutrient over-enrichment of coast waters. *Estuaries*, v. 25, pp. 677–693.

Paffenhöffer, G.-A., J. R. Strickler, and M. Alcaraz. 1982. Suspension-feeding by herbivorous calanoid copepods: A cinematographic study. *Marine Biology*, v. 67, pp. 193–199.

Paine, R. T. 1966. Food web complexity and species diversity. *American Naturalist*, v. 100, pp. 65–75.

Paine, R. T. 1977. Controlled manipulations in the marine intertidal zone, and their contributions to ecological theory. The changing scenes in natural sciences, 1776–1976. *Academy of Natural Sciences (Philadelphia)*, Special Publication 12, pp. 245–270.

Paine, R. T. 1988. Habitat suitability and local population persistence of the sea palm *Postelsia palmaeformis*. *Ecology*, v. 69, pp. 1787–1794.

Paine, R. T. 1990. Benthic macroalgal competition: Complications and consequences. *Journal of Phycology*, v. 26, pp. 12–17.

Paine, R. T., and S. A. Levin. 1981. Intertidal landscapes: Distribution and dynamics of pattern. *Ecological Monographs*, v. 51, pp. 145–178.

Paine, R. T., and A. C. Trimble. 2004. Abrupt community change on a rocky shore—biological mechanisms contributing to the potential formation of an alternative state. *Ecology Letters*, v. 7, pp. 441–445.

Paladino, F.V., O’Connor, M.P., Spotila, J.R. 1990. Metabolism of leatherback turtles, gigantothermy, and thermoregulation of dinosaurs. *Nature* v. 344, pp. 858-860.

Palmer, A. R. 1979. Fish predation and the evolution of gastropod shell sculpture: Experimental and geographic evidence. *Evolution*, v. 33, pp. 697–713.

Palmer, A. R. 1981. Predator errors, foraging in unpredictable environments and risk: The consequences of prey variation in handling time versus net energy. *American Naturalist*, v. 118, pp. 908–915.

Palmer, A. R. 1985. Adaptive value of shell variation in *Thais lamellosa*: Effect of thick shells on vulnerability to and preference by crabs. *Veliger*, v. 27, pp. 349–356.

Palsbøll, P. J., M. Bérubé, and F. W. Allendorf. 2007. Identification of management units using population genetic data. *Trends in Ecology and Evolution*, v. 22, pp. 11–16.

Palumbi, S. R., and A. C. Wilson. 1990. Mitochondrial DNA diversity in the sea-urchins *Strongylocentrotus purpuratus* and *Strongylocentrotus droebachiensis*. Evolution. 44:403–415.

Palumbi, S. R. 1994. Genetic divergence, reproduction isolation, and marine speciation. *Annual Review of Ecology and Systematics*, v. 25, pp. 547–572.

Palumbi, S. R. 1999. All males are not equal: Fertility differences depend on gamete recognition polymorphisms in sea urchins. *Proceedings of the National Academy of Sciences, USA*, v. 96, pp. 12632–12637.

Palumbi, S. R., G. Grabowsky, T. Duda, L. Geyer, and N. Tachino. 1997. Speciation and population genetic structure in tropical Pacific sea urchins. *Evolution*, v. 51, pp. 1506–1517.

Palumbi, S. R., and H. Lessios. 2005. Evolutionary animation: How do molecular phylogenies compare with Mayr’s reconstruction of speciation patterns in the sea? *Proceedings of the National Academy of Sciences, USA*, v. 102, pp. 6566–6572.

Paris, C. B., and R. K. Cowen. 2004. Direct evidence of a biophysical retention mechanism for coral reef fish larvae. *Limnology and Oceanography*, v. 49, pp. 1964–1979.

Parkes, R. J., et al. 2004. Deep bacterial biosphere in Pacific Ocean sediments. *Nature*, v. 371, pp. 410–413.

Parks, J. M., et al. 2013. The genetic basis for bacterial mercury methylation. *Science*, v. 339, pp. 1332–1335.

Parmesan, C., and G. Yohe. 2003. A globally coherent fingerprint of climate change impacts across natural systems. *Nature*, v. 421, pp. 37–42.

Parry, G. D., M. Lockett, D. B. Crookes, N. Coleman, and M. Sinclair. 1996. *Mapping and distribution of* Sabella spallanzanii *in Port Phillip Bay*. Melbourne, Australia: Fisheries Research and Development Corporation, pp. 1–14.

Parsons, T. R., M. Takahashi, and B. T. Hargrave. 1977. *Biological Oceanographic Processes.* Oxford: Pergamon Press.

Partensky, F., W. R. Hess, and D. Vaulot. 1999. *Prochlorococcus,* a marine photosynthetic prokaryote of global significance. *Microbiology and Molecular Biology Reviews*, v. 63, pp. 106–127.

Partridge, J.C., Douglas, R.H., Marshall, N.J., Chung, W.-S., Jordan, T.M., Wagner, H.-J. 2014. Reflecting optics in the diverticular eye of a deep-sea barreleye fish (*Rhynchohyalus natalensis*). *Proceedings of the Royal Society B*. 281: 20133223.

Paul, V. J., and M. E. Hay. 1986. Seaweed susceptibility to herbivory: Chemical and morphological correlates. *Marine Ecology Progress Series*, v. 33, pp. 255–264.

Pauly, D., V. Christensen, J. Dalsgaard, R. Froese, and F. Torres, Jr. 1998. Fishing down marine food webs. *Science*, v. 279, pp. 860–863.

Pauly, D., V. Christensen, J. 1995. Primary production required to sustain global fisheries. Nature 374: 255-257.

Pauly, D., and R. Watson. 2005. Background and interpretation of the ‘Marine Trophic Index’ as a measure of biodiversity. *Philosophical Transactions of the Royal Society B*, v. 360, pp. 4125–423.

Pauly, D. 2006. Major trends in small-scale marine fisheries, with emphasis on developing countries, and some implications for the social sciences. *Maritime Studies*, v. 4, pp. 7-22.

Pawlik, J. R. 1992. Chemical ecology of the settlement of benthic marine invertebrates. *Oceanography and Marine Biology Annual Reviews*, v. 30, pp. 273–335.

Pawlik, J. R. 2011. The chemical ecology of sponges on Caribbean reefs: Natural products shape natural systems. *BioScience*, v. 61, pp. 888–898.

Pawlik, J. R., C. A. Butman, and V. Starczak. 1991. Hydrodynamic facilitation of gregarious settlement of a reef-building tube worm. *Science*, v. 251, pp. 421–424.

Pawlik, J.R. McMurray, S.E., Erwin, P., and Zea, S. 2015. A review of evidence for food limitation of sponges on Caribbean reefs. *Marine Ecology Progress Series* v. 519, pp. 265-283.

Payne, R., ed. 1989. *Communication and Behavior of Whales.* Boulder, CO: Westview Press.

Paytan, A., K. R. M. Mackey, Y. Chen, I. D. Lima, S. C. Dopney, N. Mahowald, Lviosa, R., and A. F. Post. 2009. Toxicity of atmospheric aerosols on marine phytoplankton. *Proceedings of the National Academy of Science USA* 106:4601-4605.

Peakall, D. B. 1979. Eggshell thinning and DDE residue levels among peregrine falcons *Falco peregrinus:* A global perspective. *Ibis*, v. 121, pp. 200–204.

Peakall, D. B. 1993. DDE-induced eggshell thinning: An environmental detective story. *Environmental Reviews*, v. 1, pp. 13–20.

Pearson, T. H., and R. Rosenberg. 1978. Macrobenthic succession in relation to organic enrichment and pollution of the marine environment. *Oceanography and Marine Biology Annual Review*, v. 16, pp. 229–311.

Pechenik, J. A. 2004. *Biology of the Invertebrates*, 5th ed. New York: McGraw-Hill.

Peckham, S. H., D. M. Diaz, A. Walli, G. Ruiz, L. B. Crowder, et al. 2007. Small-scale fisheries bycatch jeopardizes endangered Pacific loggerhead turtles. *PLoS ONE*, v. 2, no. 10: e1041, published online, doi: 10.1371/journal.pone.0001041

Peddicord, R. K. 1977. Salinity and substratum effects on condition index of the bivalve *Rangia cuneata. Marine Biology*, v. 39, pp. 343–359.

Péden, R., Rocher, B., Chan, P., Vaudry, D., Poret, A., Olivier, S., Le Foll, F., Bultelle, F. 2010. Consequences of acclimation on the resistance to acute thermal stress: Proteomic focus on mussels from pristine site. *Marine Environmental Research*. doi: 10.1016/j.marenvres.2016.02.006

Peng, L., Liang, X., Xu, J. et al. 2020. Monospecific biofilms of *Pseudoalteromonas* promote larval settlement and metamorphosis of *Mytilus coruscus*. *Sci Rep* 10, 2577. doi: 10.1038/s41598-020-59506-1

Pennings, S. C., and V. J. Paul. 1992. Effect of plant toughness, calcification, and chemistry on herbivory by *Dolabella auricularia. Ecology*, v. 73, p. 1606–1616.

Pennings, S. C., and B. R. Silliman. 2005. Linking biogeography and community ecology: Latitudinal variation in plant-herbivore interaction strength. *Ecology*, v. 86, pp. 2310–2319.

Pennington, J. T., and F.-S. Chia. 1985. Gastropod torsion: A test of Garstang’s hypothesis. *Biological Bulletin of Woods Hole*, v. 169, pp. 391–396.

Penry, D. L., and P. A. Jumars. 1987. Modeling animal guts as chemical reactors. *American Naturalist*, v. 129, pp. 69–96.

Penry, D. L., and P. A. Jumars. 1990. Gut architecture, digestive constraints and feeding ecology of deposit-feeding and carnivorous polychaetes. *Oecologia*, v. 82, pp. 1–11.

Perl, T. M., L. Bard, T. Kosatsky, J. C. Hockin, E. Todd, and R. S. Remis. 1990. An outbreak of toxic encephalopathy caused by eating mussels contaminated with domoic acid. *New England Journal of Medicine*, v. 322, pp. 1775–1780.

Pernet, B. 2007. The cryptic filtering house of an invertebrate larva. *Science*, v. 306, p. 1757.

Perry, A. L., P. J. Low, J. R. Ellis, and J. D. Reynolds. 2005. Climate change and distribution shifts in marine fishes. *Science*, v. 308, pp. 1912–1915.

Peterson, B. J. 1980. Primary productivity and the 14C-C02 method: A history of the productivity problem. *Annual Review of Ecology and Systematics*, v. 11, pp. 359–385.

Peterson, B. J., and K. L. Heck, Jr. 2001. An experimental text of the mechanism by which suspension feeding bivalves elevate seagrass productivity. *Marine Ecology Progress Series*, v. 218, p. 115–125.

Peterson, B. J., K. R. Thompson, J. H. Cowan, Jr., and K. L. Heck, Jr. 2001. Comparison of predation pressure in temperate and subtropical seagrass habitats based on chronographic tethering. *Marine Ecology—Progress Series*, v. 224, pp. 77–85.

Peterson, C. H. 1991. Intertidal zonation of marine invertebrates in sand and mud. *American Scientist*, v. 79, pp. 236–249.

Peterson, C. H., and S. V. Andre. 1980. An experimental analysis of interspecific competition among marine filter feeders in a soft-sediment environment. *Ecology*, v. 61, pp. 129–139.

Peterson, C. H., and R. Black. 1987. Resource depletion by active suspension feeders on tidal flats: Influence of local density and tidal elevation. *Limnology and Oceanography*, v. 32, pp. 143–166.

Peterson, C. H., S. D. Rice, J. W. Short, D. Esler, J. L. Bodkin, B. E. Ballachey, and D. B. Irons. 2003. Long-term ecosystem response to the *Exxon Valdez* Oil Spill. *Science*, v. 302, pp. 2082–2086.

Peterson, C. H., and H. C. Summerson. 1992. Basin-scale coherence of population dynamics of an exploited marine invertebrate, the bay scallop: Implications for recruitment limitation. *Marine Ecology—Progress Series*, v. 90, pp. 257–272.

Peterson, C. H., H. C. Summerson, and P. B. Duncan. 1984. The influence of seagrass cover on population structure and individual growth rate of a suspension-feeding bivalve. *Journal of Marine Research*, v. 42, pp. 123–138.

Peterson, C. W. 1991. Variation in fertilization rate in the tropical reef fish *Halochoeres bivattatus*; correlates and implications. *Biological Bulletin (Woods Hole)*, v. 18, pp. 232–237.

Petraitis, P.S. 1987. Immobilization of the predatory gastropod *Nucella lapillus* by its prey, *Mytilus edulis*. *Biological Bulletin*, v. 172, pp. 307-314.

Petraitis, P. S. 1990. Direct and indirect effects of predation, herbivory and surface rugosity on mussel recruitment. *Oecologia*, v. 83, pp. 405–413.

Petraitis, P. S. 1995. The role of growth in maintaining spatial dominance by mussels (*Mytilus edulis*). *Ecology*, v. 76, pp. 1337–1346.

Petraitis, P. 2013. Multiple Stable States in Natural Ecosystems. Oxford University Press, New York.

Petraitis, P. S., and S. R. Dudgeon. 1999. Experimental evidence for the origin of alternative communities on rocky intertidal shores. *Oikos*, v. 84, pp. 39–45.

Petraitis, P. S., and S. R. Dudgeon. 2005. Divergent succession and implications for alternative states on rocky intertidal shores. *Journal of Experimental Marine Biology and Ecology*, v. 326, pp. 14–26.

Petraitis, P. S., and S. R. Dudgeon. 2006. Detection of alternative stable states in marine communities. *Journal of Experimental Marine Biology and Ecology*, v. 300, pp. 343–371.

Petraitis P.S., Dudgeon, S.R. 2015. Variation in recruitment and the establishment of alternative community states. *Ecology* v. 96, pp. 3186-3196.

Petraitis, P. S., and R. E. Latham. 1999. The importance of scale in testing the origins of alternative community states. *Ecology*, v. 80, pp. 429–442.

Petraitis, P. S., R. E. Latham, and R. A. Niesenbaum. 1989. The maintenance of species diversity by disturbance. *Quarterly Review of Biology*, v. 64, pp. 393–418.

Pett, W., Adamski, M., Adamska, W.R. Francis, M. Eitel, D. Pisani, and G. Worheide, 2019. The role of homology and orthology in the phylogenomic analysis of metazoan gene content. *Mol. Biol. Evol*. 36(4):643–649. doi: 10.1093/molbev/msz013

Pfister, C.A., Roy, K., Wooton, J.T., McCoy, S.J., Paine, R.T., Suchanek, T.H., Sanford, E. 2016. Historical baselines and the future of shell calcification for a foundation species in a changing ocean. *Proceedings of the Royal Society* *B.* doi: 10.1098/rspb.2016.0392

Pianka, E. R. 1966. Latitudinal gradients in species diversity: A review of concepts. *American Naturalist*, v. 100, pp. 33–46.

Pianka, E. R., and W. S. Parker. 1975. Age-specific reproductive tactics. *American Naturalist*, v. 109, pp. 453–464.

Piatt, J. F., and D. A. Methuen. 1993. Threshold foraging behavior of baleen whales. *Marine Ecology—Progress Series*, v. 84, pp. 205–210.

Pickard, G. L., and W. J. Emery. 1982. *Descriptive Physical Oceanography,* 4th ed. Oxford: Pergamon Press.

Pickett, S. T. A., and P. S. White. 1985. Patch dynamics: A synthesis. In S. T. A. Pickett and P. S. White, eds., *The Ecology of Natural Disturbance and Patch Dynamics.* New York: Academic Press, pp. 371–385.

Pierron, F., et al. 2008. How cadmium could compromise the European eel’s reproductive migration. *Environmental Science and Technology*, v. 42, pp. 4607–4612.

Pineda, J. 1991. Predictable upwelling and the shoreward transport of planktonic larvae by internal tidal bores. *Science*, v. 253, pp. 548–551.

Pineda, J. 1994. Spatial and temporal patterns in barnacle settlement rate along a southern California rocky shore. *Marine Ecology—Progress Series*, v. 107. pp. 125–138.

Pinnegar, J.K., Polunin, N.V.C., Francour, P., Badalamenti, F., Chemello, R., Harmelin-Vivien, M.-L., Herel, B., Milazzo, M., Zabala, M., D’Anna, G., Pipitone, C. 2000. Trophic cascades in benthic marine ecosystems: lessons for fisheries and protected-area management. *Environmental Conservation* v. 27, pp. 179-200.

Pinsky, M. L., Eikeset, A. M., McCauley, D. J., Payne, J. L. & Sunday, J. M. 2019. Greater vulnerability to warming of marine versus terrestrial ectotherms. *Nature* 569: 108–111.

Pinzon, J. H. and T. C. LaJeunesse. 2010. Species delimitation of common reef corals in the

genus Pocillopora using nucleotide sequence phylogenies, population genetics and symbiosis ecology. *Molecular Ecology*, v. 20, pp. 311–325.

Pinzon, J.H., Kamel, B., Burge, C.A., Harvell, C.D., Medina, M., Weil, E., Mydlarz, L.D. 2015. Whole transcriptome analysis reveals changes in expression of immune-related genes during and after bleaching in a reef-building coral. *Proceedings of the Royal Society B.* doi: 10.1098/rsos.140214

Pita, L., Rix, L., Slaby, B.M. et al. 2018. The sponge holobiont in a changing ocean: from microbes to ecosystems. *Microbiome* 6, 46. doi: 10.1186/s40168-018-0428-1

Pitelka, F. A., ed. 1979. *Shorebirds in Marine Environments: Studies in Avian Biology*, no. 2. Los Angeles: The Cooper Ornithological Society.

Pivorunas, A. 1979. The feeding mechanisms of baleen whales. *The American Scientist*, v. 67, pp. 432–440.

Place, S. P., B. A. Menge, and G. E. Hofmann. 2012. Transcriptome profiles link environmental variation and physiological response of *Mytilus californianus* between Pacific tides. *Functional Ecology* 26: 144-155.

Platt, T. 1981. Physiological bases of phytoplankton ecology. *Canadian Bulletin of Fisheries and Aquatic Sciences*, no. 210, pp. 1–346.

Pleijel, F., T. G. Dahlgren, and G. Rouse. 2009. Progress in systematics: From Siboglinidae to Pogonophora and Vestimentifera and back to Siboglinidae. *Comptes Rendus Biologies*, v. 332, pp. 140–148.

Polacheck, T. 2006. Tuna longline catch rates in the Indian Ocean: Did industrial fishing result in a 90% rapid decline in the abundance of large predatory species? *Marine Policy*, v. 30, pp. 470–482.

Polis, G. A., and D. R. Strong. 1996. Food web complexity and community dynamics. *American Naturalist*, v. 147, pp. 813–846.

Pomeroy, L. R., C. F. D’Elia, and L. C. Schaffner. 2006. Limits to top-down control of phytoplankton by oysters in Chesapeake Bay. *Marine Ecology Progress Series*, v. 325, pp. 301–309.

Pond, D. W. 2012. The physical properties of lipids and their role in controlling the distribution of zooplankton in the oceans. *Journal of Plankton Research*, v. 34, pp. 443-453.

Ponganis, P. J., R. P. Van Dam, P. Marshall, T. Knower, and D. H. Levenson. 2000. Sub-ice foraging behavior of emperor penguins. *Journal of Experimental Biology*, v. 203, pp. 3275–3278.

Porter, J. W., and O. W. Meier. 1992. Quantification of loss and change in Floridian reef coral populations. *American Zoologist*, v. 32, pp. 625–640.

Pörtner, H. O., and R. Knust. 2007. Climate change affects marine fishes through the oxygen limitation of thermal tolerance. *Science*, v. 315, pp. 95–97.

Pörtner, H. O., F. C. Mark, and C. Bock. 2004. Oxygen limited thermal tolerance in fish? Answers obtained by nuclear magnetic resonance techniques. *Respiratory Physiology and Neurobiology*, v. 141, pp. 243–260.

Pörtner, H.-O., C. Bock, and F. C. Mark. 2017. Oxygen- and capacity-limited thermal tolerance bridging ecology and physiology. *Journal of Experimental Biology* 220: 2685-2696.

Potts, D. C. 1983. Evolutionary disequilibrium among Indo-Pacific corals. *Bulletin of Marine Science*, v. 33, pp. 619–632.

Potts, W. T. W., and G. Parry. 1964. *Osmotic and Ionic Regulation in Animals.* Oxford: Pergamon Press.

Powell, E. N., J. M. Klinck, S. E. Ford, E. E. Hoffman, and S. J. Jordan. 1999. Modeling the MSX parasite in eastern oyster (*Crassostrea virginica*) populations. III: Regional application and the problem of transmission. *Journal of Shellfish Research*, v. 18, pp. 517–537.

Power, M. E., D. Tilman, J. A. Estes, B. A. Menge, W. J. Bond, L. S. Mills, G. Daily, J. C. Castilla, J. Lubchenco, and R. T. Paine. 1996. Challenges in the quest for keystones: Identifying keystone species is difficult—but essential to understanding how loss of species will affect ecosystems. *BioScience*, v. 46, pp. 609–620.

Preen, A. 1995. Impacts of dugong foraging on seagrass habitats: Observational and experimental evidence for cultivation grazing. *Marine Ecology—Progress Series*, v. 124, pp. 201–213.

Price, P. W. 1980. *Evolutionary Biology of Parasites.* Princeton, NJ: Princeton University Press. Priede, I. G., P. M. Bagley, J. D. Armstrong, K. L. Smith, Jr., and N. R. Merrett. 1991. Direct measurement of active dispersal of food-falls by deep-sea demersal fishes. *Nature*, v. 351, pp. 647–649.

Primack, R. B. 1993. *Essentials of Conservation Biology.* Sunderland, MA: Sinauer Associates. Primavera, J. H. 1993. A critical review of shrimp pond culture in the Philippines. *Reviews in Fisheries Science*, v. 1, pp. 151–201.

Pritchard, H. D., Arthern, R. J., Vaughan, D. G. & Edwards, L. A. 2009. Extensive dynamic thinning on the margins of the Greenland and Antarctic ice sheets. *Nature*, v. 461, pp. 971–975.

Priyadarshi, A., Smith, S.L., Mandal, S. et al. 2019. Micro-scale patchiness enhances trophic transfer efficiency and potential plankton biodiversity. *Sci Rep* 9, 17243. doi: 10.1038/s41598-019-53592-6

Pujolar, A.M. 2014. Assessing patterns of hybridization between North Atlantic eels using diagnostic single-nucleotide polymorphisms. *Heredity* v. 2014, pp.1-11.

Pulliam, H. R. 1988. Sources, sinks, and population regulation. *American Naturalist*, v. 132, pp. 652–661.

Purcell, E. M. 1977. Life at low Reynolds number. *American Journal of Physics*, v. 45, pp. 3–11.

Purcell, J. E. 2005. Climate effects on formation of jellyfish and ctenophore blooms: A review. *Journal of the Marine Biological Association United Kingdom*, v. 85, pp. 461–476.

Purchon, R. D. 1977. *The Biology of Mollusca.* Oxford: Pergamon Press.

Putnam, N. H., et al. 2007. Sea anemone genome reveals ancestral eumetazoan gene repertoire and genomic organization. *Science*, v. 317, pp, 86–94.

**Q**

Queiroz, N., et al. 2019. Global spatial risk assessment of sharks under the footprint of fisheries. *Nature* v. 572, pp. 461–466.

Quetin, L. B., et al. 1996. Factors affecting distribution and abundance of zooplankton, with an emphasis on Antarctic krill (*Euphausia superba*). In R. M. Ross, E. E. Hoffman, and L. B. Quetin, eds., *Foundations for Ecological Research West of the Antarctic Peninsula* (Antarctic Research Series, v. 70). Washington, DC: American Geophysical Union, pp. 357–371.

Quinn, J. F., and S. P. Harrison. 1988. Effects of habitat fragmentation and isolation on species richness: Evidence from biogeographic patterns. *Oecologia*, v. 75, pp. 132–140.

Quinn, P. K., and T. S. Bates, 2011. The case against climate regulation via oceanic phytoplankton sulphur emissions. *Nature*, v. 480, pp. 51–56.

**R**

Rabalais, N. N., R. E. Turner, and W. J. Wiseman, Jr. 2002. Gulf of Mexico hypoxia, A.K.A. “The Dead Zone.” *Annual Review of Ecology and Systematics*, v. 33, pp. 235–263.

Race, M. 1982. Competitive displacement and predation between introduced and native mud snails. *Oecologia*, v. 54, pp. 337–347.

Rader, B.A., Nyholm, S.V. 2012. Host/Microbe Interactions Revealed Through “Omics” in the Symbiosis Between the Hawaiian Bobtail Squid *Euprymna scolopes* and the Bioluminescent Bacterium *Vibrio fischeri*. *Biological Bulletin* v. 223, pp.103-111.

Ramus J., S. I. Beale., D. Mauzerali, and K. L. Howard. 1976. Changes in photosynthetic pigment concentration in seaweeds as a function of water depth. *Marine Biology*, v. 37, pp. 223–229.

Randall, J. E. 2005. A review of mimicry in marine fishes. *Zoological Studies*, v. 44, pp. 299–328.

Raup, D. M. 1979. Size of the Permo-Triassic bottleneck and its evolutionary implications. *Science*, v. 206, pp. 217–218.

Ray, G. C., and J. McCormick-Ray. 2004. *Coastal-Marine Conservation: Science and Policy.* Oxford: Blackwell Science.

Raybould, A. F., A. J. Gray, M. J. Lawrence, and D. F. Marshall. 1991. The evolution of *Spartina anglica* C. E. Hubbard (Graminae): Origin and genetic variability. *Biological Journal of the Linnaean Society*, v. 43, pp. 111–126.

Raymont, J. E. G. 1980. *Plankton and Productivity in the Oceans*, 2nd ed., v. 1: *Phytoplankton.* Oxford: Pergamon Press.

Raymont, J. E. G. 1983. *Plankton and Productivity in the Oceans*, 2nd ed., v. 2: *Zooplankton.* Oxford: Pergamon Press.

Rayner, N. A., et al. 2003. Global analyses of sea surface temperature, sea ice, and night marine air temperature since the late nineteenth century. *Journal of Geophysical Research*, v. 108, no. D14, p. 4407.

Redfield, A. C. 1972. Development of a New England salt marsh. *Ecological Monographs*, v. 42, pp. 201–237.

Reeburgh, W. S. 2007. Oceanic methane biogeochemistry. *Chemical Reviews,* 107, 486-513.

Reed, D., C. Amsler, and A. Ebeling. 1992. Dispersal in kelps: Factors affecting spore swimming and competency. *Ecology*, v. 73, pp. 1577–1585.

Reed, J. K. 2002. Deep-water *Oculina* coral reefs of Florida: Biology, impacts, and management. *Hydrobiologia*, v. 471, pp. 43–55.

Reid, D. G., K. Lal, J. Mackenzie-Dodds, F. Kaligis, D. T. J. Littlewood, and S. T. Williams. 2006. Comparative phylogeography and species boundaries in *Echinolittorina* snails in the central Indo-West Pacific. *Journal of Biogeography*, v. 33, pp. 990–1006.

Reid, P. C., M. Edwards, H. G. Hunt, and A. J. Warner. 1998. Phytoplankton change in the North Atlantic. *Nature*, v. 391, p. 546.

Reid, P.C., John, D.G. Edwards, M., Starr, M., Poulin, M., Snoijs, M. 2007. A biological consequence of reducing Arctic ice cover: arrival of the Pacific diatom *Neodenticula seminae* in the North Atlantic for the first time in 800 000 years. *Global Change Biology* v. 13, pp. 1910-1921.

Reid, R. G. B., and A. M. Reid. 1974. The carnivorous habit of members of the septibranch genus *Cuspidaria* (Mollusca: Bivalvia). *Sarsia*, v. 56, pp. 47–56.

Remane, A., and C. Schlieper. 1971. *Biology of Brackish Water*. New York: Wiley. Renaud, P. E., A. Riedel, C. Michel, N. Morata, M. Gosselin, T. Juul-Pedersen, and A. Chiuchiolo. 2007. Seasonal variation in benthic community oxygen demand: A response to an ice algal bloom in the Beaufort Sea, Canadian Arctic? *Journal of Marine Systems*, v. 67, pp. 1–12.

Reusch, T. B. H., A. Ehlers, A. Hémmerli, and B. Worm. 2005. Ecosystem recovery after climatic extremes enhanced by genotypic diversity. *Proceedings of the National Academy of Sciences USA*, v. 102, pp. 2826–2831.

Rex, M. A. 1981. Community structure in the deep-sea benthos. *Annual Review of Ecology and Systematics*, v. 12, pp. 331–353.

Rex, M. A., and R. J. Etter. 2010. *Deep-Sea Biodiversity: Pattern and Scale.* Cambridge, MA: Harvard University Press.

Rex, M. A., R. J. Etter, and C. T. Stuart. 1997. Large-scale patterns of biodiversity in the deep- sea benthos. In R. F. G. Ormond, J. D. Gage, and M. V. Angel, eds., *Marine Biodiversity: Patterns and Processes.* Cambridge: Cambridge University Press, pp. 94–121.

Rex, M. A., C. T. Stuart, and G. T. Coyne. 2000. Latitudinal gradients of species richness in the deep-sea benthos of the North Atlantic. *Proceedings of the National Academy of Sciences USA*, v. 97, pp. 4082–4085.

Rex, M. A., C. T. Stuart, R. R. Hessler, J. A. Allen, H. L. Sanders, and G. D. F. Wilson. 1993. Global-scale latitudinal patterns of species diversity in the deep-sea benthos. *Nature*, v. 365, pp. 636–639.

Reynolds, C. S. 2006. *The Ecology of Phytoplankton.* Cambridge: Cambridge University Press. Rhoads, D. C. 1966. Missing fossils and paleoecology. *Discovery (Yale Peabody Museum of Natural History)*, v. 2(1), pp. 19–22.

Rhoads, D. C. 1967. Biogenic reworking of intertidal and subtidal sediments in Barnstable Harbor and Buzzards Bay, Massachusetts. *Journal of Geology*, v. 75, pp. 461–474.

Rhoads, D. C., P. L. McCall, and J. Y. Yingst. 1978. Disturbance and production on the estuarine seafloor. *American Scientist*, v. 66, pp. 577–586.

Rhoads, D. C., and D. K. Young. 1970. The influence of deposit-feeding organisms on sediment stability and community trophic structure. *Journal of Marine Research*, v. 28, pp. 150–178.

Rhoads, D. C., and D. K. Young. 1971. Animal–sediment relationships in Cape Cod Bay. II. Reworking by *Molpadia oolitica* (Holothuroidea). *Marine Biology*, v. 11, pp. 255–261.

Rice, A. L. 1983. Thomas Henry Huxley and the strange case of *Bathybius haeckelii:* A possible alternative explanation. *Annals of Natural History*, v. 11, pp. 169–180.

Rice, E., Stewart, G. 2013. Analysis of interdecadal trends in chlorophyll and temperature in the Central Basin of Long Island Sound. *Estuarine, Coastal and Shelf Science*, v. 128, pp. 64-75.

Richard, J., S. A. Morley, J. Deloffre, and L. S. Peck. 2012. Thermal acclimation capacity for four Arctic marine benthic species. *Journal of Experimental Marine Biology and Ecology*, v. 424–425, pp. 38–43.

Richmond, R. H. 1985. Reversible metamorphosis in coral planula larvae. *Marine Ecology— Progress Series*, v. 22, pp. 181–185.

Richmond, R. H. 1987. Energetics, competency, and long-distance dispersal of planula larvae of the coral *Pocillopora damicornis. Marine Biology*, v. 93, pp. 527–533.

Rick, T. C. et al. 2016. Millennial-scale sustainability of the Chesapeake Bay Native American oyster fishery. *Proceedings of the National Academy of Science*, www.pnas.org/cgi/doi/10.1073/pnas.1600019113

Ridgway, S. H., and R. J. Harrison. 1981. *Handbook of Marine Mammals.* New York: Academic Press.

Riebesell, U., I. Zondervan, B. Rost, P. D. Tortell, R. E. Zeebe, and F. M. M. Morel. 2000.

Reduced calcification of marine plankton in response to increased atmospheric CO2. *Nature*, v. 407, pp. 364–367.

Riemann, R. 1989. Gelatinous phytoplankton detritus aggregates on the Atlantic deep-sea bed. Structure and mode of formation. *Marine Biology*, v. 100, pp. 533–539.

Riese, K., and P. Ax. 1979. A meiofauna “thiobios” limited to the anaerobic sulfide system of marine sand does not exist. *Marine Biology*, v. 54, pp. 225–237.

Riffell, J. A., P. J. Krug, and R. K. Zimmer. 2002. Fertilization in the sea: The chemical identity of an abalone sperm attractant. *Journal of Experimental Biology*, v. 205, pp. 1439–1450.

Riffell, J. A., and R. K. Zimmer. 2007. Sex and flow: the consequences of fluid shear for sperm–egg interactions. *Journal of Experimental Biology*, v. 210, pp. 3644–3660.

Riginos, C., K. Hock, A. M. Matias, P. J. Mumby, M. J. H. van Oppen, and V. Lukoschek. 2018. Asymmetric dispersal is a critical element of concordance between biophysical dispersal models and spatial genetic structure in Great Barrier Reef corals. *Diversity and Distributions* doi: 10.1111/ddi.12969

Rivero-Calle, S., Gnanadesikan, A., Del Castillo, C.E., Balch, W.M., Guikema, S. D. 2015. Multidecadal increase in North Atlantic coccolithophores and the potential role of rising CO2 *Science* v. 350, pp. 1533-1537.

Roark, E. B., T. P. Guilderson, R. B. Dunbar, and B. L. Ingram. 2006. Radiocarbon-based ages and growth rates of Hawaiian deep-sea corals. *Marine Ecology Progress Series*, v. 327, pp. 1–14.

Roberts, A. E., D. R. Hill, and E. C. Tifft, Jr. 1982. Evaluation of New York Bight lobsters for PCBs, DDT, petroleum hydrocarbons, mercury, and cadmium. *Bulletin of Environmental Contamination and Toxicology*, v. 29, pp. 711–718.

Roberts, C. M., and N. V. C. Polunin. 1991. Are marine reserves effective in management of reef fisheries? *Reviews of Fish Biology and Fisheries*, v. 1, pp. 65–91.

Roberts, C. M., et al. 2002. Marine biodiversity hotspots and conservation priorities for tropical reefs. *Science*, v. 295, pp. 1280–1284.

Roberts, J. M., A. J. Wheeler, and A. Freiwald. 2006. Reefs of the deep: The biology and geology of cold-water coral ecosystems. *Science*, v. 312, pp. 543–547.

Robertson, A. I., and D. M. Alongi, eds. 1992. *Tropical Mangrove Ecosystems*. Washington, DC: American Geophysical Union.

Robertson, D. R. 1972. Social control of sex reversal in a coral-reef fish. *Science*, v. 177, pp. 1007–1009.

Robison, B. H. 2004. Deep pelagic biology. *Journal of Experimental Marine Biology and Ecology*, v. 300, pp. 253–272.

Robison, B.H., Reisenbichler, K.R., 2008. Macropinna microstoma and the paradox of its tubular eyes. *Copeia*, v. 2008, pp. 780-784.

Robison, B. H., K. R. Reisenbichler, J. C. Hunt, and S. H. D. Haddock. 2003. Light production by the arm-tips of the deep-sea cephalopod *Vampyroteuthis infernalis. Biological Bulletin*, v. 205, pp. 102–109.

Robison, B. H., K. Reisenbichler, and R. E. Sherlock. 2005. Giant larvacean houses: Rapid carbon transport to the deep-sea floor. *Science*, v. 308, pp. 1609–1611.

Robles, C., R. Sherwood-Stephens, and M. Alvarado. 1995. Responses of a key intertidal predator to varying recruitment of its prey. *Ecology*, v. 76, pp. 565–579.

Robles, C., D. Sweetnam, and J. Eminike. 1990. Lobster predation on mussels: Shore-level differences in prey vulnerability and predator preference. *Ecology*, v. 71, pp. 1564–1577.

Rochet, M.-J. 1998. Short term effects of fishing on life history traits of fishes. *ICES Journal of Marine Science*, v. 55, pp. 371–391.

Rode, K.D., Amstrup S.C., Regehr, E.V. 2010. Reduced body size and cub recruitment in polar bears associated with sea ice decline. *Ecological Applications* v. 20, pp. 768-782.

Roff, G. et al. 2016. The Ecological Role of Sharks on Coral Reefs. *Trends in Ecology and Evolution* 31: 395-407.

Rogers, A. D. 1994. The biology of seamounts. *Advances in Marine Biology*, v. 30, pp. 305–350.

Rogers, A. D., P. A. Tyler, D. P. Connelly, J. T. Copley, R. James, et al. 2012. The discovery of new deep-sea hydrothermal vent communities in the Southern Ocean and implications for biogeography. *PLoS Biology*, v. 10, no. 1: e1001234, published online, doi: 10.1371/journal.pbio.1001234

Rogers-Bennett, L., Catton, C.A. 2019. Marine heat wave and multiple stressors tip bull kelp forest to sea urchin barrens. *Sci Rep* 9, 15050. doi: 10.1038/s41598-019-51114-y

Rolton, A., et al. 2016. Effects of field and laboratory exposure to the toxic dinoflagellate *Karenia brevis* on the reproduction of the eastern oyster, *Crassostrea virginica*, and subsequent development of offspring. *Harmful Algae* v. 57, pp.13–26.

Rome, L. C., D. Swank, and D. Corda. 1993. How fish power swimming. *Science*, v. 261, pp. 340–343.

Rosenfeld, D., Sherwood, S., Wood, R., Donner, L. 2014. Climate effects of aerosol-cloud interactions. *Science*, v, 342, pp. 379-380.

Ross, D. A. 1988. *Introduction to Oceanography*, 4th ed. Englewood Cliffs, NJ: Prentice Hall. Ross, J. R. P., ed. 1987. *Bryozoa: Present and Past.* Bellingham, WA: Western Washington University Press.

Rothschild, B. J. 1986. *Dynamics of Fish Populations.* Cambridge, MA: Harvard University Press.

Rothschild, B. J., J. S. Ault, P. Goulletquer, and M. Heral. 1994. Decline of the Chesapeake Bay oyster population: A century of habitat destruction and overfishing. *Marine Ecology Progress Series*, v. 111, pp. 29–39.

Round, F. E., R. M. Crawford, and D. G. Mann. 1990. *The Diatoms. Biology and Morphology of the Genera.* Cambridge: Cambridge University Press.

Rouse, G. W., S. K. Goffredi, and R. C. Vrijenhoek. 2004. *Osedax:* Bone-eating marine worms with dwarf males. *Science*, v. 305, pp. 668–671.

Roux, S., Brum, J., Dutilh, B. et al. 2016. Ecogenomics and potential biogeochemical impacts of globally abundant ocean viruses. *Nature* 537, 689–693. doi: 10.1038/nature19366

Rowan, R. 1998. Diversity and ecology of zooxanthellae on coral reefs. *Journal of Phycology*, v. 34, pp. 407–417.

Rowell, A. J. 1982. The monophyletic origin of the Brachiopoda. *Lethaia*, v. 15, pp. 299–307.

Roy, K., D. Jablonski, J. W. Valentine, and G. Rosenberg. 1998. Marine latitudinal diversity gradients—Tests of causal hypotheses. *Proceedings of the National Academy of Sciences, USA*, v. 95, pp. 3699–3702.

Royal Society of London. 2005. *Ocean Acidification Due to Increasing Atmospheric Carbon Dioxide*. Report, pp. 1–60. Available online.

Rubenstein, D. E., and M. A. R. Koehl. 1977. The mechanisms of filter feeding: Some theoretical considerations. *American Naturalist*, v. 111, pp. 981–994.

Rudwick, M. J. S. 1970. *Living and Fossil Brachiopods.* London: Hutchinson.

Ruhl, H. A., and N. B. Rybicki. 2010. Long-term reductions in anthropogenic nutrients link to improvements in Chesapeake Bay habitat. *Proceedings of the National Academy of Science*, v. 107, pp. 16566–16570.

Ruiz, G. M., J. T. Carlton, E. D. Grosholz, and A. H. Hines. 1997. Global invasions of marine and estuarine habitats by non-indigenous species: Mechanisms, extent, and consequences. *American Zoologist*, v. 37, pp. 621–632.

Ruiz, G. M., P. W. Fofonoff, J. T. Carlton, and M. J. Wonham. 2000. Invasion of coastal marine communities in North America: Apparent patterns, processes and biases. *Annual Review of Ecology and Systematics*, v. 31, pp. 481–531.

Ruppert, E. E., and R. D. Barnes. 1994. *Invertebrate Zoology*, 6th ed. Philadelphia: Saunders.

Rusch, D. B., et al. 2007. Th e Sorcerer II Global Ocean Sampling Expedition: Northwest Atlantic through Eastern Tropical Pacific. *PLoS Biology*, v. 5, p. 398–431.

Russell, R. J. 1967. Origins of estuaries. In G. H. Lauff, ed., *Estuaries*, Publication 83. Washington, DC: American Association for the Advancement of Science, pp. 63–70.

Russell-Hunter, W. D. 1970. *Aquatic Productivity.* London: Macmillan.

Russell-Hunter, W. D. 1979. *A Life of Invertebrates.* New York: Macmillan.

Rützler, K., D. L. Santavy, and A. Antonius. 1983. The black band disease of Atlantic reef corals. III. Distribution, ecology, and development. *Marine Ecology*, v. 4, pp. 329–358.

Ryland, J. S. 1970. *Bryozoans.* London: Hutchinson.

Ryther, J. G., and W. M. Dunstan. 1971. Nitrogen, phosphorus and eutrophication in the coastal marine environment. *Science*, v. 171, pp. 1008–1013.

Ryther, J. H. 1969. Photosynthesis and fish production in the sea. *Science*, v. 166, pp. 72–76.

**S**

Saeedi, H., Simoes, M. & Brandt, A. 2019. Endemicity and community composition of marine species along the NW Pacific and the adjacent Arctic Ocean. *Progress in Oceanography,* 178, 102199. doi: 10.1016/j.pocean.2019.102199

Saenger, P. 1998. Mangrove vegetation: An evolutionary perspective. *Marine and Freshwater Research*, v. 49, pp. 277–286.

Saenger, P. 2002. *Mangrove Ecology, Silviculture, and Conservation*. Dordrecht, The Netherlands: Kluwer Academic.

Saenger, P., and S. C. Snedaker. 1993. Pantropical trends in mangrove above-ground biomass and annual litterfall. *Oecologia*, v. 96, pp. 293–299.

Sáenz-Arroyo, A., C. M. Roberts, J. Torre, M. Cariño-Olvera, and J. P. Hawkins. 2006. The value of evidence about past abundance: Marine fauna of the Gulf of California through the eyes of 16th to 19th century travellers. *Fish and Fisheries*, v. 7, pp. 128–146.

Sagarin, R. D., J. P. Barry, S. E. Gilman, and C. H. Baxter. 1999. Climate-related change in intertidal community over short and long-time scales. *Ecological Monographs*, v. 69, pp.465–490.

Saito, H., and K. Osako. 2007. Confirmation of a new food chain utilizing geothermal energy: Unusual fatty acids of a deep-sea bivalve, *Calyptogena phaseoliformis. Limnology and Oceanography*, v. 52, pp. 1910–1918.

Saiz, E., Kiorboe. 1995 Predatory and suspension feeding of the copepod Acartia tonsa in turbulent environments. *Marine Ecology Progress Series* v. 122, pp. 147-158.

Sakashita, H. 1992. Sexual dimorphism and food habits of the clingfish *Diademichthys lineatus*, and its dependence on host sea urchin. *Environmental Biology of Fishes*, v. 34, pp. 95–101.

Salazar, G. et al. 2019. Gene expression changes and community turnover differentially shape the global ocean metatranscriptome. Cell 179, 1068–1083.e21.

Sale, P. F. 1977. Maintenance of high diversity in coral reef fish communities. *American Naturalist*, v. 3, pp. 337–359.

Sale, P. F., ed. 1991. *The Ecology of Fishes on Coral Reefs.* San Diego, CA: Academic Press. Saloniemi, I. 1993. An environmental explanation for the character displacement pattern in *Hydrobia* snails. *Oikos*, v. 67, pp. 75–80.

Salta, M., et al. 2010. Designing biomimetic antifouling surfaces. *Philosophical Transactions of the Royal Society*. v. 368, pp. 4729-4754.

Saltonstall, K. 2002. Cryptic invasion by a non-native genotype of the common reed, *Phragmites australis*, into North America. *Proceedings of the National Academy of Sciences USA*, v. 99, pp. 2445–2449.

Saltonstall, K., and J. C. Stevenson. 2007. The effect of nutrients on seedling growth of native and introduced *Phragmites australis*. *Aquatic Botany*, v. 86, pp. 331–336.

Sami, S., M. Faisal, and R. J. Huggett. 1993. Effects of laboratory exposure to sediments contaminated with polycyclic aromatic hydrocarbons on the hemocytes of the American oyster *Crassostrea virginica. Marine Environmental Research*, v. 35, pp. 131–135.

Sammarco, P. W. 1982a. Echinoid grazing as a structuring force in coral communities: Whole reef manipulations. *Journal of Experimental Marine Biology and Ecology*, v. 61, pp. 31–55.

Sammarco, P. W. 1982b. Effects of grazing by *Diadema antillarum* Philippi (Echinodermata: Echinoidea) on algal diversity and community structure. *Journal of Experimental Marine Biology and Ecology*, v. 65, pp. 83–105.

Sammarco, P. W. 1988. Localized dispersal and recruitment in Great Barrier Reef corals: The Helix experiment. *Science*, v. 239, pp. 1422–1424.

Sammarco, P. W. 1991. Geographically specific recruitment and postsettlement mortality as influences on coral communities: The cross-continental shelf transplant experiment. *Limnology and Oceanography*, v. 36, pp. 496–514.

Sammarco, P. W., and M. L. Heron, eds. 1994. *The Bio-Physics of Marine Larval Dispersal.* Washington, DC: American Geophysical Union.

Sanders, H. L. 1958. Benthic studies in Buzzards Bay. I. Animal–sediment relationships. *Limnology and Oceanography*, v. 3, pp. 245–258.

Sanders, H. L. 1959. Benthic marine diversity and the stability-time hypothesis. *Brookhaven Symposia in Biology*, v. 22, pp. 71–81.

Sanders, H. L. 1968. Marine benthic diversity: A comparative study. *American Naturalist*, v. 102, pp. 243–282.

Sanders, H. L., J. F. Grassle, G. R. Hampson, L. S. Morse, S. Garner-Price, and C. C. Jones. 1980. Anatomy of an oil spill: Long-term effects from the grounding of the barge *Florida* off West Falmouth, Massachusetts. *Journal of Marine Research*, v. 38, pp. 265–380.

Sanders, H. L., and R. R. Hessler. 1969. Ecology of the deep-sea benthos. *Science*, v. 163, pp. 1419–1424.

Sanders, H. L., R. R. Hessler, and G. R. Hampson. 1965. An introduction to the study of deep- sea benthic faunal assemblages along the Gay Head–Bermuda transect. *Deep-Sea Research*, v. 12, pp. 845–867.

Sanders, H. L., P. C. Mangelsdorf, and G. R. Hampson. 1965. Salinity and faunal distribution in the Pocasset River, Massachusetts. *Limnology and Oceanography*, v. 10, pp. R216–R229.

Sanders, W. B., R. L. Moe, and C. Ascaso. 2004. The intertidal marine lichen formed by the pyrenomycete fungus *Verrucaria tavaresiae* (Ascomycotina) and the brown alga *Petroderma maculiforme* (Phaeophyceae): Thallus organization and symbiont interaction. *American Journal of Botany*, v. 91, pp. 511–522.

Sanderson, S. L., J. J. Cech, Jr., and M. R. Patterson. 1991. Fluid dynamics in suspension- feeding blackfish. *Science*, v. 251, pp. 1346–1348.

Sanderson, S. L., and R. Wassersug. 1990. Suspension-feeding vertebrates. *Scientific American*, v. 262(3), pp. 96–101.

Sandin, S. A., et al. 2008. Baselines and degradation of coral reefs in the Northern Line Islands. *PLoS ONE*, v. 3, no. 2: e1548, published online, doi: 10.1371/journal.pone.0001548

Sanford, E., S. B. Holzman, R. A. Haney, D. M. Rand, and M. D. Bertness. 2006. Larval tolerance, gene flow, and the northern geographic range limit of fiddler crabs. *Ecology*, v. 87, pp. 2882–2894.

Sapp, J. 1999. *What Is Natural? Coral Reef Crisis.* New York: Oxford University Press.

Sarjeant, W. A. S. 1974. *Fossil and Living Dinoflagellates.* London: Academic Press.

Sarmiento, J. L., et al. 2004. Response of ocean ecosystems to climate warming. *Global Biogeochemical Cycles*, v. 18, GB3003, published online, doi: 10.1029/2003GB002134.

Sato, M., Jumars, P.A. 2008. Seasonal and vertical variations in emergence behaviors of *Neomysis americana*. Limnology and Oceanography, v. 53, pp. 1665–1677.

Sato, Y., Civiello, M., Bell, S. C., Willis, B. L., and Bourne, D. G. 2016. Integrated approach to understanding the onset and pathogenesis of black band disease in corals. *Environmental Microbiology* v. 18, pp. 752-765.

Sawada, H., H. Yokosawa, and C. C. Lambert, eds. 2000. *The Biology of Ascidians.* New York: Springer.

Schaefer, M.B., 1954. Some aspects of the dynamics of populations important to the management of the commercial marine fisheries. *Bulletin of the Inter-American Tropical Tuna Commission* 1: 25–56.

Schaeff, C. M., S. D. Kraus, M. W. Brown, and G. N. White. 1993. Assessment of the population structure of western North Atlantic right whales (*Eubalaena glacialis*). *Canadian Journal of Zoology*, v. 71, pp. 339–345.

Scheffer, M., S. Rinaldi, J. Huisman, and F. J. Weissing. 2003. Why plankton communities have no equilibrium: Solutions to the paradox. *Hydrobiologia*, v. 491, pp. 9–18.

Scheltema, R. S. 1971. Larval dispersal as a means of genetic exchange between geographically separated populations of shallow-water benthic marine gastropods. *Biological Bulletin*, v. 140, pp. 284–322.

Scheltema, R. S. 1989. Planktonic and non-planktonic development among prosobranch gastropods and its relationship to the geographic range of species. In J. S. Ryland and P. A. Tyler, eds., *Reproduction, Genetics, and Distributions of Marine Organisms*, 23rd European Marine Biology Symposium. Fredensborg, Denmark: Olsen and Olsen, pp. 183–188.

Schiffbauer, J. F., Huntley, J. W., O’Neil, G. R., Darroch, S. A. F. & Cai, Y. The latest Ediacaran wormworld fauna: Setting the ecological stage for the Cambrian explosion. *GSA Today,* 26, doi: 10.1130/GSATG265A.1

Schimmel, S. C., J. M. Patrick, Jr., L. F. Faas, J. S. Oglesby, and A. J. Wilson, Jr. 1979.

Kepone®: Toxicity and bioaccumulation in blue crabs. *Estuaries*, v. 2, pp. 9–15. Schindler, D. 2006. Recent advances in the understanding and management of eutrophication. *Limnology and Oceanography*, v. 51, pp. 356–363.

Schmidt, J. 1920. Experiments with *Zoarces viviparus* L. *Comptes Rendus des Travaux du Laboratoire Carlsberg*, v. 14, pp. 1–14.

Schmidt-Nielsen, K. 1975. *Animal Physiology.* Cambridge: Cambridge University Press.

Schmitz, L., R. Motani, C. E. Oufiero, C. H. Martin, M. McGee, A. R. Gamarra, J. J. Lee, and P. C. Wainwright. 2013. Allometry indicates giant eyes of giant squid are not exceptional. *BMC Evolutionary Biology*. http://www.biomedcentral.com/1471-2148/13/45

Schneider, D. C. 1978. Equalisation of prey numbers by migratory shorebirds. *Nature*, v. 271, pp. 353–354.

Schneider, D. C. 1983. Seabirds and shorebirds. *Oceanus*, v. 26, pp. 38–43.

Scholander, P. F., L. Van Dam, and S. I. Scholander. 1955. Gas exchange in the roots of mangroves. *American Journal of Botany*, v. 42, pp. 92–98.

Schram, F. R., ed. 1986. *Crustacea.* New York: Oxford University Press.

Schroeder, P. C., and C. O. Herman. 1975. Annelida: Polychaeta. In A. C. Giese and J. S. Pearse, eds., *Reproduction of Marine Invertebrates*, v. 3. New York: Academic Press, pp. 1–214.

Schubart, C., R. Diesel, and S. B. Hedges. 1998. Rapid evolution to terrestrial life in Jamaican crabs. *Nature*, v. 393, pp. 363–365.

Schulte, D. M., R. P. Burke, and R. N. Lipcius. 2009. Unprecedented restoration of a native oyster metapopulation. *Science*, v. 325, pp. 1124–1128.

Schultz, R.A., Anisfeld, C., Hill. T.D. 2016. Submergences and herbivory as divergent causes of marsh loss in Long Island Sound. *Estuaries and Coasts*, V. 39, pp. 1367–1375.

Schwacke, L.H. et al. 2014. Health of common bottlenose dolphins (*Tursiops truncatus*) in Barataria Bay, Louisiana, following the *Deepwater Horizon* oil spill. *Environmental Science and Technology*, v. 48, pp. 98-103.

Schwinghammer, P., D. C. Gordon, Jr., T. W. Rowell, J. Prena, D. L. McKeown, and G. Shotten, R., eds. 2001. *Case Studies on the Allocation of Transferrable Quota Rights in Fisheries.* FAO Technical Paper no. 411, pp. 1–373. Rome: Food and Agriculture Organization, United Nations.

Schwinghammer, P., D C. Gordon, Jr., T. W. Rowell, J. Prena, D. L. McKeown, G. Sonnichsen, and J. Y. Guigné. 1998. Effects of experimental otter trawling on surficial sediment properties of a sandy-bottom ecosystem on the Grand Banks of Newfoundland. *Conservation Biology*, v. 12, pp. 1215–1222.

Scott, K.M. 2005. Allometry of gill weights, gill surface areas, and foot biomass d13C values of the chemoautotroph–bivalve symbiosis *Solemya velum*. *Marine Biology* 147: 935–941.

Scott, K. M., and C. M. Cavanaugh. 2007. CO2 uptake and fixation by endosymbiotic chemoautotrophs from the bivalve *Solemya velum. Applied and Environmental Microbiology*, v. 73, pp. 1174–1179.

Sebens, K. P. 1986. Spatial relationships among encrusting marine organisms in the New England subtidal zone. *Ecological Monographs*, v. 56, pp. 73–96.

Sebert, P. 2002. Fish at high pressure: A hundred-year history. *Comparative Biochemistry and Physiology A*, v. 131, pp. 575–585.

Seeley, R. H. 1986. Intense natural selection causes a rapid morphological transition in a living marine snail. *Proceedings of the National Academy of Sciences (USA)*, v. 83, pp. 6897–6901.

Segovia, N. I., Gonzalez-Wevar, C. A. & Haye, P. A. 2020. Signatures of local adaptation in the spatial genetic structure of the ascidian Pyura chilensis along the southeast Pacific coast. *Scientific Reports,* doi: 10.1038/s41598-020-70798-1

Seibold, E., and W. H. Berger. 1996. *The Sea Floor: An Introduction to Marine Geology.* Berlin: Springer-Verlag.

Sepkoski, J. J., Jr. 1984. A kinetic model of Phanerozoic taxonomic diversity. III. Post-Paleozoic families and mass extinctions. *Paleobiology*, v. 10, pp. 246–267.

Serrao, E. A., G. Pearson, L. Kautsky, and S. H. Brawley. 1996. Successful external fertilization in turbulent environments. *Proceedings of the National Academy of Science*, v. 93, pp. 5286–5290.

Sfakiotakis, M., D. M. Lane, and J. B. C. Davies. 1999. Review of fish swimming modes for aquatic locomotion. *IEEE Journal of Ocean Engineering*, v. 24, pp. 237–252.

Shadwick, R. E., and G. V. Lauder. 2006. *Fish Biomechanics.* London: Elsevier Academic Press.

Shanks, A.L. 2009. Pelagic Larval Duration and Dispersal Distance Revisited. *Biological Bulletin* v. 216, pp. 373-385.

Shanks, A. L. 1983. Surface slicks associated with tidally forced internal waves may transport pelagic larvae of benthic invertebrates and fishes shoreward. *Marine Ecology—Progress Series*, v. 13, pp. 311–315.

Shanks, A. L., and M. L. Reeder. 1993. Reducing microzones and sulfide production in marine snow. *Marine Ecology—Progress Series*, v. 96, pp. 43–47.

Shapiro, L. P., L. Campbell, and E. M. Haugen. 1989. Immunochemical recognition of phytoplankton species. *Marine Ecology Progress Series*, v. 57, pp. 219–224.

Shaw, D. G. 1992. The *Exxon Valdez* oil-spill: Ecological and social consequences. *Environmental Conservation*, v. 19, pp. 253–258.

Shen, G. T., E. A. Boyle, and D. W. Lea. 1987. Cadmium in corals as a tracer of historical upwelling and industrial fallout. *Nature*, v. 328, pp. 794–796.

Sheppard, M., A. Walker, M. E. Erischer, and R. E. Lee. 2003. Histopathology and prevalence of the parasitic dinoflagellate, *Hematodinium* sp., in crabs (*Callinectes sapidus, Callinectes similis, Neopanope sayi, Libinia emarginata, Menippe mercenaria*) from a Georgia estuary. *Journal of Shellfish Research,* v. 22, pp. 873–880.

Sherman, I. W., and V. G. Sherman. 1976. *The Invertebrates: Function and Form*, 2nd ed. New York: Macmillan.

Shimeta, J. S., and P. A. Jumars. 1991. Physical mechanisms and rates of particle capture by suspension feeders. *Oceanography and Marine Biology Annual Review*, v. 29, pp. 191–257.

Short, F. T., and D. M. Burdick. 1996. Quantifying eelgrass habitat loss in relation to housing development and nitrogen loading in Waquoit Bay, Massachusetts. *Estuaries*, v. 19, pp. 730–739.

Short, F. T., D. M. Burdick, and J. E. Kaldy III. 1995. Mesocosm experiments quantify the effects of eutrophication on eelgrass, *Zostera marina*. *Limnology and Oceanography*, v. 40, pp. 740–749.

Shotton, R. 2001. Initial allocation of quota rights: The Australian southeast trawl fishery story, *FAO Fisheries Technical Paper*, v. 411, pp. 187–201.

Shumway, S. E. 1990. A review of the effects of algal blooms on shellfish and aquaculture. *Journal of the World Aquaculture Society*, v. 21, pp. 65–104.

Shumway, S. E., T. L. Cucci, R. C. Newell, and C. M. Yentsch. 1985. Particle selection, ingestion, and absorption in filter-feeding bivalves. *Journal of Experimental Marine Biology and Ecology*, v. 91, pp. 77–92.

Sibuet, M., and K. Olu. 1998. Biogeography, biodiversity and fluid dependence of deep-sea cold- seep communities at active and passive margins. *Deep Sea Research II*, v. 45, pp. 517–567.

Siebenaller, J. F. 1987. Pressure adaptation in deep-sea animals. In H. W. Jannasch, R. E. Marquis, and A. M. Zimmerman, eds., *Current Perspectives in High Pressure Biology.* London: Academic Press, pp. 33–48.

Siebenaller, J. F. 1991. Pressure as an environmental variable: Magnitude and mechanisms of perturbation. In Hochachka, P. W., and T. P. Mommsen, eds., *Biochemistry and Molecular Biology of Fishes*, v. 1. Amsterdam: Elsevier, pp. 323–343.

Siebenaller, J. F. 2003. Pressure effects on the GTPase activity of brain membrane G proteins of deep-living marine fishes. *Comparative Biochemistry and Physiology B*, v. 135, pp. 697–705.

Sieburth, J. McN. 1979. *Sea Microbes.* New York: Oxford University Press.

Siegel, V. & Loeb, V. 1995. Recruitment of Antarctic krill Euphausia superba and possible causes for its variability. *Marine Ecology-Progress Series*, v. 123, pp. 45–56.

Silliman, B. R., et al. 2012. Degradation and resilience in Louisiana salt marshes after the BP– Deepwater Horizon oil spill. *Proceedings of the National Academy of Science*, v. 109, pp. 11234–11239.

Silliman, B. R., and S. Y. Newell. 2003. Fungal farming in a snail. *Proceedings of the National Academy of Science, USA*, v. 100, pp. 15643–15648.

Silliman, B. R., J. Van der Koppel, M. D. Bertness, L. E. Stanton, and I. A. Mendelsohn. 2005. Drought, snails, and large-scale die-off of southern U.S. salt marshes. *Science*, v. 310, pp. 1803–1806.

Silliman, B. R., and J. C. Zieman. 2001. Top-down control of *Spartina alterniflora* production by periwinkle grazing in a Virginia marsh. *Ecology*, v. 82, pp. 2830–2843.

Sizwanto, E., Honda, M.C., Matsumoto, K., Sasai, Y., Fujiki, T., Sasaoka, K., Saino, T. 2016. Sixteen-year phytoplankton biomass trends in the northwestern Pacific Ocean observed by the SeaWiFS and MODIS ocean color sensors. *en* v. 72, pp. 479-489.

Smale, D.A. 2019. Impacts of ocean warming on kelp forest ecosystems. *New Phytologist* 225: 1447–1454. doi: 10.1111/nph.16107

Smee, D. L., and M. J. Weissburg. 2006. Clamming up: Environmental forces diminish the perceptive ability of bivalve prey. *Ecology*, v. 87, pp. 1587–1598.

Smetacek, V. and Nicol, S. 2005. Polar ocean ecosystems in a changing world. *Nature* v. 437, pp. 362-368.

Smith, A. B. 1984. Classification of the Echinodermata. *Palaeontology*, v. 27, pp. 431–459.

Smith, A. B. 1999. Dating the origin of metazoan body plans. *Evolution and Development*, v. 1, pp. 138–142.

Smith, C. R. 1985. Food for the deep-sea: Utilization, dispersal and flux of nekton falls at the Santa Catalina Basin floor. *Deep-Sea Research*, v. 32, pp. 417–422.

Smith, C. R., and A. R. Baco. 2003. Ecology of whale falls at the deep-sea floor. *Oceanography and Marine Biology: Annual Review*, v. 41, pp. 311–354.

Smith, C. R., Glover, A. G., Treude, T., Higgs, N. D., Amon, D. J. 2015. Whale fall ecosystems: Recent insights into ecology, paleoecology, and evolution. *Annu. Rev. Mar. Sci*. 7: 571–596.

Smith, F. G. W. 1941. Sponge disease in British Honduras, and its transmission by water currents. *Ecology*, v. 22, pp. 415–421.

Smith, F., and J. D. Witman. 1999. Species diversity in subtidal landscapes: Maintenance by physical processes and larval recruitment. *Ecology*, v. 80, pp. 51–69.

Smith, F.G.W., 1941. Sponge disease in British Honduras, and its transmission by water currents. *Ecology* v. 22, pp.415–421.

Smith, L. D., J. J. Wonham, L. D. McCann, G. M. Ruiz, A. H. Hines, and J. T. Carlton. 1999. Invasion pressure to a ballast-flooded estuary and an assessment of inoculant survival. *Biological Invasions*, v. 1, pp. 67–87.

Smith, R. C., B. B. Prezelin, K. S. Baker, R. R. Bidigare, N. P. Boucher, T. Coley, D. Karentz, S. MacIntyre, H. A. Matlick, D. Menzies, M. Ondrusek, Z. Wan, and K. J. Waters. 1992. Ozone depletion: Ultraviolet radiation and phytoplankton biology in Antarctic waters. *Science*, v. 255, pp. 952–959.

Smits, S.L., Bodewes, R., Ruiz-Gonzales, A., Baumgartner, W., Koopmans, M.P., Osterhaus, A.D.M.E., and Schurch, A.C. 2014. Assembly of viral genomes from metagenomes. *Frontiers in Microbiology* v. 5, pp.1-10.

Sokal, R. R., and F. J. Rohlf. 2011. *Biometry*, 4th ed. New York: W. H. Freeman.

Sogin, M.L. et al. 2006. Microbial diversity in the deep sea and the underexplored “rare biosphere”. *Proceedings of the National Academy of Sciences USA*, v. 103, p. 12115-12120.

Somero, G. N. 1995. Proteins and temperature. *Annual Review of Physiology*, v. 57, pp. 43–68.

Sorte, C. J. B., Bernatchez, G., Mislan, K.A.S., Pandori, L. L. M., Silbiger, N. J. & Wallingford, P. D. 2019. Thermal tolerance limits as indicators of current and future intertidal zonation patterns in a diverse mussel guild. *Marine Biology,* 166: 6. doi: 10.1007/s00227-018-3452-6

Sotka, E. E., J. P. Wares, J. A. Barth, R. K. Grosberg, and S. R. Palumbi. 2004. Strong genetic clines and geographical variation in gene flow in the rocky intertidal barnacle *Balanus glandula. Molecular Ecology*, v. 13, pp. 2143–2156.

Sousa, W. P. 1979a. Disturbance in marine intertidal boulder fields: The nonequilibrium maintenance of species diversity. *Ecology*, v. 60, pp. 1225–1239.

Sousa, W. P. 1979b. Experimental investigations of disturbance and ecological succession in a rocky intertidal algal community. *Ecological Monographs*, v. 49, pp. 227–254.

Sousa, W. P. 1984. The role of disturbance in natural communities. *Annual Review of Ecology and Systematics*, v. 15, pp. 353–391.

Sousa, W. P. 1993. Interspecific antagonism and species coexistence in a diverse guild of larval trematode parasites. *Ecological Monographs*, v. 63, pp. 103–128.

South, G. R., and A. Whittick. 1987. *Introduction to Phycology.* Oxford: Blackwell Scientific.

Southward, A. J. 1964. The relationship between temperature and rhythmic cirral activity in some Cirripedia considered in connection with their geographical distribution. *Helgolénder Wissenschaften Meeresuntersuchungen*, v. 10, pp. 391–403.

Southward, E. C. 1961. *Pogonophora.* Leiden: Brill.

Southward, E. C. 1988. Development of the gut and segmentation of newly settled stages of *Ridgeia* (Vestimentifera): Implications for relationship between Vestimentifera and Pogonophora. *Journal of the Marine Biological Association of the United Kingdom*, v. 68, pp. 465–487.

Speiser, D. I., Eernisse, D. J., and Johnsen, S. 2011. A Chiton Uses Aragonite Lenses to Form Images. *Current Biology* v. 21, pp. 665–670.

Srivastava, M., et al. 2008. The Trichoplax genome and the nature of placozoans. *Nature*, v. 454, pp. 955–961.

Stachowicz, J. J. 2001. Mutualism, facilitation and the structure of ecological communities. *BioScience*, v. 51, pp. 235–246.

Stachowicz, J. J., J. R. Terwin, R. B. Whitlatch, and R. W. Osman. 2002. Linking climate change and biological invasions: Ocean warming facilitates nonindigenous species invasions. *Proceedings of the National Academy of Sciences USA*, v. 99, pp. 15497–15500.

Stachowicz, J. J., R. B. Whitlatch, and R. W. Osman. 1999. Species diversity and invasion resistance in a marine ecosystem. *Science*, v. 286, pp. 1577–1579.

Stafford-Smith, M. G., and R. F. G. Ormond. 1992. Sediment-rejection methods of 42 species of Australian scleractinian corals. *Australian Journal of Marine and Freshwater Research*, v. 43, pp. 683–705.

Staley, C., and Sadowsky, M. 2016. Application of metagenomics to assess microbial communities in water and other environmental matrices. *Journal of the Marine Biological Association U.K.* v. 96, pp. 121-129.

Standora, E. A., and J. R. Spotilla. 1985. Temperature-dependent sex determination in sea turtles. *Copeia*, v. 1985, pp. 711–722.

Starr, M., J. H. Himmelman, and J.-C. Therriault. 1990. Direct coupling of marine invertebrate spawning with phytoplankton blooms. *Science*, v. 247, pp. 1071–1074.

Stearns, S. C. 1976. Life history tactics: A review of the ideas. *Quarterly Review of Biology*, v. 51, pp. 3–47.

Steele, J. H. 1974. *The Structure of Marine Ecosystems.* Cambridge, MA: Harvard University Press.

Stehli, F. G., A. L. McAlester, and C. E. Helsley. 1967. Taxonomic diversity of Recent bivalves and some implications for geology. *Geological Society of America Bulletin*, v. 78, pp. 455–466.

Stehli, F. G., and J. W. Wells. 1971. Diversity and age patterns in hermatypic corals. *Systematic Zoology*, v. 20, pp. 115–126.

Steinberg, P. D. 1985. Feeding preferences of *Tegula funebralis* and chemical defenses of marine brown algae. *Ecological Monographs*, v. 55, pp. 333–349.

Steinberg, P. D., J. A. Estes, and F. C. Winter. 1995. Evolutionary consequences of food chain length in kelp forest communities. *Proceedings of the National Academy of Sciences USA*, v. 92, pp. 8145–8148.

Steinberg, P. D., and I. van Altena. 1992. Tolerance of marine invertebrate herbivores to brown algal phlorotannins in temperate Australasia. *Ecological Monographs*, v. 62, pp. 189–222.

Steneck, R. S., and J. T. Carlton. 2001. Human alterations of marine communities: Students beware! In M. D. Bertness, S. D. Gaines, and M. E. Hay, eds., *Marine Community Ecology.* Sunderland, MA: Sinauer Associates, pp. 445–468.

Steneck, R. S., and L. Watling. 1982. Feeding capabilities and limitations of herbivorous molluscs: A functional group approach. *Marine Biology*, v. 68, pp. 299–319.

Steneck, R. S., S. D. Hacker, and M. N. Dethier. 1991. Mechanisms of competitive dominance between crustose coralline algae: An herbivore-mediated competitive reversal. *Ecology*, v. 72, pp. 938–950.

Steneck, R. S., J. Vanrinec, and A. V. Leland. 2004. Accelerating trophic-level dysfunction in kelp forest ecosystems of the western North Atlantic. *Ecosystems*, v. 7, pp. 323–332.

Stephens, E. G., and M. D. Bertness. 1991. Mussel facilitation of barnacle survival in a sheltered bay habitat. *Journal of Experimental Marine Biology and Ecology*, v. 145, pp. 33–48.

Stephenson, T. A., and A. Stephenson. 1972. *Life Between Tidemarks on Rocky Shores*. San Francisco: W. H. Freeman.

Sternberg, L., S. Y. The, S. M. L. Ewe, F. Miralles-Wilhalm, and D. L. DeAngelis. 2007. Competition between hardwood hammocks and mangroves. *Ecosystems*, v. 10, pp. 648–660.

Stewart, F. J., and C. M. Cavanaugh. 2006. Bacterial endosymbioses in *Solemya* (Mollusca: Bivalvia)—Model systems for studies of symbiont–host adaptation. *Antonie van Leeuwenhoek*, v. 90, pp. 343–360.

Stiasny MH, Mittermayer FH, Sswat M, Voss R, Jutfelt F, Chierici M, et al. 2016. Ocean Acidification Effects on Atlantic Cod Larval Survival and Recruitment to the Fished Population. PLoS ONE 11(8): e0155448. doi: 10.1371/journal.pone.0155448

Stillman, J. H. 2002. Causes and consequences of thermal tolerance limits in rocky intertidal porcelain crabs, genus *Petrolisthes*. *Integrative and Comparative Biology*, v. 42, pp. 790-796.

Stock, C. A., D. J. McGillicuddy, A. R. Solow, and D. M. Anderson. 2005. Evaluating hypotheses for the initiation and development of *Alexandrium fundyense* blooms in the western Gulf of Maine using a coupled physical-biological model. *Deep-Sea Research II*, v. 52, pp. 2715–2744.

Stock, C.A., John, J.G. et al. 2017. Reconciling fisheries catch and ocean productivity. *Proceedings of the National Academy of Sciences USA*. doi: 10.1073/pnas.1610238114.

Stoecker, D. 1978. Resistance of a tunicate to fouling. *Biological Bulletin*, v. 155, pp. 615–626.

Stoecker, D. K., and J. M. Capuzzo. 1990. Predation on protozoa: Its importance to zooplankton. *Journal of Plankton Research*, v. 12, pp. 891–908.

Stommel, H. 1966. *The Gulf Stream.* Berkeley: University of California Press.

Stone, H. H., S. Gavarisa, C. M. Legault, J. D. Neilsona, and S. X. Cadrin. 2004. Collapse and recovery of the yellowtail flounder (*Limanda ferruginea*) fishery on Georges Bank. *Journal of Sea Research*, v. 51, pp. 261–270.

Stoner, A. W. 1980. The role of seagrasses in the organization of benthic macrofaunal assemblages. *Bulletin of Marine Science*, v. 30, pp. 537–551.

Stramma, L., Johnson, G.C., Sprintall, J., Mohrholz, V. 2008. Expanding oxygen minimum zones in the tropical oceans. *Science* v. 320, pp. 655-658.

Stramma, L., Prince, E.D., Schmidtko, S., Luo, J., Hoolihan, J.P., Visbeck, M., Wallace, D.W.R., Brandt, P, Körtzinger, A. 2012. Expansion of oxygen minimum zones may reduce available habitat for tropical pelagic fishes. Nature Climate Change v. 2, pp. 33-37.

Strathmann, R. R. 1974. The spread of sibling larvae of sedentary marine invertebrates. *American Naturalist*, v. 108, pp. 29–44.

Strathmann, R. R. 1985. Feeding and nonfeeding larval development and life-history evolution in marine invertebrates. *Annual Review of Ecology and Systematics*, v. 16, pp. 339–361.

Strathmann, R. R. 1987. Larval feeding. In A. C. Giese, J. C. Pearse, and V. B. Pearse, eds., *Reproduction of Marine Invertebrates*, v. IX: *General Aspects: Seeking Unity in Diversity.* Palo Alto, CA: Blackwell Scientific, pp. 465–550.

Strayer, D. L. 1991. Projected distribution of the zebra mussel, *Dreissena polymorpha*, in North America. *Canadian Journal of Fisheries and Aquatic Sciences*, v. 48, pp. 1389–1395.

Strayer, D. L. 2006. Alien species in the Hudson River. In J. S. Levinton and J. R. Waldman, eds., *The Hudson River Estuary*. New York: Cambridge University Press, pp. 296–310.

Strickland, J. D. H. 1965. Production of organic matter in the primary stages of the marine food chain. In J. P. Riley and G. Skirrow, eds., *Chemical Oceanography*, v. 1. London: Academic Press, pp. 477–610.

Strove, J., and M. Serreze. 2008. Arctic sea ice extent plummets in 2007. *Eos*, v. 89, pp. 13–20.

Stroeve, J. C., Serreze, M.C., Holland, M.M., Kay, J.E., Malanik, J., Barrett, A.P. 2012. The Arctic’s rapidly shrinking sea ice cover: a research synthesis. *Climatic Change* v. 110, pp. 1005–1027.

Strychar, K. B., M. Coates, P. W. Sammarco, and T. J. Piva. 2004. Bleaching as a pathogenic response in scleractinian corals, evidenced by high concentrations apoptotic and necrotic zooxanthellae. *Journal of Experimental Marine Biology and Ecology*, v. 304, pp. 99–121.

Sturmbauer, C., J. S. Levinton, and J. Christy. 1996. Molecular phylogeny analysis of fiddler crabs: Test of the hypothesis of increasing behavioral complexity in evolution. *Proceedings of the National Academy of Sciences, USA*, v. 93, pp. 10855–10857.

Styan, C. A. 1998. Polyspermy, egg size, and the fertilization kinetics of free-spawning marine invertebrates. *American Naturalist*, v. 152, pp. 290–297.

Subba Rao, D. V., M. A. Quilliam, and R. Pocklington. 1988. Domoic acid—A neurotoxic amino acid produced by the marine diatom *Nitszchia pungens* in culture. *Canadian Journal of Fisheries and Aquatic Science,* v. 45, pp. 2076–2079.

Suchanek, T. H. 1981. The role of disturbance in the evolution of life histories in the intertidal mussels *Mytilus edulis* and *Mytilus californianus*. *Oecologia*, v. 50, pp. 143–152.

Suchanek, T. H. 1983. Control of seagrass communities and sediment distribution by *Callianassa* (Crustacea, Thalassinidae) bioturbation. *Journal of Marine Research*, v. 41, pp. 281–298.

Summers, A. P., R. A. Ketchum, and T. Rowe. 2004. Structure and function of the horn shark (*Heterodontus francisci*) cranium through ontogeny: Development of a hard prey specialist. *Journal of Morphology*, v. 260, pp. 1–12.

Sun, M. Y., M. L. Carroll, W. G. Ambrose, L. M. Clough, L. Zou, and G. R. Lopez. 2007. Rapid consumption of phytoplankton and ice algae by Arctic soft-sediment benthic communities: Evidence using natural and C-13-labeled food materials. *Journal of Marine Research*, v. 65, 561–588.

Sundby, S., T. Dristiansen, and S. J. Bograd. 2015. The principles of buoyancy in marine fish eggs and their vertical distributions across the world oceans. *PLoS One*. doi: [10.1371/journal.pone.0138821](https://dx.doi.org/10.1371%2Fjournal.pone.0138821)

Sunderland, E. M., D. P. Krabbenhoft, J. W. Moreau, S. A. Strode, and W. M. Landing. 2009. Mercury sources, distribution, and bioavailability in the North Pacific Ocean: Insights from data and models. *Global Biogeochemical Cycles*, v. 23, GB2010, published online, doi: 10.1029/2008GB003425

Sussarellu, R., Suquet, M., Thomas, Y., Lambert, C. Fabioux, C. Pernet, M. E. J., Le Goïc, N., Quillien, V., Mingant, C. K. Epelboin, Y., Corporeau, C., Guyomarch, Robbens, J., Paul-Pont, I., Soudant, P. and Huvet, A. 2016. Oyster reproduction is affected by exposure to polystyrene microplastics. *Proceedings of the National Academy of Sciences* v. 113, pp. 2430-2435.

Sutherland, J. 1974. Multiple stable points in natural communities. *American Naturalist*, v. 108, pp. 859–873.

Sutherland, K. P., J. W. Porter, and C. Torres. 2004. Disease and immunity in Caribbean and Indo-Pacific zooxanthellate corals. *Marine Ecology Progress Series*, v. 266, pp. 273–302.

Sutherland, K. P., S. Shaban, J. L. Joyner, J. W. Porter, and E. K. Lipp. 2011. Human pathogen shown to cause disease in the threatened Elkhorn coral *Acropora palmata. PLoS One*, v. 6, no. 8: e23468, published online, doi: 10.1371/journal.pone.0023468

Suttle, C. 2005. Viruses in the sea. *Nature*, v. 437, pp. 356–361.

Sverdrup, H. U., M. W. Johnson, and R. H. Fleming. 1942. *The Oceans: Their Physics, Chemistry, and General Biology.* Englewood Cliffs, NJ: Prentice Hall. [A classic text of oceanography.]

Swann, J. B., Holland, S. J., Petersen, M., Pietsch, T. W. & Boehm, T. 2020. The immunogenetics of sexual parasitism. *Science,* 369, 1608-1615. doi: 10.1126/science.aaz9445

Swanson, R., and O. Hoegh-Guldberg. 1998. Amino acid synthesis in the symbiotic sea anemone *Aiptasia pulchella. Marine Biology*, v. 131, pp. 83–93.

Swanson, W. J., and V. D. Vacquier. 1998. Concerted evolution in an egg receptor for a rapidly evolving abalone sperm protein. *Science*, v. 281, pp. 710–712.

Sweatman, H. 2008. No-take reserves protect coral reefs from predatory starfish *Current Biology*, v. 18, pp. R598–R599.

Swedmark, B. 1964. The interstitial fauna of a marine sand. *Biological Reviews*, v. 39, pp. 1–42.

Sweet, M.J., Croquer, A., Bythell, J.C. 2015. Experimental antibiotic treatment identifies potential pathogens of white band disease in the endangered Caribbean coral Acropora cervicornis. *Proceedings of the Royal Society B.* doi: 10.1098/rspb.2014.0094

**T**

Taghon, G. L. 1981. Beyond selection: Optimal ingestion rate as a function of food value. *American Naturalist*, v. 118, pp. 202–214.

Talbot, E., Bruggeman, J., Hauton, C., Widdicombe 2019. Uncovering the environmental drivers of short-term temporal dynamics in an epibenthic community from the Western English Channel. *J. Mar. Biol. Ass. U.K.* 99: 1467-1479.

Talmage, S. C., and C. Gobler. 2010. Effects of past, present, and future ocean carbon dioxide concentrations on the growth and survival of larval shellfish. *Proceedings of the National Academy of Science,* v. 107, pp. 17246–17251.

Tankersley, R. A., J. M. Welch, and R. B. Forward, Jr. 2002. Settlement times of blue crab (*Callinectes sapidus*) megalopae during flood-time transport. *Marine Biology*, v. 141, pp. 863–875.

Tanner, J. E., and T. P. Hughes. 1994. Species coexistence, keystone species and succession: A sensitivity analysis. *Ecology*, v. 75, pp. 2204–2219.

Taroncher-Oldenburg, G., E. M. Griner, C. A. Francis, and B. B. Ward. 2003. Oligonucleotide microarray for the study of functional gene diversity in the nitrogen cycle in the environment. *Applied and Environmental Microbiology*, v. 69, pp. 1159–1161.

Tarquinio, F., Hyndes, G.A., Laverock, B., Koenders, A., Sawstrom, C. 2019. The seagrass holobiont: understanding seagrass-bacteria interactions and their role in seagrass ecosystem functioning. *Microbiology Letters* 366, doi: 10.1093/femsle/fnz057

Tasch, P. 1973. *Paleobiology of the Invertebrates.* New York: Wiley.

Tatem, H. E., B. A. Cox, and J. W. Anderson. 1978. The toxicity of oils and petroleum hydrocarbons to estuarine crustaceans. *Estuarine and Coastal Shelf Science*, v. 6, pp. 365–373.

Taylor, A. H., and J. A. Stephens. 1998. The North Atlantic Oscillation and the latitude of the Gulf Stream. *Tellus A*, v. 50, pp. 134–142.

Taylor, P. D. 1988. Major radiation of cheilostome bryozoans: Triggered by the evolution of a new larval type? *Historical Biology*, v. 1, pp. 45–64.

Tchernov, D., H. Kvitt, L. Haramaty, T. S. Bibby, M. Y. Gorbunov, H. Rosenfeld, and P. G. Falkowski. 2011. Apoptosis and the selective survival of host animals following thermal bleaching in zooxanthellate corals. *Proceedings of the National Academy of Science USA* 108: 9905-9909.

Teal, J. M. 1962. Energy flow in the salt marsh ecosystem of Georgia. *Ecology*, v. 43, pp. 614–624.

Teal, J. M., and J. W. Kanwisher. 1966. Gas transport in the marsh grass, *Spartina alterniflora*. *Journal of Experimental Botany*, v. 17, pp. 355–361.

Teal, J. M., and M. Teal. 1969. *The Life and Death of a Salt Marsh*. Boston: Little, Brown. Teas, H. J. 1983. *The Biology and Ecology of Mangroves*. The Hague: W. Junk.

Teeling, H., et al. 2012. Substrate-controlled succession of marine bacterioplankton populations induced by a phytoplankton bloom. *Science*, v. 336, pp. 608–611.

Telford, M.J., Budd, G.E., Philippe, H. 2015. Phylogenomic insights into animal evolution. *Current Biology* v. 25, pp. R876–R887.

Tepolt, C.K., Somero, G.N. 2014. Master of all trades: thermal acclimation and adaptation of cardiac function in a broadly distributed marine invasive species, the European green crab, *Carcinus maenas*. *Journal of Experimental Biology* v. 217, pp. 1129-1138.

Terlau H, Shon KJ, Grilley M, Stocker M, Stühmer W, Olivera BM. 1996. Strategy for rapid immobilization of prey by a fish-hunting cone snail. *Nature*. 381: 148–151.

Thacker, R.W., M. A. Becerro, W. A. Lumbang, and V. J. Paul. 1998. Allelopathic interactions between sponges on a tropical reef. *Ecology*, v. 79, pp. 1740–1750.

Thiel, H., 2001. Evaluation of the environmental consequences of polymetallic nodule mining based on the results of the TUSCH Research Association. *Deep Sea Research Part II: Topical Studies in Oceanography* v 48, pp 3433-3452.

Thiel, H. et al. 2001. The large-scale environmental impact experiment DISCOL—reflection and foresight. *Deep Sea Research Part II: Topical Studies in Oceanography* 48: 3869-3882.

Thistle, D., and L. A. Levin. 1998. The effect of experimentally increased near-bottom flow on metazoan meiofauna at a deep-sea site, with comparison data on macrofauna. *Deep-Sea Research, Part I, Oceanographic Research Papers*, v. 45, pp. 625ff.

Thomas, A. C., D. W. Townsend, and R. Weatherbee. 2003. Satellite-measured phytoplankton variability in the Gulf of Maine. *Continental Shelf Research*, v. 23, pp. 971–989.

Thomas, J. A., R. A. Kastelein, and A. Y. Supin, eds. 1992. *Marine Mammal Sensory Systems.* New York: Plenum Press.

Thompson, J. D. 1991. The biology of an invasive plant. *BioScience*, v. 41, pp. 393–401. [This is a discussion of *Spartina* invasion.]

Thomson, C. W., and J. Murray. 1884. *Report on the Scientific Results of the Voyage of the H.M.S. Challenger During the Years 1873–1876.* New York: Macmillan.

Thorne, L.H. et al. 2015. Foraging behavior links climate variability and reproduction in North Pacific albatrosses. *Movement Ecology.* doi: 10.1186/s40462-015-0050-9

Thorne-Miller, B. L. 1991. *The Living Ocean: Understanding and Protecting Marine* *Biodiversity.* Washington, DC: Island Press.

Thorson, G. 1950. Reproductive and larval ecology of marine bottom invertebrates. *Biological Reviews*, v. 25, pp. 1–45.

Thrush, S. F., J. E. Hewitt, V. J. Cummings, P. K. Dayton, M. Cryer, S. J. Turner, G. A. Funnell, R. G. Budd, C. J. Milburn, and M. R. Wilkinson. 1998. Disturbance of the marine benthic habitat by commercial fishing: Impacts at the scale of the fishery. *Ecological Applications*, v. 8, pp. 866–879.

Thurber, A. R., W. J., Jones, and K. Schnabel. 2011. Dancing for food in the deep sea: Bacterial farming by a new species of Yeti crab. *PLoS ONE*, v. 6, no. 11: e26243, published online, doi: 10.1371/journal.pone.0026243

Tilman, D. 1982. *Resource Competition and Community Structure.* Princeton, NJ: Princeton University Press.

Tilman, D. 1999. The ecological consequences of changes in biodiversity: A search for general principles. *Ecology*, v. 80, pp. 1455–1474.

Tittensor, D. P., C. Mora, W. Jetz, H. K. Lotze, D. Ricard, E. V. Berghe, and B. Worm. 2010. Global patterns and predictors of marine biodiversity across taxa. *Nature*, v. 466, pp. 1098–1101.

Tomanek, L. 2002. The heat-shock response: Its variation, regulation and ecological importance in intertidal gastropods (Genus *Tegula*). *Integrative and Comparative Biology*, v. 42, pp. 797–807.

Tomanek, L. 2008. The importance of physiological limits in determining biogeographical range shifts due to global climate change: The heat-shock response. *Physiological and Biochemical Zoology*, v. 81, pp. 709–717.

Tomanek, L. 2014. Proteomics to study adaptations in marine organisms to environmental stress. *Journal of Proteomics* v. 105, pp.92-106.

Tomanek, L., and E. Sanford. 2003. Heat-shock protein 70 (Hsp70) as a biochemical stress indicator: An experimental field test in two congeneric intertidal gastropods (Genus: *Tegula*). *Biological Bulletin*, v. 205, pp. 276–284.

Tomlinson, P. B. 1986. *The Botany of Mangroves*. Cambridge: Cambridge University Press.

Tonra, C.M., Sager-Fradkinc, K., Morleyd, S.A., Dudae, J.S., Marra, P.P. 2015. The rapid return of marine-derived nutrients to a freshwater food web following dam removal. *Biological Conservation* v. 192, pp. 130-134.

Toonan, R. J., and J. R. Pawlik. 1994. Foundations of gregariousness. *Nature*, v. 370, pp. 511–512.

Toonan, R. J., and J. R. Pawlik. 1996. Settlement of the tube worm *Hydroides dianthus* (Polychaeta: Serpulidae): Cues for gregarious settlement. *Marine Biology*, v. 126, pp. 725–733.

Toonan, R. J., and J. R. Pawlik. 2001. Foundations of gregariousness: A dispersal polymorphism among the planktonic larvae of a marine invertebrate. *Evolution*, v. 55, pp. 2439–2454.

Toro, J., R. Thompson, and D. Innes. 2002. Reproductive isolation and reproductive output in two sympatric mussel species (*Mytilus edulis, M. trossulus*) and their hybrids from Newfoundland. *Marine Biology*, v. 141, pp. 897–909.

Toth, E., and J. E. Duffy. 2005. Coordinated group response to nest intruders in social shrimp. *Biology Letters*, v. 1, pp. 49–52.

Townsend, C. R., M. Begon, and J. L. Harper. 2008. *Essentials of Ecology,* 3rd ed. Oxford: Blackwell Publishing.

Trenberth, K. E. 1990. Recent observed interdecadal climate changes in the Northern Hemisphere. *Bulletin of the American Meteorological Society*, v. 71, pp. 988–993.

Trenberth, K. E., and T. J. Hoar. 1996. The 1990–1995 El Nino–Southern Oscillation event: Longest on record. *Geophysical Research Letters*, v. 23, pp. 57–60.

Trillmich, F., and K. A. Ono. 1991. *Pinnipeds and El Niño.* Berlin: Springer-Verlag.

Truchet, M., C. Ballandufrancais, A. Y. Jeantet, J. P. Lechaire, and R. Cosson. 1998. The trophosome of the Vestimentifera *Riftia pachyptila* and *Tevnia jerichoana*—Metal bioaccumulations and sulfur metabolism. *Cahiers de Biologie Marine*, v. 39, pp. 129–141.

Trommer, G., Laynaert, A., Klein, C., Neigelen, A., Beker, B. 2013. Phytoplankton phosphorus limitation in a North Atlantic coastal ecosystem not predicted by nutrient load. *Journal of Plankton Research*. doi: 10.1093/plankt/fbt070

Trueman, E. R. 1975. *The Locomotion of Soft-Bodied Animals.* Bristol, UK: Arnold.

Trussell, G. C. 1996. Phenotypic plasticity in an intertidal snail: The role of a common crab predator. *Evolution*, v. 50, pp. 448–454.

Trussell, G. C, Ewanchuk, P. J., and M. D. Bertness. 2002. Field evidence of trait-mediated indirect interactions in a rocky intertidal food web. *Ecology Letters*, v. 5, pp. 241–245.

Trussell, G. C., and L. D. Smith. 2000. Induced defenses in response to an invading crab predator: An explanation of historical and geographic phenotypic change. *Proceedings of the National Academy of Sciences USA*, v. 97, pp. 2123–2127.

Tubbesing, V. A., and B. A. Block. 2000. Orbital rete and red muscle vein anatomy indicate a high degree of endothermy in the brain and eye of the salmon shark. *Acta Zoologica*, v. 81, pp. 49–56.

Tunnell, J. W., Jr. 2011. *An Expert Opinion of When the Gulf of Mexico Will Return to Pre-spill Harvest Status Following the BP Deepwater Horizon MC 252 Oil Spill,* A Report Submitted to the Gulf Coast Claims Facility, Washington, D.C. Corpus Christi, TX: Harte Research Institute for Gulf of Mexico Studies, Texas A&M University–Corpus Christi.

Tunnicliffe, V. 1991. The biology of hydrothermal vents: Ecology and evolution. *Oceanography and Marine Biology Annual Reviews*, v. 29, pp. 319–407.

Tunnicliffe, V., A. G. McArthur, and D. McHugh. 1998. A biogeographical perspective of the deep-sea hydrothermal vent fauna. *Advances in Marine Biology*, v. 34, pp. 353–442.

Turner, R. D., and R. A. Lutz. 1984. Growth and distribution of molluscs at deep-sea vents and seeps. *Oceanus*, v. 27, pp. 54–62.

Turner, R. E., E. M. Swenson, and C. S. Milan. 2002. Organic and inorganic contributions to vertical accretion in salt marsh sediments. In M. P. Weinstein and D. A. Kreeger, eds., *Concepts and Controversies in Tidal Marsh Ecology*. Berlin: Springer, pp. 583–593.

Tyler, P. A. 1988. Seasonality in the deep-sea. *Oceanography and Marine Biology Annual Reviews*, v. 26, pp. 227–258.

Tyrrell, T. 1999. The relative influences of nitrogen and phosphorus on oceanic primary production. *Nature*, v. 400, 525–531.

**U**

Ueda, N. and Degnan, S.N. 2014. Nitric oxide is not a negative regulator of metamorphic induction in the abalone *Haliotis asinine. Frontiers in Marine Science.* doi: 10.3389/fmars.2014.00021.

Ugarelli, K., Chakrabartim Laas, P., Stingl, U. 2017. The sea grass holobiont and its microbiome. *Microorganisms* 2017, v.5, 81. doi: 10.3390/microorganisms5040081

Underhill, L. G., et al. 1999. Mortality and survival of African Penguins *Spheniscus demersus* involved in the Apollo Sea oil spill: An evaluation of rehabilitation efforts. Ibis, v. 141, pp. 29–37.

Underwood, A. J. 1981. Techniques of analysis of variance in experimental marine biology and ecology. *Oceanography and Marine Biology Annual Review,* v. 19, pp. 513–605.

Underwood, A. J. 1991. The logic of ecological experiments: A case history from studies of the distribution of macro-algae on rocky intertidal shores. *Journal of the Marine Biological Association of the United Kingdom,* v. 71, pp. 841–866.

Underwood, A. J. 1999. Physical disturbances and their direct effect on an indirect effect: Responses of an intertidal assemblage to a severe storm. *Journal of Experimental Marine Biology and Ecology*, v. 232, pp. 125–140.

Underwood, A. J., and M. G. Chapman. 1995. Introduction to coastal habitats. In A. J. Underwood and M. G. Chapman, eds., *Coastal Marine Ecology of Temperate Australia.* Sydney: University of New South Wales Press, pp. 1–15.

Underwood, A. J., and E. J. Denley. 1984. Paradigms, explanations, and generalizations in models for the structure of intertidal communities on rocky shores. In D. Simberloff, D.R. Strong, L. Abele, and A. R. Thistle, eds., *Ecological Communities: Conceptual Issues and the Evidence*. Princeton, NJ: Princeton University Press, pp. 151–180.

Underwood, A. J., and P. G. Fairweather. 1989. Supply-side ecology and benthic marine assemblages. *Trends in Ecology and Evolution*, v. 4, pp. 16–20.

Unsworth, R.K.F., Nordlund, L.M., Cullen-Unsworth, L.C. 2018. Seagrass meadows support global fisheries production. *Conservation Letters.* doi: 10.1111/conl.12566

Ushakov, B. P. 1968. Cellular resistance adaptation to temperature and thermostability of somatic cells with special reference to marine animals. *Marine Biology*, v. 1, pp. 153–160.

Utne-Palme, et al. 2010. Trophic structure and community stability in an overfished ecosystem. *Science*, v. 329, pp. 333–336.

**V**

Vacelet, J., Boury-Esnault, N. 1995. Carnivorous sponges. *Nature* v. 373, pp. 333-335.

Vadas, R. L., W. A. Wright, and S. L. Miller. 1990. Recruitment of *Ascophyllum nodosum*: Wave action as a source of mortality. *Marine Ecology—Progress Series*, v. 61, pp. 263–272.

Vagvolgyi, J. 1967. On the origin of the molluscs, the coelom, and coelomic segmentation. *Systematic Zoology*, v. 16, pp. 153–168.

Vahl, O. 1981. Age-specific residual reproductive value and reproductive efforts in the Iceland scallop, *Chlamys islandica* (O. F. Moller). *Oecologia*, v. 51, pp. 53–56.

Valentine, D. L. Valentine, J. D. Kessler, M. C. Redmond, S. D. Mendes, M. B. Heintz, C. Farwell, L. Hu, F. S. Kinnaman, S. Yvon-Lewis, M. Du, E. W. Chan, F. G. Tigreros, and C. J. Villanueva. 2010. Propane respiration jump-starts microbial response to a deep oil spill. *Science*, v. 330, pp. 208–211.

Valentine, D.L., et al. 2012. Dynamic autoinoculation and the microbial ecology of deep-water hydrocarbon irruption. *Proceedings of the National Academy of Science USA*, v. 109, pp. 20286–20291.

Valentine, J. L., and K. W. Heck 1999. Seagrass herbivory: Evidence for the continued grazing of seagrass. *Marine Ecology Progress Series*, v. 176, pp. 291–302.

Valentine, J. W. 1966. Numerical analysis of marine molluscan ranges on the extratropical northeastern Pacific shelf. *Limnology and Oceanography*, v. 11, pp. 198–211.

Valentine, J. W. 1989. Bilaterians of the Precambrian-Cambrian transition and the annelid–arthropod relationship. *Proceedings of the National Academy of Sciences, USA*, v. 86, pp. 2272–2275.

Valiela, I. 1983. *Marine Ecological Processes.* New York: Springer-Verlag. [See Chapter 8.]

Valiela, I., and J. Teal. 1979. The nitrogen budget of a salt marsh ecosystem. *Nature*, v. 280, pp. 652–656.

Valiela, I., J. M. Teal, and W. G. Deuser. 1978. The nature of growth forms in the salt marsh grass, *Spartina alterniflora*. *American Naturalist*, v. 112, pp. 461–470.

van Andel, T. 1981. *Science at Sea: Tales of an Old Ocean.* San Francisco: W. H. Freeman. Van Blaricom, G. R., and J. A. Estes. 1988. *The Community Ecology of Sea Otters.* Berlin: Springer-Verlag.

van de Koppel J, Altieri AH, Silliman BS, Bruno JF, Bertness MD. 2006. Scale-dependent interactions and community structure on cobble beaches. *Ecology Letters* v. 9, pp. 45–50.

van den Hoek, C. 1987. The possible significance of long-range dispersal for the biogeography of seaweeds. *Helgoländer Wissenschaften Meeresuntersungen*, v. 41, pp. 261–273.

Van Dover, C. L. 2000. *The Ecology of Deep-Sea Hydrothermal Vents.* Princeton, NJ: Princeton University Press.

Van Dover, C. L., and R. A. Lutz. 2004. Experimental ecology at deep-sea hydrothermal vents: A perspective. *Journal of Experimental Marine Biology and Ecology*, v. 300, pp. 273–307.

van Duren, L. A., and J. J. Videler. 2003. Escape from viscosity: The kinematics and hydrodynamics of copepod foraging and escape swimming. *Journal of Experimental Biology*, v. 206, pp. 269–279.

van Wesenbeeck, B. K., J. van de Koppel, P. M. Herman, J. P. Bakker, and T. J. Bouma. 2007. Biomechanical warfare in ecology; negative interactions between species by habitat modification. *Oikos*, v. 116, pp. 742–750.

Vance, R. R. 1973. On reproductive strategies in marine bottom invertebrates. *American Naturalist*, v. 107, pp. 339–352.

Vandermeulen, J. H., Muscatine, L. & Davis, N. D. 1974. Effect of inhibitors of photosynthesis on zooxanthellae in corals and other marine invertebrates. *Marine Biology,* 16, 185-191.

Vasquez, E.A., Glenn, E.P., Guntenspergen, G.R., Brown, J.J., Nelson, S.G. 2006. Salt tolerance and osmotic adjustment of *Spartina alterniflora* (Poaceae) and the invasive M haplotype of *Phragmites australis* (Poaceae) along a salinity gradient. *American Journal of Botany* v. 93, pp.1784-1790.

Vaughn, D., and R. R. Strathmann. 2008. Predators induce cloning in echinoderm larvae. *Science*, v. 319, p. 1503.

Vasquez, E.A., Glenn, E.P., Guntenspergen, G.R., Brown, J.J., Nelson, S.G. 2006. Salt tolerance and osmotic adjustment of *Spartina alterniflora* (Poaceae) and the invasive M haplotype of *Phragmites australis* (Poaceae) along a salinity gradient. *American Journal of Botany* v. 93, pp.1784-1790.

Venier, P., C. De Pittà, A. Pallavicini, F. Marsano, L. Varotto, C. Romualdi, F. Dondero, A. Viarengo, and G. Lanfranchi. 2006. Development of mussel mRNA profiling: Can gene expression trends reveal coastal water pollution? *Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis,* v. 602, nos. 1–2, pp. 121–134.

Venrick, E. L., J. A. McGowan, D. R. Cayan, and T. L. Hayward. 1987. Climate and chlorophyll *a:* Long-term trends in the central North Pacific Ocean. *Science*, v. 238, pp. 70–72.

Vermeij, G. J. 1976. Interoceanic differences in vulnerability of shelled prey to crab predation. *Nature*, v. 260, pp. 135–136.

Vermeij, G. J. 1991. Anatomy of an invasion: The trans-Arctic interchange. *Paleobiology*, v. 17, pp. 281–307.

Vernberg, W. B., A. Calabrese, F. P. Thurberg, and F. J. Vernberg. 1979. *Marine Pollution: Functional Responses.* New York: Academic Press.

Veron, J. E. N. 1995. *Corals in Space and Time.* Sydney: University of New South Wales Press.

Versluis, M., Schmitz, B., von der Heydt, A. & Lohse, D. 2000. How snapping shrimp snap: Through cavitating bubbles. *Science,* 289, 2114-2117.

Via, S., R. Gomulkiewicz, G. DeJong, S. M. Scheiner, C. D. Schlichting, and P. H. van Teinderen. 1995. Adaptive phenotypic plasticity: Consensus and controversy. *Trends in Ecology and Evolution*, v. 10, pp. 212–217.

Vickery, M. S., and McClintock, J. B. 2000. Effects of food concentration and availability on the incidence of cloning in planktotrophic larvae of the sea star *Pisaster ochraceus. Biological Bulletin*, v. 199, pp. 298–304.

Vidal-Tupiol, J., et al. 2009. Coral bleaching under thermal stress: Putative involvement of host/symbiont recognition mechanisms. *BMC Physiology*, v. 9, no. 14, published online, doi: 10.1186/1472-6793-9-14

Vincent, W. F., and S. Roy. 1993. Solar ultraviolet-B radiation and aquatic primary production: Damage, protection, and recovery. *Environmental Reviews*, v. 1, pp. 1–12.

Vogel, H., G. Czihak, P. Chang, and W. Wolf. 1982. Fertilization kinetics of sea urchin eggs. *Mathematical Biosciences*, v. 58, pp. 189–216.

Vogel, S. 1992. *Vital Circuits.* New York: Oxford University Press.

Vogel, S. 1994. *Life in Moving Fluids*, 2nd ed. Princeton, NJ: Princeton University Press. Vogel, S., and W. L. Bretz. 1972. Interfacial organisms: Passive ventilation in the velocity gradients near surfaces. *Science*, v. 175, pp. 210–211.

Vollmer, S. V., and S. R. Palumbi. 2002. Hybridization and the evolution of reef coral diversity. *Science*, v. 296, pp. 2023–2025.

Von Arx, W. S. 1962. *An Introduction to Physical Oceanography.* Reading, MA: Addison- Wesley.

von Herbing, I. H. 2002. Effects of temperature on larval fish swimming performance: The importance of physics to physiology. *Journal of Fish Biology*, v. 61, pp. 865–876.

von Moos, N., Burkhardt-Holm, P, Köhler, A. 2012. Uptake and effects of microplastics on cells and tissue of the blue mussel *Mytilus edulis* L. after an experimental exposure. *Environmental Science and Technology* v. 46, pp. 11327−11335.

Votier, S. C., et al. 2004. Changes in fisheries discard rates and seabird communities. *Nature*, v. 427, pp. 727–730.

Vuorinen, I., M. Rajasilta, and J. Salo. 1983. Selective predation and habitat shift in a copepod species—Support for the predation hypothesis. *Oecologia*, v. 59, pp. 62–64.

**W**

Wahle, R. A., Gibson, M. & Fogarty, M. 2009. Distinguishing disease impacts form larval supply effects in a lobster fishery collapse. *Marine Ecology Progress Series,* 376, 185-192, doi: 10.3354/meps07803.

Wainwright, P., A. M. Carroll, D. C. Collar, S. W. Day, T. E. Higham, and R. A. Holzman. 2007. Suction feeding mechanics, performance, and diversity in fishes. *Integrative and Comparative Biology*, v. 47, p. 96–106.

Wainwright, S. A., W. D. Biggs, J. D. Currey, and J. M. Gosline. 1976. *Mechanical Design in Organisms.* Princeton, NJ: Princeton University Press.

Wainwright, S. A., and J. R. Dillon. 1969. On the orientation of sea fans (Genus *Gorgonia*). *Biological Bulletin*, v. 136, pp. 130–139.

Wall, C. C., B. J. Peterson, and C. J. Gobler. 2008. Facilitation of seagrass Zostera marina production by suspension-feeding bivalves. *Marine Ecology Progress Series*, v. 357, pp. 165–174.

Wallace, W. G., and G. R. Lopez. 1997. Bioavailability of biologically sequestered cadmium and the implications of metal detoxification. *Marine Ecology Progress Series*, v. 147, pp. 149–157.

Wallace, R. B., Baumann, H., Grear, J. S., Aller, R. C. & Gobler, C. J. 2014. Coastal ocean acidification: The other eutrophication problem. *Estuarine, Coastal & Shelf Science.* doi: 10.1016/j.ecss.2014.05.027

Walne, P. R. 1972. The influence of current speed, body size and water temperature on the filtration rate of five species of bivalves. *Journal of the Marine Biological Association of the United Kingdom*, v. 52, pp. 345–374.

Waloszek, D., and A. Maas. 2005. The evolutionary history of crustacean segmentation: A fossil-based perspective. *Evolution and Development*, v. 7, 515–527.

Walsh, J. J. 1988. *On the Nature of Continental Shelves.* San Diego, CA: Academic Press. Wang, W.-X., and N. S. Fisher. 1998. Accumulation of trace elements in a marine copepod. *Limnology and Oceanography*, v. 43, pp. 273–283.

Wanless, S., Frederiksen, M., Daunt, F., Scott, B.E., Harris, M.P.2007. Black-legged kittiwakes as indicators of environmental change in the North Sea: Evidence from long-term studies. *Progress in Oceanography* 72:30-38.

Ward, B. B. 1996. Nitrification and denitrification: Probing the nitrogen cycle in aquatic environments. *Microbial Ecology*, v. 32, pp. 247–261.

Ward, B., and G. D. O’Mullan. 2002. Worldwide distribution of *Nitrosococcus oceani*, a marine ammonia-ozidizing g-proteobacterium, detected by PCR and sequencing of 16S rRNA and *amoA* genes. *Applied and Environmental Microbiology*, Aug. 2002, pp. 4153–4157.

Ward, J. E., P. G. Beninger, B. A. MacDonald, and R. J. Thompson. 1991. Direct observations of feeding structures and mechanisms in bivalve molluscs using endoscopic examination and video image analysis. *Marine Biology*, v. 111, pp. 287–291.

Ward, J. E., J. S. Levinton, S. E. Shumway, and T. L. Cucci. 1998a. Site of particle selection in a bivalve mollusc. *Nature*, v. 390, pp. 131–132.

Ward, J. E., J. S. Levinton, S. E. Shumway, and T. L. Cucci. 1998b. Particle sorting in bivalves: In vivo determination of the pallial organs of selection. *Marine Biology*, v. 131, pp. 283–292.

Ward, J. E., B. A. MacDonald, R. J. Thompson, and P. G. Beninger. 1993. Mechanisms of suspension feeding in bivalves: Resolution of current controversies by means of endoscopy. *Limnology and Oceanography*, v. 38, pp. 265–272.

Ward, J. E., and S. E. Shumway. 2004. Separating the grain from the chaff: particle selection in suspension- and deposit-feeding bivalves. *J Exp Mar Biol Ecol* 300: 83–130. doi: 10.1016/j.jembe.2004.03.002

Ward, J. E., R. J. Thompson, R. I. E. Newell, and B. A. MacDonald. 1994. In vivo studies of suspension-feeding processes in the eastern oyster *Crassostrea virginica* (Gmelin). *Biological Bulletin*, v. 186, pp. 221–240.

Ware, D. M., and R. D. Thomson. 2005. Bottom-up ecosystem trophic dynamics determine fish production in the northeast Pacific. *Science*, v. 308, pp. 1280–1284.

Wares, J. P., and C. W. Cunningham. 2001. Phylogeography and historical ecology of the North Atlantic intertidal. *Evolution*, v. 55, pp. 2455–2469.

Warner, J. F., and J. D. Woodley. 1975. Suspension-feeding in the brittle star *Ophriothrix fragilis. Journal of the Marine Biological Association of the United Kingdom*, v. 55, pp. 199–210.

Warner, R. R. 1975. The adaptive significance of sequential hermaphroditism in animals. *American Naturalist*, v. 109, pp. 61–82.

Warrant, E., and D.-E. Nilsson. 2007. *Invertebrate Vision.* Cambridge: Cambridge University Press.

Wasser, S. K. 2008. Lucky dogs. *Natural History*, October, pp. 49–53.

Watling, L., and M. Risk, eds. 2002. *Biology of Cold Water Corals*. Amsterdam: Kluwer Academic.

Watson, R., J. Alder, A. Kitchingman, and D. Pauly. 2005. Catching some needed attention. *Marine Policy*, v. 29, pp. 281–284.

Webb, J. F. 1989. Gross morphology and evolution of the mechanoreceptive lateral line system in teleost fishes. *Brain, Behavior and Evolution*, v. 33, pp. 34–53.

Webb, P. W. 1984. Form and function in fish swimming. *Scientific American*, v. 256, pp. 58ff.

Webster, N.S. 2007. Sponge disease: a global threat? *Environmental Microbiology* v. 9, pp. 1363-1375.

Weersing, K., and R. J. Toonen. 2009. Population genetics, larval dispersal, and connectivity in marine systems. *Marine Ecology Progress Series* v. 393, pp.1–12.

Weinstein, R. B., and G. N. Somero. 1998. Effects of temperature on mitochondrial function in the Antarctic fish *Trematomus bernacchi. Journal of Comparative Physiology B*, v. 168, pp. 190–196.

Weis, V. M. 2009. Cellular mechanisms of Cnidarian bleaching: Stress causes the collapse of symbiosis. *Journal of Experimental Biology*, v. 211, pp. 3059–3065.

Weissburg, M. J. 1993. Sex and the single forager: Gender-specific energy maximization strategies in fiddler crabs. *Ecology*, v. 74, pp. 279–281.

Weissburg, M. J. 2000. The fluid dynamical context of chemosensory behavior. *Biological Bulletin*, v. 198, pp. 188–202.

Weissburg, M. J., M. C. Ferner, D. C. Pisut, and D. L. Smee. 2004. Ecological consequences of chemically mediated prey perception. *Journal of Chemical Ecology*, v. 28, pp. 1953–1970.

Weissburg, M. J., C. P. James, D. L. Smee, and D. R. Webster. 2003. Fluid mechanics produces conflicting constraints during olfactory navigation of blue crabs, *Callinectes sapidus. Journal of Experimental Biology*, v. 206, pp. 171–180.

Weissburg, M. J., and R. K. Zimmer-Faust. 1993. Life and death in moving fluids: Hydrodynamic effects on chemosensory-mediated predation. *Ecology,* v. 74, pp. 1428–1443.

Welch, V., J. P. Vigneron, V. Lousse, and A. Parker. 2006. Optical properties of the iridescent organ of the comb-jellyfish *Beroë cucumis. Physical Review E*, v. 73, pp. 041916–041917.

Wells, M.J. 1963. Taste by touch – some experiments with Octopus. Journal of Experimental Biology v. 40, pp. 187-193.

Wells, M.J., N.J. Freeman, and M. Ashburner. 1965. Some experiments on the chemotactile sense of octopuses. Journal of Experimental Biology, v. 43, pp. 553-563.

Wertheim, A. 1984. *The Intertidal Wilderness*. San Francisco: Sierra Club.

Wethey, D. S., 2002. Biogeography, competition, and microclimate: The barnacle *Chthamalus fragilis* in New England. *Integrative and Comparative Biology*, v. 42, pp. 872–880.

White, J. W., C. J. Grigsby, and R. R. Warner. 2007. Cleaning behavior is riskier and less profitable than an alternative strategy for a facultative cleaner fish. *Coral Reefs*, v. 26, pp. 87–94.

Whitt, D.B., Jansen M.F. 2020. Slower nutrient stream suppresses Subarctic Atlantic Ocean biological productivity in global warming. *Proceedings of the National Academy of Science*. www.pnas.org/cgi/doi/10.1073/pnas.2000851117

Whittington, H. B. 1985. *The Burgess Shale.* New Haven, CT: Yale University Press. Wicksten, M. K. 1982. Decorator crabs. In *Life in the Sea.* San Francisco: W. H. Freeman, pp. 171–177.

Widder, E. A. 2007. Sly eye for the shy guy: Peering into the depths with new sensors. *Oceanography* 20: 46-51.

Wilbur, K. M., ed. 1983–1986. *The Mollusca* (10 volumes). New York: Academic Press.

Wilcox, C., Van Sebile, E., Hardesty, B.D. 2015. Threat of plastic pollution to seabirds is global, pervasive and increasing. *Proc. Nat. Acad. Sci*. doi: 10.1073/pnas.1502108112

Wiley, D., Ware, C., Bocconcelli, A., Cholewiak, D., Friedlaender, A., Thompson, M., Weinrich, M. 2011. Underwater components of humpback whale bubble-net feeding behavior. *Behaviour*, v. 148, pp. 575-602.

Wilga, C. D., and G. V. Lauder. 2004. Hydrodynamic function of the shark’s tail. *Nature*, v. 430, p. 850.

Williams, B., M. J. Risk, S. W. Ross, and K. J. Sulak. 2007. Stable isotope data from deep-water antipatharians: 400-year records from the southeastern coast of the United States of America. *Bulletin of Marine Science*, v. 81, pp. 437–447.

Williams, E. E., and G. N. Somero. 1996. Seasonal-, tidal-, cycle- and microhabitat-related variation in membrane order of phospholipid vesicles from gills of the intertidal mussel *Mytilus californianus. Journal of Experimental Biology*, v. 199, pp. 1587–1596.

Williams, G. C. 1975. *Sex and Evolution.* Princeton, NJ: Princeton University Press.

Williams, L.M., et al. 2010. SNP identification, verification, and utility for population genetics in a non-model genus. *BMC Genetics.* doi: 10.1186/1471-2156-11-32

Williams, S. T., and D. G. Reid. 2004. Speciation and diversity on tropical rocky shores: A global phylogeny of snails of the genus *Echinolittorina*. *Evolution*, v. 58, pp. 2227–2251.

Williams, T. M., R. A. Kastelein, R. W. Davis, and J. A. Thomas. 1988. The effects of oil contamination and cleaning on sea otters (*Enhydra lutris*). 1. Thermoregulatory implications based on pelt studies. *Canadian Journal of Zoology*, v. 66, pp. 2776–2781.

Willis, B. L., R. C. Babcock, P. L. Harrison, and C. C. Wallace. 1997. Experimental hybridization and breeding incompatibilities within the mating systems of mass spawning reef coral. *Coral Reefs*, v. 16 (suppl.), pp. S53–S65.

Willis, B. L., M. J. H. van Oppen, D. J. Miller, S. V. Vollmer, and D. J. Ayre. 2006. The role of hybridization in the evolution of reef corals. *Annual Review of Ecology, Evolution and Systematics*, v. 37, pp. 489–517.

Willows, A. O. D. 1978. Physiology of feeding in *Tritonia.* I. Behavior and mechanics. *Marine Behavior and Physiology*, v. 5, pp. 115–135.

Wilmers, C.C. et al. 2012. Do trophic cascades affect the storage and flux of atmospheric carbon? An analysis of sea otters and kelp forests *Frontiers in Ecology and the Environment* 2012 v. 10, pp. 409–415.

Wilson, E. O. 1992. *The Diversity of Life.* Cambridge, MA: Belknap Press, Harvard University Press.

Wilson, E. O., and F. M. Peter. 1988. *Biodiversity.* Washington, DC: National Academy Press.

Wilson, J. R., and P. L. Harrison. 1998. Settlement-competency periods of larvae of three species of scleractinians. *Marine Biology*, v. 131, pp. 339–345.

Wilson, R. E., and R. L. Swanson. 2005. A perspective on bottom water temperature anomalies in Long Island Sound during the 1999 lobster mortality event. *Journal of Shellfish Research*, v. 24, pp. 825–830.

Wilson, R. R., and K. L. Smith. 1984. Effect of near-bottom currents on the detection of bait by the abyssal grenadier fishes *Coryphaenoides* spp. *Marine Biology*, v. 84, pp. 83–91.

Wilson, W. H. 1991. Competition and predation in marine soft-sediment communities. *Annual Review of Ecology and Systematics*, v. 21, pp. 221–241.

Winker, S., and C. R. Woese. 1991. A definition of the domains Archaea, Bacteria, and Eucarya in terms of small subunit ribosomal RNA characteristics. *Systematic and Applied Microbiology*, v. 14, pp. 305–310.

Wirgin, I., N. K. Roy, M. Loftus, R. C. Chambers, D. G. Franks, and M. E. Hahn. 2011. Mechanistic basis of resistance to PCBs in Atlantic tomcod from the Hudson River. *Science*, v. 331, pp. 1322–1325.

Wirgin, I., J. S. Weis, and A. E. McElroy. 2006. Physiological and genetic aspects of toxicity in Hudson River species. In J. S. Levinton, and J. R. Waldman. eds., *The Hudson River Estuary.* New York: Cambridge University Press, pp. 441–464.

Wirsing, A. J., Heithaus, M. R., & Dill, L. M. 2007. Fear factor: do dugongs (*Dugong dugon*) trade food for safety from tiger sharks (*Galeocerdo cuvier*)? *Oecologia*, v. *153*, pp. 1031-1040.

Woese, C. R., O. Kandler, and M. L. Wheelis. 1990. Towards a natural system of organisms: Proposal for the domains Archaea, Bacteria, and Eucarya. *Proceedings of the National Academy of Sciences, USA*, v. 87, pp. 4576–4579.

Wolfe, D. A., and T. P. O’Connor, eds. 1988. *Urban Wastes in Coastal Marine Environments.* Malabar, FL: Krieger.

Wong, Y.-Y. et al. 2007. Isolation of salinity tolerant genes from the mangrove plant *Bruguiera cylindrica* by using suppression subtractive hybridization (SSH) and bacterial functional screening. *Aquatic Botany*, v. 86, pp. 117–122.

Woodin, S. A. 1974. Polychaete abundance patterns in a marine soft-sediment environment: The importance of biological interactions. *Ecological Monographs*, v. 44, pp. 171–187.

Woodin, S. A. 1977. Algal “gardening” behavior by nereid polychaetes: Effects on soft bottom community structure. *Marine Biology*, v. 44, pp. 39–42.

Woodin, S. A. 1987. External morphology of the Polychaeta: Design constraints by life habit. *Bulletin of the Biological Society of Washington*, v. 7, pp. 295–309.

Woodin, S. A., S. M. Lindsay, and D. E. Lincoln. 1997. Biogenic bromophenols as negative recruitment cues. *Marine Ecology—Progress Series*, v. 157, pp. 303–306.

Woodin, S. A., R. L. Marinelli, and D. E. Lincoln. 1993. Allelochemical inhibition of recruitment in a sedimentary assemblage. *Journal of Chemical Ecology*, v. 19, pp. 517–530.

Woodin, S. A., and R. A. Merz. 1987. Holding on by their hooks: Anchors for worms. *Evolution*, v. 41, pp. 427–432.

Woodwell, G. M., Hall C.A.S., Whitney, D.E. Houghton, R.A. 1979. The Flax Pond Ecosystem Study: Exchanges of inorganic nitrogen between an estuarine marsh and Long Island Sound. *Ecology* v. 60, pp. 695-702.

Woollacott, R. M., and R. L. Zimmer. 1977. *Biology of Bryozoans.* New York: Academic Press. Wootton, J. T. 1997. Estimates and tests of per capita interaction strength: Diet, abundance, and impact of intertidally foraging birds. *Ecological Monographs*, v. 67, pp. 45–64.

Wootton, J. T., C. A. Pfister, and J. D. Forester. 2008. Dynamic patterns and ecological impacts of declining ocean pH in a high-resolution multi-year dataset. *Proceedngs of the National Academy of Sciences USA* 105: 18848-18853.

Wooton, J.T., Pfister, C.A. 2012. Carbon system measurements and potential climatic drivers at a site of rapidly declining ocean pH. *PLoS ONE* 7(12): e53396. doi: 10.1371/journal.pone.0053396

Worm, B., et al. 2006. Impacts of biodiversity loss on ocean ecosystem services. *Science*, v. 314, p. 787–790.

Worm, B., et al. 2013. Global catches, exploitation rates, and rebuilding options for sharks. *Marine Policy*, v. 40, pp. 194–204.

Worm, B., H. K. Lotze, and R. A. Meyers. 2003. Predator diversity hotspots in the blue ocean. *Proceedings of the National Academy of Science USA*, v. 100, pp. 9884–9888.

Worm, B., and R. A. Myers. 2003. Meta-analysis of cod-shrimp interactions reveals top-down control in ocean food webs. *Ecology*, v. 84, pp. 162–173.

Wray, G. A., J. S. Levinton, and L. H. Shapiro. 1996. Molecular evidence for deep Precambrian divergences among metazoan phyla. *Science*, v. 274, pp. 568–573.

Wulff, J.L. 2006. Rapid diversity and abundance decline in a Caribbean coral reef sponge community. Bio*logical Conservation* v. 1 2 7, pp.167 –176.

Wursig, B. 1979. Dolphins. *Scientific American*, v. 256, pp. 100–105.

Wurster, C. F. 1968. DDT reduces photosynthesis by marine phytoplankton. *Science*, v. 159, pp. 1474–1475.

Wurster, C. F., and D. B. Wingate. 1968. DDT residues and declining reproduction in the Bermuda petrel. *Science*, v. 159, pp. 179–181.

**Y**

Yancey, P. H., M. E. Clark, S. C. Hand, R. D. Bowlus, and G. N. Somero. 1982. Living with water stress: Evolution of osmolyte systems. *Science*, v. 217, pp. 1214–1222.

Yang, W. T., R. F. Hixon, P. E. Turk, M. E. Krejci, and W. H. Hulet. 1986. Growth, behavior, and sexual maturation of the market squid, *Loligo opalescens*, cultured through the life cycle. *Fishery Bulletin*, v. 84, pp. 771–798.

Yano., Y., A. Nakayama, K. Ishihara, and H. Saito. 1998. Adaptive changes in membrane lipids of barophilic bacteria in response to changes in growth pressure. *Applied and Environmental Microbiology*, v. 64, pp. 479–485.

Yates, G. T. 1986. How microorganisms move through water. *American Scientist*, v. 74, pp. 358–375.

Yellowlees, D., T. A. V. Rees, and W. Leggat. 2008. Metabolic interactions between algal symbionts and invertebrate hosts. *Plant, Cell & Environment*, v. 31, pp. 679–694.

Yen, J. 2000. Life in transition: Balancing inertial and viscous forces by planktonic copepods. *Biological Bulletin*, v. 198, pp. 213–224.

Yen, J., B. Sanderson, J. R. Strickler, and A. Okubo. 1991. Feeding currents and energy dissipation by *Euchaeta rimana*, a subtropical pelagic copepod. *Limnology and Oceanography*, v. 36, pp. 362–369.

Young, C. M., ed. 2002. *Atlas of Marine Invertebrate Larvae.* San Diego: Academic Press. Young, C. M., and L. F. Braithwaite. 1980. Orientation and current-induced flow in the stalked ascidian *Styela montereyensis. Biological Bulletin*, v. 159, pp. 428–440.

Young, C. M., and F.-S. Chia. 1987. Abundance and distribution of pelagic larvae as influenced by predation, behavior, and hydrographic factors. In A. C. Giese, J. C. Pearse, and V. B. Pearse, eds., *Reproduction of Marine Invertebrates*, v. IX: *General Aspects: Seeking Unity in Diversity.* Palo Alto, CA: Blackwell Scientific, pp. 385–463.

Young, D. K. 1971. Effects of infauna on the sediment and seston of a subtidal environment. *Vie Milieu*, v. 22 (suppl.), pp. 557–571.

Yund, P. O., and M. M. McCartney. 1994. Male reproductive success in sessile invertebrates: Competition for fertilizations. *Ecology*, v. 7, pp. 2151–2167.

**Z**

Zaitsev, Y. P. 1992. Recent changes in the trophic structure of the Black Sea. *Fisheries Oceanography*, v. 1, pp. 180–189.

Zal, F., E. Leize, F. H. Lallier, A. Toulmond, A. Vandorsselaer, and J. J. Childress. 1998. *S*- Sulfohemoglobin and disulfide exchange: The mechanisms of sulfide binding by *Riftia pachyptila* hemoglobins. *Proceedings of the National Academy of Sciences USA*, v. 95, pp. 8997–9002.

Zehr, J. P., and B. B. Ward. 2002. Nitrogen cycling in the ocean: new perspectives on processes and paradigms. *Applied and Environmental Microbiology*, v. 68, pp. 1015–1024.

Zehr, J.P., Capone, D.G., et al. 2020. Changing perspectives in marine nitrogen fixation. *Science.* doi: 10.1126/science.aay9514

Zeller, D., and D. Pauly. 2005. Good news, bad news: Global fisheries discards are declining but so are total catches. *Fish and Fisheries*, v. 6, pp. 156–159.

Zigler, K. S., M. A. McCartney, D. R. Levitan, and H. A. Lessios. 2005. Sea urchin bindin divergence predicts gamete compatibility. *Evolution*, v. 59, pp. 2399–2404.

Zimmer-Faust, R. K., and M. N. Tamburri. 1994. Chemical identity and ecological implications of a waterborne, larval settlement cue. *Limnology and Oceanography*, v. 39, pp. 1075–1087.