

## **WILLIAM K. FITT JR.**

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### **RESEARCH AND SCIENTIFIC INTERESTS:**

Ecological physiology of marine invertebrates, with emphasis on algal symbioses and larval development. Specialized topics include: response of corals and their symbiotic dinoflagellates to environmental stress, physiology and mariculture of giant clams, chemical induction of settlement and metamorphosis of larvae of oysters and cnidarians, establishment and maintenance of algal-invertebrate symbiosis, bleaching of reef corals and relationship to global warming.

### **EDUCATIONAL EXPERIENCE:**

B.S. University of California, Irvine, California, 1974

Ph.D. University of California, Santa Barbara, California, 1982

"Infection of invertebrate hosts with the symbiotic dinoflagellate *Symbiodinium* spp."

### **PROFESSIONAL EXPERIENCE:**

2002-present	Professor of Ecology and Marine Science, University of Georgia
1993 - 2002	Associate Professor. Institute of Ecology, University of Georgia
1987 - 1993	Assistant Professor. Department of Zoology, University of Georgia
1985-1986	Research Associate. "Chemical induction of settlement and metamorphosis in marine molluscs". University of Maryland
1984-1985	Research Scientist. "Chemical induction of metamorphosis in coelenterate larvae". Ruhr University, Bochum, Germany
1982-1983	Postdoctoral Fellow. "Physiology and developmental biology of tridacnid clams". University of California, Santa Barbara

### **ADMINISTRATIVE POSITIONS:**

Graduate Coordinator, Institute of Ecology 1998 – 2007

Board of Scientific Advisors, Highlands Biological Station, North Carolina, 1999 - 2004

Board of Directors, Key Largo Marine Research Laboratory, Florida, 1995 - present

### **TEACHING EXPERIENCE:**

1987 - Present	University of Georgia: Invertebrate Biology, Ecological Physiology, Tropical Marine Invertebrates, Tropical Marine Invertebrates & Ecosystems, Marine Biology, Organismal Biology, Coral Reefs, Invertebrates in Medicine
1989 – 1997	Discovery Bay Marine Laboratory, University of the West Indies, Jamaica, Instructor Northeastern University East/West Marine Biology Program: Coastal Processes, Biology of Coral Reefs,
1977 - 1981	Teaching Assistant, University of California, Santa Barbara, Biology and Geology of Coral Reefs, Human Anatomy

## PUBLICATIONS:

### Books Edited:

*Biology, Mariculture, and Economics of Giant Clams*. 1993. William K. Fitt, Ed.  
Australian Centre for International Agricultural Research: Canberra, A.C.T. 154 pp

Fitt, W.K. and Yellowlees D. 2011. Coral Reefs: future directions. JEMBE 184

### Chapters in books:

Fitt, W.K. and R.K. Trench. 1983. Infection of coelenterate hosts with the symbiotic dinoflagellate *Symbiodinium microadriaticum*. In: *Endocytobiology*, eds., W. Schwemmler and H.E.A. Schenk, Walter de Gruyter. Vol. 2: 675-681

Fitt, W.K. 1988. Role of zooxanthellae in the mariculture of giant clams. In: *Giant Clams in Asia and the Pacific*, J.W. Copland and J.S. Lucas, Eds. Australian Center for International Agricultural Research, Canberra publ. pp. 166-167

Fitt, W.K. 1991. Mariculture of tridacnid clams. In: *The Culture of Estuarine and Marine Bivalve Mollusks in Temperate and Tropical Regions*. W. Menzel, Ed. CRC Press, Inc., Miami, Fl., pp. 283-295

Yellowless D, Rees TAV, Fitt WK 1993. The giant clam as a model animal for study of marine algal-invertebrate associations. In: *Biology and Mariculture of Giant Clams*, ACIAR 147:27-30

Coon, S.L. and W.K. Fitt. 1999. Perspectives on induced settlement and metamorphosis as a tool for oyster reef enhancement. Chapter 11. In: *Oyster Reef Habitat Restoration, A Synopsis and Synthesis of Approaches*. Ed. M.W. Luckenback, R. Mann. K/A/ Wessen. Virginia Institute of Marine Science Press, Gloucester Point, Virginia

Fitt WK (2012) Why do corals grow in South Florida? In: *Tropical Connections*, eds. Bill Kruczynski and Pamela Fletcher, pp. 192-194

### Journal Articles:

- 1 Fitt, W.K. and R.L. Pardy. 1981. Effects of starvation, and light and dark on the energy metabolism of symbiotic and aposymbiotic sea anemones, *Anthopleura elegantissima*. *Marine Biology* 61: 199-205
- 2 Fitt, W.K., S.S. Chang, and R.K. Trench. 1981. Motility patterns of different strains of the symbiotic dinoflagellate *Symbiodinium microadriaticum* (Freudenthal) in culture. *Bulletin of Marine Science* 31: 436-443
- 3 Trench, R.K., N.J. Colley, and W.K. Fitt. 1981. Recognition phenomena in symbioses between marine invertebrates and "zooxanthellae": uptake, sequestration and persistence. *Ber. Deuts. Bot. Gesellschaft.* 94: 213-235
- 4 Fitt, W.K. and R. Trench. 1981. Spawning, development, and acquisition of zooxanthellae by *Tridacna squamosa* (Mollusca, Bivalvia). *Biological Bulletin* 161:213-235

- 5 Fitt, W.K., R.L. Pardy, and M.M. Littler. 1982. Photosynthesis, respiration, and productivity of the symbiotic intertidal sea anemone *Anthopleura elegantissima* (Brandt, 1835). *J. Experimental Marine Biology and Ecology* 61: 213-232
- 6 Fitt, W.K. and R.K. Trench. 1983. The relation of diel patterns of cell division to diel patterns of motility in the symbiotic dinoflagellate *Symbiodinium* (*Gymnodinium*) *microadriaticum*. (Freudenthal) in culture. *New Phytologist* 94: 421-432
- 7 Fitt, W.K. and R.K. Trench. 1983. Infection of coelenterate hosts with the symbiotic dinoflagellate *Symbiodinium microadriaticum*. In: Endocytobiology, eds., W. Schwemmler and H.E.A. Schenk, Walter de Gruyter. Vol. 2: 675-681
- 8 Fitt, W.K. and R.K. Trench. 1983. Endocytosis of the symbiotic dinoflagellate *Symbiodinium microadriaticum* Freudenthal by endodermal cells of the scyphistomae of *Cassiopeia xamachana* and resistance of the algae to host digestion. *J. Cell Science* 64: 195-212
- 9 Fitt, W.K., C.R. Fisher, R.K. Trench. 1984. Larval biology of tridacnid clams. *Aquaculture* 39: 181-195
- 10 Fitt, W.K. 1984. The role of chemosensory behavior of *Symbiodinium microadriaticum*, intermediate hosts, and host behavior in the infection of coelenterates and molluscs with zooxanthellae. *Marine Biology* 81: 9-17
- 11 Michel, W.C. and W.K. Fitt. 1984. Effects of crude oil on a coral-reef hydroid's nutrition, growth, and symbiotic algae. *Marine Biology* 84: 143-154
- 12 Fitt, W.K. 1985. Chemosensory response of the symbiotic dinoflagellate *Symbiodinium microadriaticum*. *J. Phycology* 21: 62-67
- 13 Fitt, W.K. and D.K. Hofmann. 1985. Chemical induction of settlement and metamorphosis of planulae and buds of the reef-dwelling coelenterate *Cassiopeia andromeda*. *Proc. Fifth Intl. Coral Reef Symp.* 5: 239-244
- 14 Fitt, W.K. 1985. Effect of different strains of the zooxanthella *Symbiodinium microadriaticum* on growth and survival of their coelenterate and molluscan hosts. *Proc. Fifth Intl. Coral Reef Symp.* 6: 131-136
- 15 Fisher, C.R., W.K. Fitt, and R.K. Trench. 1985. Photosynthesis and respiration in *Tridacna gigas* as a function of irradiance and size. *Biological Bulletin* 169: 230-245
- 16 Wolk, M., W.K. Fitt, M. Rahat, D.K. Hofmann. 1985. Cholera toxin and thyrotropine can replace the natural inducers for metamorphosis of larvae and buds of the scyphozoan *Cassiopeia andromeda*. *Roux's Arch. Developmental Biology* 194: 487-490
- 17 Fitt, W.K., C.R. Fisher and R.K. Trench. 1986. Contribution of the symbiotic dinoflagellate *Symbiodinium microadriaticum* to the nutrition, growth, and survival of larval and juvenile tridacnid clams. *Aquaculture* 55: 5-22
- 18 Fitt, W.K., D.K. Hofmann, M. Wolk, and M. Rahat. 1986. Requirements of exogenous inducers for the development of axenic larvae and buds of *Cassiopeia andromeda* (Cnidaria: Scyphozoan). *Marine Biology* 94: 415-422

- 19 Heslinga, G.A. and W.K. Fitt. 1987. The domestication of tridacnid clams. *Bioscience* 37: 332-339
- 20 Fitt, W.K., M.P. LeBare, D.D. Sedjeski, D.B. Bonar, R.R. Colwell, R.M. Weiner. 1989. Factors influencing bacterial production of inducers of settlement behavior of the oyster larvae of *Crassostrea gigas*. *Microbial Ecology*. 17: 287-298
- 21 Fitt, W.K. and C.B. Cook. 1989. Nutritional status and the regulation of host/symbiont growth in the zooxanthellate hydroid *Myrionema ambionense*. I. The effect of host feeding and incident light levels in nature. *Endocytobiology*. 4: 281-289
- 22 Cook, C.B. and W.K. Fitt. 1989. Nutritional status and the regulation of host/symbiont growth in the zooxanthellate hydroid *Myrionema ambionense*. II. The effect of feeding, starvation, and dissolved inorganic nutrients. *Endocytobiology*. 4: 285-288
- 23 Porter, J.W., W.K. Fitt, H.J. Spero, C.S. Rugers, M.W. White. 1989. Bleaching in reef corals: physiological and stable isotopic responses. *Proc. National Academy of Science* 86: 9342-9346
- 24 Fitt WK, Labare MP, Fuqua WC, Walch M, Coon SL, Bonar DV, Weiner RM 1989. Factors influencing bacterial production of inducers of settlement behavior of larvae of the oyster *Crassostrea gigas*. *Microbial Ecology* 17:297-298
- 25 Fitt, W.K., S.L. Coon, M. Walsh, R.M. Weiner, R.R. Colwell, D.B. Bonar. 1990. Settlement behavior and metamorphosis of oyster larvae of *Crassostrea gigas* in response to bacterial supernatants. *Marine Biology* 106: 389-394
- 26 Bonar, D.B., S.L. Coon, M. Walsh, R.M. Weiner, W.K. Fitt. 1990. Control of oyster settlement and metamorphosis by endogenous and exogenous chemical cues. *Bulletin Marine Science* 46: 484-498
- 27 Coon, S.L., W.K. Fitt, D.B. Bonar. 1990. Competency and delay of metamorphosis in the Pacific oyster *Crassostrea gigas*. *Marine Biology* 106: 379-387
- 28 D.G. Fautin and W.K. Fitt. 1990. Description, life history, physiology and reproduction of a new species of actinian from Jellyfish lake, Palau. *Hydrobiology* 216-217: 453-461
- 29 Coon, S.L., M. Walsh, W.K. Fitt, R.M. Weiner, D.B. Bonar. 1990. Ammonia induces settlement behavior in oyster larvae. *Biological Bulletin*. 179: 297-303
- 20 Fitt, W.K. 1991. Biotechnology of raising giant clams: food for thought, subsistence, and profit. *Developments in Industrial Microbiology*.
- 31 Fitt, W.K., G.A. Heslinga, T.C. Watson. 1992. Use of antibiotics in the mariculture of giant clams (F. Tridacnidae). *Aquaculture*. 104: 1-10
- 32 Fitt, W.K. and S.L Coon. 1992. Evidence for ammonia as a natural cue for recruitment of oyster larvae to oyster beds in a Georgia salt marsh. *Biological Bulletin* 182: 401-408

- 33 Norton, J.H., Shepherd, M.A., Long, H.M, Fitt, W.K. 1992. The zooxanthellal tube system in the giant clam. *Biological Bulletin* 183: 503-506.
- 34 Fitt, W.K., G.A. Heslinga, T.C. Watson. 1993. Utilization of dissolved inorganic nutrients in growth and mariculture of the tridacnid clam *Tridacna derasa*. *Aquaculture* 109: 27-38
- 35 Rees, T.A.V., D. Yellowlees, W.K. Fitt. 1993. A method for temporal measurement of haemolymph composition in the giant clam symbiosis and its application to glucose and glycerol levels during a diel cycle. *Limnology Oceanography* 38: 213-217
- 36 Fitt, W.K. 1993. Nutrition of giant clams. In: *Biology and Mariculture of Giant Clams*. Australian Centre for International Agricultural Research: Canberra, A.C.T. ACIAR Proceedings No. 147: 31-40
- 37 Fitt, W.K., H.J. Spero, J. Halas, M.W. White, J.W. Porter. 1993. Recovery patterns of the coral *Montastrea annularis* in the Florida Keys after the 1987 Caribbean "bleaching event". *Coral Reefs* 12: 57-64
- 39 Rees, T.A.V., Fitt, W.K., Yellowlees, D. 1993. The haemolymph and its temporal relationship with zooxanthellae metabolism in the giant clam symbiosis. Australian Centre for Intl Agri Res: Canberra, A.C.T. ACIAR Proc. 147:41-45
- 39 Fitt, W.K., Rees T.A.V., Braley R.D., Lucas J.S., Yellowlees, D. 1993. Nitrogen flux in giant clams: size dependency and relationship to zooxanthellae density and clam biomass in the uptake of dissolved inorganic nitrogen. *Marine Biology*. 117: 381-386
- 40 Yellowlees, D., T.A.V. Rees, W.K. Fitt. 1994. The effect of ammonium supplemented sea water on the glutamine synthetase and glutamate dehydrogenase activities in host tissue and zooxanthellae of *Pocillopora damicornis* and on the ammonium uptake rates of the zooxanthellae. *Pacific Science*. 48: 291-295
- 41 Rees, T.A.V., W.K. Fitt, D. Yellowlees. 1994. Host glutamine synthetase activities in the giant clam symbiosis: effect of clam size, nitrogen and light regime. *Marine Biology* 118: 681-685
- 42 Fitt, W.K., Rees, T.A.V., Yellowlees, D. 1995. Relationship between pH and the availability of dissolved inorganic nitrogen in the zooxanthella-giant clam symbiosis. *L&O* 40: 976-982
- 42 Fitt, W.K. and M.E. Warner. 1995. Patterns of bleaching of four species of Caribbean corals. *Biol. Bull.* 189: 298-307
- 43
- 44 Warner, M.E., W.K. Fitt, G.W. Schmidt. 1996. The effects of elevated temperature on the photosynthetic efficiency of zooxanthellae in hospite from four different species of reef coral: a novel approach. *Plant, Cell and Environment* 19: 291-299
- 45 Hofmann, D.K., W.K. Fitt, J. Fleck. 1996. Checkpoints in the life-cycle of Cassiopea spp: control of metagenesis and metamorphosis in a tropical jellyfish. *Int. J. Dev. Biol.* 40:331-338

- 46 Fitt, W.K. and K. Costley. 1998. The role of temperature in survival of the polyp stage of the tropical rhizostome jellyfish Cassiopea xamachana. *J. Exp. Marine Biology and Ecology* 222: 79-91
- 47 Fleck, J. and W.K. Fitt. 1999. Degrading mangrove leaves of Rhizophora mangle provide a natural metamorphic cue for the upside-down jellyfish Cassiopea xamachana. *J. Exp. Marine Biology and Ecology* 234: 84-94
- 48 Brown, B.E., I. Ambarsari, M.E. Warner, W.K. Fitt, R.P. Dunne, S.W. Gibb, D.G. Cummings. 1999. Diurnal changes in photochemical efficiency and xanthophyll concentrations in shallow water reef corals: evidence for photoinhibition and photoprotection. *Coral Reefs* 18:99-105
- 49 Fleck, J., W.K. Fitt, M.G. Hahn. 1999. A proline-rich peptide originating from decomposing mangrove leaves is one natural metamorphic cue of the tropical jellyfish Cassiopea xamachana. *Mar. Ecol. Progr. Ser.* 183: 115-124
- 50 Warner, M.E., W.K. Fitt, G.W. Schmidt. 1999. Damage to photosystem II in symbiotic dinoflagellates: a probable cause of coral bleaching. *Proc. Natl. Acad. Sci.* 98: 8007-8012
- 51 Fitt, W.K., F.K. McFarland, M.E. Warner, G.C. Chilcoat. 2000. Seasonal cycles of tissue biomass and zooxanthellae densities in Caribbean reef corals. *Limnol. Ocean* 45: 677-685
- 52 Fitt, W.K. 2000. Cellular growth of host and symbiont in a cnidarian-zooxanthellae symbiosis. *Biol. Bull.* 198: 110-120
- 53 Brown, B.E., R.P. Dunne, M.E. Warner, I. Ambarsari, W.K. Fitt, S.W. Gibb, D.G. Cummings. 2000. Damage and recovery of photosystem II during a manipulative field experiment on solar bleaching in the coral Gboniastra aspera. *Mar. Ecol. Progr. Ser.* 195: 117-124
- 54 Farmer, M.A., W.K. Fitt, R.K. Trench. 2001. The morphology of the symbiosis between Corculum cardissa (Mollusca: Bivalvia) and Symbiodinium corculorum (Dinophyceae). *Biological Bulletin* 200: 336-343
- 55 Fitt, W.K. and C.B. Cook. 2001. The effects of feeding and addition of dissolved inorganic nutrients in maintaining the symbiosis between dinoflagellates and a tropical marine cnidarian. *Mar. Biol.* 139:507-517
- 56 Fitt, W.K. and C.B. Cook. 2000. Photoacclimation and the effect of the symbiotic environment on the photosynthetic response of symbiotic dinoflagellates in the tropical marine hydroid Myrionema amboinense. *J. Exp. Mar. Biol. & Ecol.* 256:15-31
- 57 Fitt, W.K., B.E. Brown, M.E. Warner, R.P. Dunne. 2001. Coral bleaching, interpretation of thermal thresholds in tropical corals. *Coral Reefs* 20:51-65
- 58 Warner, M.E., C. Chilcoat, F.K. McFarland, W.K. Fitt. 2002. Seasonal fluctuation in the photosynthetic efficiency of photosystem II in symbiotic dinoflagellates within Caribbean reef-building corals. *Mar. Biol.* 141:31-38
- 59 LaJeunesse, T.C., W.K.W. Loh, T. van Woesik, O. Hoegh-Guldberg, G.S. Schmidt, W.K. Fitt. 2003. Low symbiont diversity in southern Great Barrier Reef corals relative to those of the Caribbean. *Limnol. Oceanogr.* 48:2046-2054

- 60 Wellington, G.M. and W.K. Fitt.. 2003 Influence of UV radiation on the survival of larvae from broadcast-spawning reef corals. *Marine Biology* 143:1185-1192
- 61 LaJeunesse, T.C., R. Bhagooli, M. Hidaka, L. deVantier, T. Done, G. W. Schmidt, W. K. Fitt, O. Hoegh-Guldberg. 2004. Closely related *Symbiodinium* spp. differ in relative dominance in coral reef host communities across environmental, latitudinal and biogeographic gradients. *Mar. Ecol. Prog. Ser.* 284: 147-161.
- 62 LaJeunesse TC, Thornhill DJ, Cox E, Stanton F, Fitt WK and Schmidt GW 2004. High diversity and host specificity observed among symbiotic dinoflagellates in reef coral communities from Hawaii. *Coral Reefs* 23:596-603.
- 63 Todd, B.D., D.J. Thornhill, W.K. Fitt. 2006. Patterns of inorganic phosphate uptake in *Cassiopea xamachana*: a bioindicator species. *Marine Pollution Bull* 52:515-521
- 64 Thornhill, D.J., T. C. LaJeunesse, G.W. Schmidt, William K. Fitt 2006. Multi-year seasonal geotypic surveys of coral-dinoflagellate symbioses reveal prevalent stability of postbleaching reversion. *Marine Biology* 148: 711-722
- 65 Thornhill, D.J., Daniel, M.W., LaJeunesse, T.C., Bruns, B.U., Schmidt, G.W. and Fitt, W.K. (2006) Natural infections of aposymbiotic *Cassiopea xamachana* scyphistomae from environmental pools of *Symbiodinium*. *J. Exp. Mar. Biol. Ecol.* 338:50-56
- 66 Thornhill, D.J., W.K. Fitt, G.W. Schmidt (2006) Highly stable symbioses among western Atlantic brooding corals. *Coral Reef* 25: 515-519
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- 68 LaJeunesse, T. C., H. Reyes Bonilla, M. E. Warner, M. Wills, G. W. Schmidt, and W. K. Fitt (2008) Specificity and stability in high latitude eastern Pacific coral-algal symbioses. *Oceanogr Limnol* 53:719-727
- 69 Daniel J. Thornhill, Dustin W. Kemp, Brigitte U. Bruns, William K. Fitt, Gregory W. Schmidt (2008) Correspondence between cold tolerance and temperate biogeography in Western Atlantic *Symbiodinium* (Dinophyta) lineage. *Phycology* 44:1126-1135
- 70 Reynolds JCM, Bruns BU, Fitt WK, Schmidt GW (2008) Enhanced Photoprotection Pathways in Symbiotic Dinoflagellates of Shallow Water Corals and Other Cnidarians. *PNAS* 105:13674-8
- 71 Fitt WK, Gates R, Hoegh-Guldberg O, Bythell JC, Jatkar A, Grottoli AG, Cabrera MCG, Fisher P, Lajuenesse TC, Pantos O, Iglesias-Prieto R Franklin DJ, Rodrigues LJ, Torregiani JM, van Woesik R, Lesser MP (2009) Response of Two Species of Indo-Pacific Corals, *Porites cylindrica* and *Stylophora pistillata*, to Short-Term Thermal Stress: The host does matter in determining the tolerance of corals to bleaching. *JEMBE* 373:102-110
- 72 Thornhill DJ, Xiang Y, Fitt WK, Santos SR (2009) Reef Endemism, Host Specificity and Temporal Stability in Populations of Symbiotic Dinoflagellates from Two Ecologically Dominant Caribbean Corals. *PloS One* 4(7): e6262.doi:10.1371/journal.pone.0006262

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- 75 LaJeunesse,TC, Fitt WK, Schmidt GW (2010) The reticulated chloroplasts of zooxanthellae (Symbiodinium) and differences in chlorophyll localization among life cycle stages. Coral Reefs 29:627
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- 78 Thornhill DJ, Chilcoat GC, Iglesias-Prieto R, LaJeunesse TC, Kemp DW, McCabe Reynolds J, Rotjan RD, Schmidt GW, Shannon T, Todd BD, Warner ME, Fitt WK (2011) A connection between colony biomass and death in Caribbean reef-building corals. PLoS ONE: 6(12): e29535
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- 80 Kirk N, Thornhill DJ, Kemp DW, Fitt WK, Santos SR (2013) Persistent associations between apicomplexan symbionts and Caribbean reef corals. Coral Reefs 32:847-858
- 81 João G. Monteiro, Cristiane F. Costa, Krystyna Gorlach-Lira, William K. Fitt, Sergio S. Stefani, Roberto Sassi, Ricardo S. Santos, Todd C. LaJeunesse (2013) Ecological and biogeographic implications of *Siderastrea* symbiotic relation with Symbiodinium sp. C46 in Sal Island (Cape Verde, East Atlantic Ocean). Marine Biodiversity 43:261-272
- 82 Costa CF; Sassi R, Gelarch-Lira K, LaJeunesse TC, Fitt WK (2013) Seasonal changes in zooxanthellae harbored by Zoanthidea from coastal reefs in northeastern Brazil. Pan-American J. Aq. Sci. 8:243-264
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*Siderastrea stellata* during bleaching in the coastal reefs of northeastern Brazil. Latin American J of Aquatic Research 43:

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- 87 Tansik AL, Fitt WK, Hopkinson BM (2015) Extracellular carbonic anhydrase in three Caribbean corals: quantification of activity and role in CO<sub>2</sub> uptake. *Coral Reefs* 34:703-713
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- 90 Kemp DW, Ruzicka RR, Colella MA, Porter JW, Fitt WK (2016) *Invited contribution for special issue of Ecosphere: Life after cold anomaly: physiological and demographic effects of Florida Keys reef-building corals.* *Ecosphere* 7:e01373
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- 93 Fitt WK (2020) Florida manatees, *Trichechus manatus latirostris* actively consume the sponge *Condrilla caribensis*. *PeerJ* 8:e8443 <https://doi.org/10.7717/peerj.8443> (accepted December 2019)
- 94 Kempf SC, Kemp DW, Fitt WK (2020) The weight of it all: symbiotic dinoflagellates in Caribbean reef-building corals. *Mar Biol* 167(8):6 pages Article number ARTN
- 95 Fitt WK, Hofmann DK (2020) The effects of the UV-Blocker Oxybenzone (Benzophenone-3) on planulae swimming and metamorphosis of the Scyphozoans *Cassiopea xamachana* and *Cassiopea frondosa*. *Oceans* 1: 174-180
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- 97 Letourneau ML, Hopkinson BM, Fitt WK, Medeiros PM (2020) Molecular composition and biodegradation of loggerhead sponge *Spheciospongia vesparium* exhalent dissolved organic matter. *Mar Environmental Res* 162:105130
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- 100 Mónica Medina, Aki Ohdera, Anthony Bellantuono, Justin Dalrymple, Victoria Sharp, Bailey Steinworth, Dietrich Kurt Hofmann, Mark Q. Martindale, Matthew DeGennaro,

Edgar Gamero-Mora, André C. Morandini, William K. Fitt (2021) The Upside-down Jellyfish *Cassiopea xamachana* as an emerging model system to study cnidarian-algal symbiosis. Ch. 11, In: *Marine Model Organisms in Experimental Biology*, 23pp, eBook ISBN 9781003217503

- 101 William K. Fitt, Dietrich K. Hofmann, Dustin W. Kemp, Aki H. Ohdera Different Physiology in the Jellyfish *Cassiopea xamachana* and *C. frondosa* in Florida Bay. *Oceans* 2021, 2, 811–821
- 102 Todd C. LaJeunesse. Anastazia T. Banaszak. Charles R. Fisher. Malcolm M. Shick, Mark E. Warner, James W. Porter, Armand M. Kuris. Roberto Iglesias-Prieto, William K. Fitt (2021) Robert Kent Trench (1940–1921): a life devoted to symbiotic mutualisms and seeking nature’s truth. *Symbiosis*: <https://doi.org/10.1007/s13199-021-00817-w>
- 103 Ohdera AH, Avila-Magaña V, Rubain H, Laird H, Fitt WK<sup>1</sup>, Medina M (2023) Comparative genomic insights into bacterial induction of larval settlement and metamorphosis in the upside-down jellyfish *Cassiopea*. *Sphere* 8(3):22 June 2023
- 104 Gantt SE, Keister EF, Monfroy AA, Merck DE, Fitt WK, Muller EM, Kemp DW (2023) Wild and nursery-raised corals: comparative physiology of two framework coral species. *Coral Reefs* 42:299-310
- 105 Butler CC, Turnham KE, Lewis AM, Nitschke MR, Warner ME, Kemp DW, Hoegh-Guldberg O, Fitt WK, van Oppen M, LaJeunesse TC (2023) Formal recognition of host-generalist species of dinoflagellate *Cladocopium*, Symbiodiniaceae, mutualistic with Indo-Pacific reef corals. *J Phycology* 59:668-711
- 106 Delphine Thibault, Zafrir Kuplik, Laura Prieto, Angelica Enrique-Navarro, Michael Brown, Shin Uye, Tom Doyle, Kylie Pitt, William Fitt, and Mark Gibbons (2024) Ecology of Rhizostomes. *Advances in Marine Biology*, 7: 397-410
- 107 Fitt WK, Hofmann DK, Ohdera AH, Kemp DW, Morandini AC (2024) The effects of heat stress on the physiology and mortality of the rhizostome upside-down jellyfish *Cassiopea xamachana*—observations throughout the life cycle. *Oceans*, accepted 17 December 2024
- 108 Ohdera AH, Dalrymple J, Avila-Magaña V, Sharp V, Watson K, McCauley M, Steinworth B, Díaz-Almeyda EM, Kitchen SA, Poole AZ, Bellantuono A, Haridas S, Grigoriev IV, Goentoro L, Vallen E, Baker DM, LaJeunesse TC, Loesgen S, Martindale MQ, DeGennaro M, Fitt WK, Medina M (2024) Symbiosis-driven development in an early metazoan lineage. *Cell*, submitted
- 109 Fitt WK (2024) Bleaching and a corallivore of the coral *Siderastrea radians* in the Florida Keys. Submitted to *Interactions between Marine Invertebrates and Symbiotic Microbes*

## Abstracts:

Fitt, W.K. and R.L. Pardy. 1977. The effect of feeding and starvation on a sea anemone's respiratory quotient. *Western Society of Naturalists, Abs. 67th Annual Meeting*, University of California, Santa Cruz, California.

Fitt, W.K. 1979. Intrinsic patterns of motility in symbiotic zooxanthellae. *Western Society of Naturalists, Abs. 69th Annual Meeting*, California State University, Pomona, California.

Fitt, W.K. and R.K. Trench. 1980. Uptake of zooxanthellae by veliger and juvenile stages of *Tridacna squamosa*. *American Zoologist* 20: 777.

Porter, J.W., G.J. Smith, J.F. Battey, S. Chang, and W.K. Fitt. 1980. Photobiology of reef corals: photoadaptive mechanisms and their three ecological consequences. *Limnology and Oceanography*

Walsh, M., Labare, M., Weiner, R., Fitt, W., and Bonar, D. 1987. Use of specific bacterial biofilms and their products to enhance spat set of the oysters *Crassostrea virginica* and *C. gigas*. *J. Shellfish Res.* 5: 35.

Coon, S.L., M. Walsh, W.K. Fitt, D.B. Bonar, R.M. Weiner. 1988. Induction of settlement behavior in oyster larvae by ammonia. *American Zoologist* 28: 70A.

Khalil, A., W.K. Fitt, S. Coon, D.B. Bonar. 1988. Production of ammonia by fed and starved oysters, *Crassostrea gigas*, in relation to metabolism and metamorphosis. *American Zoologist* 28: 122A.

Fitt, W.K. 1988. Chemical induction of metamorphosis of the scyphozoan *Cassiopea* sp. *American Zoologist* 28: 122A.

Bonar, D.B., S.L. Coon, M. Walch, R.M. Weiner, and W.K. Fitt. 1988. Control of oyster settlement and metamorphosis by endogenous and exogenous chemical cues. *American Zoologist* 28: 270.

Fitt, W.K. 1988. Increasing growth rates and survival of giant clams in mariculture. *J. Shellfish Research* 7: 547.

Coon, S.L., D.B. Bonar, W.K. Fitt. 1988. An integrated model of oyster settlement and metamorphosis. *J. Shellfish Research* 7: 548.

Fitt, W.K., H.J. Spero, J.W. Porter. 1989. Bleaching of two Caribbean reef corals. *American Zoologist* 29: 147A.

Cook, C.B., W.K. Fitt, G. Muller-Parker. 1989. Cnidarians as hosts for zooxanthellae: comparing sea anemones, hydroids, and scleractinian corals. *American Zoologist* 29: 147A.

Meier, O.W., W.K. Fitt, J.A. Pechenik. 1989. Metamorphosis and larval energetics of the scyphozoan jellyfish *Cassiopea*. Sp. *American Zoologist*. 29: 173A.

- Fitt, W.K., D. E. Haymans, S.L. Coon. 1989. Production and role of ammonia, and inducer of settlement of veliger larvae of oysters. *J. Shellfish Research* 8: 456.
- Fitt, W.K. 1991. Natural metamorphic cues of larvae of a tropical jellyfish. *American Zoologist* 31: 85A.
- Warner, M, W.K. Fitt. 1991. Mechanisms of bleaching of zooxanthellate symbioses. *Amer. Zool.* 31: 28A.
- Keith, C.H., L.T. Lee, W.K. Fitt. 1991. Potential neurofilament subunits in cnidaria. *American Zoologist* 31: 32A.
- O'Beirn, F.S., P.B. Heffernan, R.L. Walker, W.K. Fitt. 1992. Temporal and spatial recruitment variations of *Crassostrea virginica* within a Georgia estuary. *J. Shellfish Research*, 11
- Walden, T. and W.K. Fitt. 1993. Metamorphosis of larvae of the scyphozoan *Cassiopea xamachana*: natural metamorphic inducers. Proc. 7<sup>th</sup> Intl. Coral Reef Symp. 2: 503
- Yellowlees, D, T.A.V. Rees and W.K. Fitt. 1993. The giant clam as an animal For study of marine alga-invertebrate associations. Proc. 7<sup>th</sup> Intl. Coral Reef Symp. 2: 753
- Fitt, W.K., T.A.V. Rees and D. Yellowlees. 1993. Nitrogen flux in giant clams: Relation to clam size and zooxanthellae density. Proc. 7<sup>th</sup> Intl. Coral Reef Symp. 2: 752
- Rees, T.A.V., W.K. Fitt and D. Yellowlees. 1993. The haemolymph and nutritional Interactions in the giant clam symbiosis. Proc. 7<sup>th</sup> Intl. Coral Reef Symp. 2: 752
- Fitt, W.K., Coon, S.L. 1994. Oyster settlement: a synthesis of old and new data. *J. Shellfish Research*, 12:
- Fitt, W.K. 1994. Bleaching of reef corals: the alga's point of view. L&O
- Warner, M.E. and W.K. Fitt. 1994. Bleaching of zooxanthellae in culture and within the host. L&O
- Vodenichar, J.S. and W.K. Fitt. 1994. Ontogenic patterns in nutrient physiology or the zooxanthellate jellyfish Cassiopea xamachana. L&O
- Warner, M.E. and W.K. Fitt. 1995. The effects of acute elevated temperature exposure on the physiology of Symbiodinium in hospite and in culture. L&O
- Costa, C.F., F.D. Amaral, W.K. Fitt. 1997. Study of reduction of the zooxanthellae of Siderastrea stellata Verrill, 1808 (Anthozoa, Scleractinia) from Gaibu (PE). Encontro de Zoologie do Nordeste XI:5

Fitt, W.K., F.K. McFarland, M.E. Warner. 1998. Seasonal cycles of tissue biomass and zooxanthellae densities in Caribbean reef corals: a new definition of bleaching. *Am. Zool.* 72A:255

Warner, M.E., W.K. Fitt. 1998. Bleaching of Caribbean reef corals: time course, depth gradients and mechanisms. *Am. Zool.* 72A:250

Kirk, NL, DJ Thornhill, DW Kemp, WK Fitt, and SR Santos. 2011. Persistent and widespread associations of Apicomplaxans (*Chromal veolata*) with Caribbean reef corals. *J phycol.* 47(S2): S22

## GRANTS RECEIVED:

### External:

South Eastern Conference Faculty Travel Grant, 2024, \$1000. Goulet (U. Mississippi) with Fitt as co-PI.

NSF RAPID, 2024, “The reaction of non-scleractinian cnidarians to the unprecedented Summer 2023 warm water events: consequences to Caribbean coral reefs in the upcoming months and year”, Goulet and Fitt, not funded.

NSF Collaborative Research: EDGE: “The upside-down jellyfish, *Cassiopea xamachana*: From emerging to established model system in comparative biology” co-PI, not funded

NSF, 2023-2026 \$131031 “Collaborative Research: MUCUS: Measuring and Understanding the *Cassiopea* Use of Space” (co-PI Miller, Medina).

Fulbright 2020-2022 \$22500 “The role of global warming in the invasion and reproduction of the jellyfish *Cassiopea* in Brazil” Fulbright US Scholar award.

Moore Foundation, Symbiosis Model Systems 2019-2023, “*Cassiopea* – a jellyfish”. (not funded).

SEC Faculty Travel Grant, 2017-2018 \$1200

National Science Foundation, 2013-2017 \$307000 “Ocean acidification: coral inorganic carbon processing in response to ocean acidification” (co-PI, Hopkinson, Cai, Meile)

National Science Foundation, 2018-2020, co-PIs Dustin Kemp, Jim Porter (not funded)  
Collaborative Research: Ecosystem in transition: Predicting phenotypes that enhance survivorship and environmental susceptibility of reef-building coral (not funded)

National Science Foundation, 2018-2020, co-PI Brian Hopkinson (not funded)  
Collaborative Research: Effects of three-dimensional structure and community composition on coral reef productivity

National Science Foundation, 2018-2020, co-PI Brian Hopkinson (not funded)  
IOS Preliminary Proposal: Collaborative Research: Testing a mechanism by which increased CO<sub>2</sub> concentrations reduce calcification rates in reef-building corals

Coral Reef Alliance, 2016-2018: Assessing coral response to thermal bleaching events using a multi-biomarker approach, Co-PIs: Patricia Medeiros (Marine Science, UGA, not funded)

National Science Foundation, 2016-2019: Three dimensional structure and community composition effects of coral reef metabolism, Co-PIs: Brian Hopkinson, Matthew Long, Matthew Johnson-Roberson (not funded)

Joint Genome Institute, 2016-2020: Comparative genomics of larval settlement and metamorphosis inducing bacteria associated with degrading mangrove leaf biofilm. Co-PIs: Monica Medina, Aki Odhera (not funded)

National Science Foundation, 2015-2017, Biological Oceanography, RAPID:  
COLLABORATIVE RESEARCH: Coral bleaching and recovery of metabolic function of

common reef-building corals of the Florida Keys, Co-PIs: DK Kemp (not funded)

ENTRIX-CARDNO-BP, 2010-2012, \$86979, "Expansion of Coral Tissue and Zooxanthellae Monitoring in the Florida Keys" Fitt and Porter.

Coral Reef Targeted Research and Capacity Building for Management, 2007-2010, \$31000, World Bank-University of Queensland

USEPA Fellow, "Osmotic changes in a symbiotic flatworm" 2005-2007, \$97430.

Coral Reef Targeted Research and Capacity Building for Management, 2005-2010, World Bank and Global Environment Fund, funded for \$18,200,000 for 5 years (82 scientists directly involved)

National Science Foundation, 2002-2009, \$698846, "Reef corals: symbiotic dinoflagellate/host combinations and their physiological response to environmental change", Fitt and Schmidt (Plant Sciences)

NSF, REU 2004, \$5000. Supplement to "Reef corals: symbiotic dinoflagellate/host combinations and their physiological response to environmental change", Fitt and Schmidt (Plant Sciences)

National Oceanic and Atmospheric Administration, National Undersea Research Program, Key Largo, 2002-2003, \$2000. "Health of reef corals: seasonal patterns of tissue biomass and symbiont diversity"

Australian Research Council. "Tracing the origins of stress in the symbionts of reef-building corals" 2005-2008 PIs: Hoegh-Guldberg, O., Yellowlees, D., Gates, R.D., Fitt, W.K., LaJeunesse, T.C. (AU \$800,000)

National Oceanic and Atmospheric Administration, National Undersea Research Program, Key Largo, 2000-2001, \$9900. "Potential for Acropora cervicornis (staghorn coral) and Acropora palmata (elkhorn coral) in coral reef restoration", Principal Investigator.

National Oceanic and Atmospheric Administration, National Undersea Research Program, Caribbean Marine Research Laboratory, 2000-2001, ca. \$7960. "Restoration biology of the acroporid corals in the Caribbean", Principal Investigator.

National Coral Reef Institute, 1999-2001, \$5000. "Genetic variation in Acroporid Corals in the Caribbean", Grant in Aid of Research, Principal Investigator.

National Science Foundation, 1999-2002, \$405000. "Physiological and molecular dissection of the differential sensitivity of coral symbionts to thermal-induced bleaching: mechanisms or photodamage and photoprotection", Co-Principal Investigator (w/ Gregory W. Schmidt, Botany and Mark E. Warner, Post-doc)

National Oceanic and Atmospheric Administration, National Undersea Research Program, 1998-1999, \$7,000. "Nutrient status of reef-building corals in the Bahamas and the Florida Keys", Principal Investigator.

National Science Foundation, Ph.D. Dissertation Improvement Grant to Mark Warner. 1997-1999, \$8410. "The effects of elevated temperatures on symbiotic dinoflagellates: possible sites of damage and protection and coral "bleaching", Principal Investigator.

National Oceanic and Atmospheric Administration, National Undersea Research Program, 1997-2000, \$50622. "Seasonal monitoring of tissues of four species of Caribbean reef corals", Principal Investigator.

National Oceanic and Atmospheric Administration, National Undersea Research Program, 1996-1999, \$40000. "Seasonal patterns in tissue biomass and zooxanthellae in Floridean corals", Principal Investigator.

National Science Foundation, Biological Oceanography, 1992-1996, \$100000. "Bleaching of symbiotic algae (zooxanthellae) and their invertebrate hosts: causes and mechanisms," Principal Investigator.

National Science Foundation, Biological Oceanography, 1995, \$5000.  
Research Experience for Undergraduate Students, "Bleaching of symbiotic algae (zooxanthellae) and their invertebrate hosts: causes and mechanisms," Supplement for NSF grant above.

U.S. State Department (through Virginia Institute of Marine Science), 1995-7, \$12500  
"Giant Clams in the Red Sea: A Unique Ecological Resource or a Sustainable Economic Resource" Egypt-Israel Bi-national funding.

National Oceanic and Atmospheric Administration, National Undersea Research Program, 1994-1996, \$50000. "Seasonal variation in a zooxanthellate reef coral and fire coral, and effect of transplantation". Principal Investigator.

Office of Naval Research, 1992-1995, \$100000. "Mechanisms of bleaching of symbiotic algae (zooxanthellae) and their marine hosts: the role of light quality and high temperature," Principal Investigator.

National Science Foundation, Physiological Processes, 1991-93, \$58387. "Natural inducers of larval settlement and metamorphosis associated with mangrove leaves: identity and the role of bacteria in their production", Principal Investigator.

National Science Foundation, Physiological Processes, 1992-94, \$9625.  
Research Experience for Undergraduate Students, "Larval Settlement and Metamorphosis", Supplement for NSF grant above.

Sea Grant, University of Georgia, 1990, \$7300. "The biology and ecology of whelks in Georgia coastal waters", Principal Investigator.

ACIAR (Australian Centre for International Agricultural Research), 1989-92, \$22000. "Improving growth rates and survival of giant clams in mariculture" (part of the International Project "The culture of the giant clam for food and restocking of tropical reefs-second phase"), Principal Investigator.

National Science Foundation, Biological Oceanography, 1988-90, \$20000. "Bleaching of reef corals", Co-Principal Investigator (w/ J.W. Porter, H.J. Spero)

Sea Grant (University of Hawaii) 1988, \$5000. "The role of inorganic nitrogen and phosphorous in the growth of giant clams" (in collaboration with U.S. Department of the Interior funded project at the Micronesian Mariculture Demonstration Center in Palau), Principal Investigator.



Riker Fellowship, Bermuda Biological Station, 1988, \$1000. "Effect of dissolved inorganic nitrogen on a symbiotic coelenterate's growth and algal symbionts", Principal Investigator.

United States Agency for International Development, Peace Fellowship Program, 1987-88, \$8780. "Physiological ecology and biochemistry of the Pacific oyster *Crassostrea gigas* during larval development, metamorphosis, and early juvenile growth." Co-Invesigator (w/ A. Khalil).

**University of Georgia:**

1987-88 UGA Research Foundation, "Mechanisms of settlement and metamorphosis of marine invertebrate larvae", \$6000.

1988-89 UGA Research Foundation, "The role of nerves and neurosensory cells in metamorphosis", \$8000.

1990 Instructional Improvement Grant, OID, "Students Responding to Georgia Invertebrates", (creation of two handbooks for student use in Invertebrate Zoology (ZOO 407/607) and Ecological Physiology (ZOO 424/624), \$2000.

## SYMPOSIA:

### International

- 2024 AIMEC-NSF Joint Workshop for the Model Species *Cassiopea*: Molecular Analysis with Gridion and Fluidic Dynamics, Owagawa, Japan
- 2021 15<sup>th</sup> International Coral Reef Symposium, Bremen, Germany  
Session: The jellyfish *Cassiopea*: a model organism (remote)
- 2020 14<sup>th</sup> International Coral Reef Symposium, Bremen, Germany  
Session: The jellyfish *Cassiopea*: a model organism (cancelled)
- 2018 Patricia M. Medeiros, Maria L. Letourneau, Brian M. Hopkinson, William K. Fitt  
Molecular composition and biodegradation of sponge exhalent dissolved organic matter, ASLO, June, Victoria, Canada
- 2016 13<sup>th</sup> International Coral Reef Symposium, Honolulu, US  
“Inorganic carbon uptake and processing for photosynthesis in the coral-*Symbiodinium* symbiosis: a quantitative picture” Tansik, Fitt, Meile, Hopkinson  
“3D photogrammetry for measuring reef productivity: advances in light proagation and self-occlusion” Johnson-Roberson, Fitt, Hopkinson, Long, Iscar, Skinner  
“Multi-decade monitoring of reef-building corals in the Florida Keys Reef Tract” Baker, Kemp, Hopkinson, Fitt  
“Functional aspects of the jellyfish *Cassiopea xamachana* – *Symbiodinium* symbiosis” Fitt, Epps, Mattheiss, Hofmann, Odhera, Medina, LaJuenesse
- 2012 12<sup>th</sup> International Coral Reef Symposium, Cairns, Australia  
“Role of UVR in the lifecycle of the jellyfish *Cassiopea*” Meghan, Hardy, Gleason, Fitt  
“Bleaching of the fire corals *Millipora*” Fitt
- 2009 “Life and death of a coral” Targeted Research and Capacity Building for Management Workshop, Heron Island, Australia
- 2008 11<sup>th</sup> International Coral Reef Symposium, Ft. Lauderdale, USA: “Antioxidant activity of extracts and secondary metabolites from *Pseudopterogorgia* sps” Maia Mukherjee, Lyndon West, Howard Lasker, Gregory Schmidt, William Fitt  
“Micro-niche partitioning and the photobiology of *Symbiodinium* associated with *Montastraea faveolata*” Dustin Kemp, Xavier Hernandez-Pech, Roberto Iglesias-Prieto, Gregory Schmidt, and William Fitt  
“Photosmoregulation: evidence of host behavioral photoregulation of an algal endosymbiont by the acoel *Convolutriloba retrogemma* as a means of non-metabolic osmoregulation” Tom Shannon\* (graduate student in my laboratory)  
“Bleaching, El Nino, and El Nina: 13 years of seasonal analysis of reef-building corals in Florida, the Bahamas, and the Caribbean” William Fitt, Dustin Kemp, Xavier Hernandez-Pech, Roberto Iglesias-Prieto, Dan Thornhill, Brigitte Bruns, Gregory Schmidt
- 2007 “A post-El Nino spike in zooxanthelae density – what does it mean?” Coral Reef Targeted Research and Capacity Building for Management Workshop, Institute for Marine Science, Zanzibar
- 2006 “Thermal history of Caribbean reef corals” Society of Experimental Biology, Annual Meeting, Canterbury, England

- 2005 Coral Reef, Targeted Research Group on Coral Bleaching, "Understanding the stress response of corals and Symbiodinium in a rapidly changing environment". Unidad Academica Puerto Morelos, UNAM, Mexico.
- 2004 10<sup>th</sup> International Coral Reef Symposium, Okinawa, Japan. "Physiological specificity in Symbiodinium symbioses" Fitt, LaJeunesse, Thornhill, Schmidt, "Phylogeography of Symbiodinium diversity" LaJeunesse, Thornhill, Schmidt, Fitt, "Seasonal availability of symbiotic dinoflagellates (Symbiodinium sp) in reef water: a bioassay", Daniel, Thornhill, LaJeunesse, Schmidt, Fitt, "Change and stability of symbiotic dinoflagellate taxa in reef building corals" Thornhill, LaJeunesse, Schmidt, Fitt, "Differential Sensitivity of Photosynthetic Electron Transport to Elevating Temperature Among Cultured Symbiodinium Genotypes" Bruns, Warner, Thornhill, McCabe, Fitt, Schmidt, "A bioindicator species for dissolved phosphate in the Florida Keys" Todd and Fitt.
- 2003 7<sup>th</sup> International Conference on Ceolenterate Biology, Lawrence, Kansas. "Physiological attributes of coral tissue over time: seasons and years" Fitt, Thornhill, LaJeunesse, Chilcoat, Shannon, "Change and stability of symbiotic dinoflagellate taxa in reef-building corals" Thornhill, LaJeunesse, Schmidt, Fitt, "Effect of season and coral size on the growth rate and survival of transplanted Acropora cervicornis in the Caribbean" Chilcoat and Fitt, "Host tissue environment drives the diversification and evolution of symbiotic dinoflagellates" LaJeunesse, Fitt, Schmidt, "Alal symbioses and the potential for osmotic stress: how do symbiotic reef invertebrates deal with it?" Shannon, Gates, Fitt.
- 2000 9<sup>th</sup> International Coral Reef Symposium, Bali, Indonesia. "Comparisons of tissue biomass and zooxanthellae populations of five reef-building corals living in the Bahamas and on the Florida reef tract and relationship to bleaching" Fitt, Warner, Chilcoat, "Effects of season and coral size on the growth rate and survival of transplanted staghorn coral Acropora cervicornis in the Caribbean" Chilcoat, Brazeau, and Fitt. 2000 "The photosynthetic response to stress in different taxa of symbiotic dinoflatellates" Warner, LaJeunesse, Schmidt, Fitt. "Seasonal fluctuation in the photosynthetic efficiency of reef building corals" Warner, Fitt, Chilcoat.
- 1999 International Conference on the Scientific Aspects of Coral Reef Assessment, Monitoring, and Restoration, Ft. Lauderdale. "Monitoring the physiology of reef corals: tissue biomass and zooxanthellae" (Fitt, Warner, McFarland, Chilcoat), "The use of chlorophyll fluorescence in the physiological assessment of reef corals" (Warner, Fitt).
- 1997 Festkolloquium, Lehrstuhl Fur Spezielle Zoologie der Ruhr-Universitat Bochum, Germany. "The importance of multidisciplinary approaches to research problems: the jellyfish Cassiopea, as a case history" (Fitt)
- 1996 8<sup>th</sup> International Coral Reef Symposium, Panama. "Bleaching of firecorals" (Fitt, Cook, Warner, and Spruck) "Damage and protection of photosystem II in different zooxanthellae during warm water bleaching" (Warner and Fitt)
- 1993 1st European Regional Meeting, International Society for Reef Studies: "Induction of metamorphosis in larvae of *Cassiopea xamachana* (Cnidaria: Scyphozoa): characterization of a natural substratum" (Fleck and Fitt)
- 1992 7<sup>th</sup> International Coral Reef Symposium, Guam. Presentations: "The giant clam as a animal for study of marine alga-invertebrate associations" (Yellowlees, Rees, Fitt), "Nitrogen flux in giant clams: relation to

- clam size and zooxanthellae density" (Fitt, Rees, Yellowlees), "The haemolymph and nutritional interactions in the giant clam symbiosis" (Rees, Yellowlees, Fitt); "Metamorphosis of larvae of the scyphozoan *Cassiopea xamachana*: natural metamorphic inducers" (Walden and Fitt)
- 1992 World Aquaculture Symposium, Orlando, Florida. "Temporal and spatial recruitment variations of *Crassostrea virginica* within a Georgia Estuary" (O'Beirn, Heffernan, Walker, Fitt)
- 1991 International Marine Biotechnology Conference, Baltimore, Maryland. "Biotechnology of raising giant clams" (Fitt)
- 1991 International workshop, Coconut Island, Hawaii. "Nutrient limitation in the symbiotic association between zooxanthellae and reef-building corals" (Fitt)
- 1989 Internattonal Conference on Coelenterate Biology, Southampton, England  
 "Description, life history, physiology, and reproduction of a new jellyfish-eating actinian species from Palau" (Fitt and Fautin). "The role of host feeding in nutrient supply for zooxanthellae symbiotic with cnidarians." (Cook, Muller-Parker, Fitt)
- 1989 4<sup>th</sup> International Colloquium on Endocytobiology and Symbiosis, Lyon, France. "Some effects of dissolved inorganic nutrients on the growth of zooxanthellae in the hydroid *Myrionema ambionense*" (Cook and Fitt)  
 "Some effects of host feeding on growth of zooxanthellae in the marine hydroid *Myrionema ambionense* in the laboratory and in nature" (Fitt and Cook).
- 1989 World Aquaculture Symposium, Los Angeles. "Increasing growth rates and survival of giant clams in mariculture" (Fitt) "Identification of soluble microbial products that induce settlement behavior in oyster larvae (*Crassostrea*)" (Walsh, Dagasan, Coon, Fitt, Weiner, Bonar, Colwell), "An integrated model of oyster settlement and metamorphosis" (Coon, Bonar, Fitt)
- 1988 6<sup>th</sup> International Coral Reef Symposium, Townsville, Australia. Participant in two symposia:  
 "Settlement and metamorphosis of larvae of the reef-dwelling jellyfish of the genus *Cassiopea*" (Fitt),  
 and "Growth of zooxanthellae and their invertebrate hosts during initial establishment of a symbiosis" (Fitt)
- 1988 International Mariculture Conference: "Giant Clam Workshop" Townsville, Australia. "The role of zooxanthellae in the mariculture of giant clams" (Fitt)
- 1987 International Symposium on Marine Symbiosis, Eilat, Israel. "Regulation of numbers of zooxanthellae in a marine symbiosis" (Fitt)
- 1986 Third International Colloquium on Endocytobiology and Symbiosis, New York. "Regulation of numbers of the zooxanthella *Symbiodinium* sp. in a tropical marine cnidarian" (Fitt)
- 1985 5<sup>th</sup> International Coral Reef Symposium, Papeete, Tahiti. "Chemical induction of settlement and metamorphosis of planulae and buds of the reef-dwelling coelenterate *Cassiopeia andromeda*" (Fitt and Hofmann), "Effect of different strains of the zooxanthella *Symbiodinium microaduraticum* on growth and survival of their coelenterate and molluscan hosts" (Fitt)
- 1985 Workshop, Aktuelle Fragestellungen in der Entwicklungsbiologie der Coelenterata, Bochum, Germany. "Induction of planulae metamorphosis in *Cassiopea ancromeda*: facts and concepts" (Fitt)

- 1983 2<sup>nd</sup> International Colloquium on Endocytobiology and Symbiosis, Tübingen, Germany. "Infection of coelenterated hosts with the symbiotic dinoflagellate *Symbiodinium (Gymnodinium) microadriaticum*" (Fitt and Trench)
- 1982 International Symposium on Recent Innovations in cultivation of Pacific Molluscs San Diego, California. "Larval biology of giant clams" (Fitt, Fisher, Trench)

National:

- 2024 Jellyfish *Cassiopea* Workshop VIII: Molecular biology.  
AGU Meeting, Washington DC, “Carryover Effects Influence the Physiology and Energetics of Florida Framework Corals ” Keister, Ryan, Gantt, Jerry, Fitt, Kemp
- 2023 Jellyfish *Cassiopea* Workshop VII: “*Cassiopea*” Fitt, Key Largo, Florida  
“The role of MUCUS in *Cassiopea*”  
  
Benthic Meeting in Miami: Elise Keister “Impact of Thermal Stress on Coral Physiology and Symbiodiniaceae Communities in Contrasting Florida Key Reef Environments”  
  
Benthic Meeting in Miami: Shelby Gantt “Acclimatization of the outplanted nursery corals”
- 2022 Jellyfish *Cassiopea* Workshop VI: “*Cassiopea*” Fitt, Key Largo, Florida  
“The jellyfish *Cassiopea xamachana* and *C. frondosa* in the Florida Keys”
- 2021 Jellyfish *Cassiopea* Workshop V: “*Cassiopea*” Fitt, Key Largo, Florida  
“Different physiologies of the jellyfish *Cassiopea xamachana* and *C. frondosa*”
- 2020 Jellyfish *Cassiopea* Workshop IV: “*Cassiopea*” Fitt, Key Largo, Florida  
“The life cycle of the jellyfish *Cassiopea xamachana*”
- 2019 Jellyfish *Cassiopea* Workshop III: “*Cassiopea*” Fitt, Key Largo, Florida  
“The role of oxybenzone in swimming and metamorphosis of larvae of the jellyfish *Cassiopea xamachana*”
- 2018 Jellyfish *Cassiopea* Workshop II: “*Cassiopea xamachana* vs. *C. frondosa*” Fitt, Key Largo, Florida
- 2017 Jellyfish *Cassiopea* Workshop I: “The jellyfish *Cassiopea*” Fitt, Key Largo, Florida
- 2016 Lydia Babcock-Adams, Sara Miñarro, William K. Fitt, Patricia M. Medeiros  
Assessing Coral Response to a Severe Bleaching Event using Multimolecular Biomarkers. Ocean Sciences Meeting, February, New Orleans, LA, USA
- 2015 Ohdera A, Diaz-Almeyda E, Steinworth B, Fitt W, Martindale MQ, Medina M.  
Symbiosis-driven development in the upside down jellyfish *Cassiopea xamachana*. HHMI Janelia, March, Virginia, USA
- 2014 Medina M, A Ohdera, WK Fitt, MQ Martindale. Symbiosis-driven development in the upside-down jellyfish *Cassiopea xamachana*. ASM Meeting, Boston, MA, USA  
  
Tansik, A. L.; Fitt, W. K.; Hopkinson, B. M.: Overcoming diffusive boundary limitation of CO<sub>2</sub> uptake by external carbonic anhydrase in tropical scleractinian corals. ASLO-Ocean Sciences Meeting, Honolulu, HA, USA
- 2013 Kemp DW, Fitt WK, Iglesias-Prieto R. Riviera Maya tourism and anthropogenic nitrogen 2013 influx on reef-building corals. Oral Presentation at the Benthic Ecology Meeting, Savannah, GA. USA

The upside-down jellyfish *Cassiopea xamachana* as a model system to study the contributions of symbiosis to development. **Ohdera, A.**, Díaz-Almeyda, E., Zavalza, M., Kelly, S., Fitt, W., Médina, M. 3<sup>rd</sup> Annual Yosemite Symbiosis Workshop. Wawona, CA. June 2013

Preliminary characterization of the biofilm community implicated in settlement and metamorphosis of the upside-down jellyfish *Cassiopea xamachana*. Ohdera, A. Fitt, W. Médina, M. Society for Developmental Biology, 2013 West Coast SDB Conference. Cambria, CA, April, 2013.

- 2011 “Persistent infection of Caribbean corals by apicomplexans” Kirk N., Kemp DW, Thornhill D, Fitt WK, Santos S. Benthic Ecology Meetings, Mobile, Alabama.  
 “Cold-kill of corals in the Caribbean” Kemp, Oakley, Fitt. BEM, Mobile, AL. “Persistent and widespread associations of apicomplexans (Chromalveolata) with Caribbean reef corals” Kirk N., Kemp DW, Thornhill D, Fitt WK, LaJeunesse T, Santos S. International Society of Protistologists (ISOP), Seattle, Washington
- 2010 “Health of reef corals in the Caribbean” Fitt, Kemp, Oakley, Thornhill, Iglesias, Schmidt.  
 “Catastrophic mortality on inshore reefs of the Florida Keys: cold water physiology of three common reef-building corals” Fitt, Kemp, Oakley, Thornhill, Schmidt. Florida Keys Marine Ecosystem, Duck Key, Florida
- “Temperature effects on photosynthetic and respiratory CO<sub>2</sub> and O<sub>2</sub> exchange of *Symbiodinium*: evidence of functional diversity” Oakley CA, Fitt WK, Schmidt GW,  
 “Functional and genetic differences in coral-algal symbiosis during a coral bleaching event in Puerto Morelos, Mexico” Kemp DW, Schmidt GW, Fitt WK. Benthic Ecology Meetings, University of North Carolina, Wilmington
- 2001 The Effects of Combined Sea Temperature, Light, and /or Carbon Dioxide on Coral Bleaching, Settlement and or/Growth of Reef Corals. NOAA-National Undersea Research Program. “The sublethal bleaching response” Fitt,
- 1998 Society for Integrative Biology, Boston, MA. "Seasonal cycles of tissue biomass and zooxanthellae densities in Caribbean reef corals: a new definition" (Fitt, McFarland, Warner), "Bleaching of Caribbean reef-corals 1997: time course, depth gradients and mechanisms" (Warner and Fitt).
- 1995 Oyster Reef Habitat Restoration, Williamsburg, Virginia. April, 1995.  
 “Induced settlement of oyster larvae: implications for oyster reef restoration” (Coon and Fitt)
- 1995 American Society of Limnology and Oceanography, Reno, Nevada. August 1995  
 “The effects of acute elevated temperature exposure on the physiology of *Symbiodinium* sp. In hospite and in culture” (Warner and Fitt)
- 1994 American Society of Limnology and Oceanography, Miami, Florida.  
 “Bleaching of reef corals: the alga’s point of view” (Fitt and Warner),  
 “Ontogenic patterns in nutrient physiology of the zooxanthellate jellyfish *Cassiopea xamachana*” (Vodenichar and Fitt), “Bleaching of zooxanthellae in culture and within the host” (Warner and Fitt)

- 1992 World Aquaculture Meetings, National Shellfisheries Association, Orlando, Florida.  
"Temporal and spatial recruitment variations of *Crassostrea virginica* within a Georgia estuary". (O'Beirn, Heffernan, Walker, Fitt )
- 1992 Office of Naval Research, Workshop, Mechanisms of change in Coral Reefs, Maui, Hawaii. "Bleaching and recovery of reef corals" (Fitt)
- 1991 American Society of Zoologists, Atlanta.  
"Natural metamorphic cues of larvae of a tropical jellyfish" (Fitt)  
"Mechanisms of bleaching of zooxanthellae symbioses" (Warner and Fitt)
- 1990 National Shellfisheries Association, Virginia. "Production and role of ammonia, an inducer of settlement of veliger larvae of oysters" (Fitt, Haymans, Coon)
- 1989 American Society of Zoologists, Boston.  
"Bleaching of two Caribbean reef corals" (Fitt, Spero, Porter)  
"Cnidarians as hosts for zooxanthellae: comparing sea anemones, hydroids, and scleractinian corals" (Cook, Muller-Parker, Fitt)  
"Metamorphosis and larval energetics of the scyphozoan jellyfish *Cassiopea* sp." (Meier, Fitt, Pechenik)
- 1988 American Society of Zoologists, San Francisco.  
"Induction of settlement behavior in oyster larvae by ammonia" (Coon, Walsh, Fitt, Bonar, Weiner)  
"Production of ammonia by fed and starved oysters, *Crassostrea gigas*, in relation to metabolism and metamorphosis" (Khalil, Fitt, Coon, Bonar)  
"Chemical induction of metamorphosis of the scyphozoan *Cassiopea* sp." (Fitt)  
"Control of oyster settlement and metamorphosis by endogenous and exogenous chemical cues" (Bonar, Coon, Walch, Weiner, Fitt)
- 1987 Western Society of Malacologists, San Diego. "Mariculture of giant clams" (Fitt)
- 1987 National Shellfisheries Association, Virginia. "Use of specific bacterial biofilms and their products to enhance spat set of the oysters *Crassostrea virginica* and *C. gigas*. (Walsh, Labare, Weiner, Fitt, Bonar)



## **STUDENT SUPERVISION:**

### Major Professor: Ph.D

Abdelemone Kahlil (research conducted at UGA 1988-1989, PhD. Zagazig Univ, Egypt 1989)  
Frances O'Biern (temporary advisor), Ph.D. 1995  
Ouida Meier (supervised for 3 years, received PhD with Jim Porter, Ecology)  
Rita Lim (supervised for 2 years, received PhD with Marcus Fecheimer, Cell Biology)  
Mark Warner, Ph.D. 1998 (Professor at University of Delaware)  
Frank McFarland, dropped out  
Dan Thornhill (Presidential Scholar), PhD 2005 (Program Director, NSF, Biological Oceanography)  
Tom Shannon (University-Wide Assistantship, EPA-Star Fellowship), PhD 2007  
Maia Mukherjee. PhD 2008  
Jennifer McCabe (NOAA Fellowship), PhD 2009  
Dusty Kemp (Gregory Schmidt, co-advisor) PhD 2010 (Associate Professor UAB)  
Jessica Joyner (w/ Erin Lipp, co-advisor) PhD 2014 (post-doc in New York)

### Committee Member: Ph.D

Dale Bishop  
Lee Carlough  
Larry Castenares  
Chuck DeCurtis  
Scott Eckert  
Karen Eckert  
Carrie Futch  
Stanley Hales  
Alyssa Gehman  
Linsey Harman  
Amita Kanti  
Hal King  
Mark Komoroski  
Erin Looney  
Meagan Maloney (Auburn University)  
Caroline McFarlin  
Amanda McLendon  
Philip McGillivray  
Ouida Meier  
Jim Merickel  
Meredith Myers  
Billy Norfolk  
Clint Oakley  
Daniel Owens  
Dean Pakuliski  
Katie Patterson  
Leslie Ruyle  
Hany Abdel Salan  
Susan Saucerman  
Joseph Schubauer  
Virginia Schutte  
Robert Smith  
Chris Speck

Anna Tansik  
Brian Todd  
Jennifer Tougas  
Carrie Venton  
Peter Vila  
Tim Wakefield (Auburn University)  
Randy Walker  
Chris Winne  
Debra L. Wohl  
Amanda Wrona  
Yaunlin Zhang

External Reader/Reviewer: Ph.D.

Jamila Patterson, Suganthi Devadason Marine Research Institute, India  
Yvette McNeil, Department of Biochemistry, James Cook University, Townsville,  
Australia, 1989

Suzanne Mingoa, Department of Zoology, James Cook University, Townsville,  
Australia, 1991

Angela Grice, Department of Zoology, James Cook University, Townsville, Australia, 1999

Kevin Strychar, School of Biological and environmental sciences, Central Queensland  
University, Rockhampton, Australia, 2001

Maria Cabrera, University of Queensland, Brisbane, Australia 2005

Annameike Van Den Heuvel, University of Queensland, Australia 2013

Dominique Bradbury, James Cook University, Townsville, Australia 2013

Postdoctoral students

Dr. Juergen Fleck (1997-1978)  
Dr. Mark Warner (1998-2000)  
Dr. Todd LaJuenesse (2000-2004)  
Dr. Brigetta Bruns (2005-2007)

Major Professor: M.S.

Daniel Baker (M.S. 2017)  
Geoff Chilcoat (M.S. 2004)  
Ethan Epps, dropped out  
Sara Minaro (EU 2012)  
Brian Todd (M.S. 2002)  
Jenny Vodenichar (M.S. 1996)

Committee Member: M.S.

Thomas Bahl  
Michelle Covi

Joan Sheldon  
Wendy Fulks  
Douglas Leeper  
Jennifer Tougas  
Shannon Kirk (Forestry)  
Daniel Owen (MS)

Undergraduate Research:

- 2024 Aliya Baig  
Katheine Baughman  
Chip Cobb  
Cunningham Culp  
Kasey Lawson  
Kasey Schwan
- 2023 Savannah Perry  
Reagan Greene  
Mackenzie Kennelly  
Kaitlynn Garcia
- 2022 Nemerov (BIOL)  
Weimorts (BIOL)  
Kelly Nguyen  
Abigal Parks
- 2021 Marino (ECOL)  
Zarate (U. Colorado)  
Burgess (BIOL)  
Lanier (Public Health)
- 2020 John Kolb  
Jimmy Mack  
Austin Burgess  
Kelly Barnes
- 2019 Cyra Malec  
Jimmy Mack  
Rebekka Farley  
Ethan Turner
- 2018 Ethan Turner  
Rebekka Farley  
Grant Foster  
Cyra Malec
- 2017 Lauren Carroll  
Samantha Bennett  
Sarah Gardner (Marine Science)  
Jonathan Fox
- 2016: Joseph Shafritz

Sarah Gardner  
Alexander Amalfitano  
Kkatelyn Skoczen  
Cailynn Houlihan  
Madeline MacDonald  
Lauren Carroll  
Brianna Beldon  
Landon Brantley

2014-2015:

Madeline Banyas	Ecology
Melantha Balyakov	Ecology
John Coffin	Ecology
Caylie Mahaffey	Ecology
Betsy Potter	Ecology
Alex Amalfitano	Biology
Jeff Mattheiss	Ecology
Meghan Tait	Ecology
Eliza Nixon	Forestry
Clay Oldham	Forestry
Emma Yawn	Marine Science
Andrew Speese	Marine Science

Pre-2014 \* Marked with an asterisk are those students supported by National Science Foundation, Research Experience for Undergraduates in Marine Science, Ed Chin, P.I.

\*\* Marked with a double asterisk are those students supported by National Science Foundation, Research Experience for Undergraduate Students in Physiological Processes, Biological Oceanography, William K. Fitt, P.I.

Paige Adams  
Brian Badgley  
Yesmira Chia  
\*\* Geoff Chilcoat  
\*\* Kristin Costly  
Mike Daniels  
Junling Dong (Marine Science)  
Tommy Funk  
\* Nancy Halutick  
\*\* Scott Hardister  
Douglas Haymans  
Rachel Jude  
Andrew Lainhard  
Laura Lee  
Woong Lee  
Andrew Leinhard  
Erin Looney  
\*\* Charlene Long  
Jeffrey Mattheiss  
Meghan Nieson  
Daisie Ogawa (Marine Science)  
Dale Wilshire  
\*\* Whitney Pate

Anthony Pass  
Ben Paull  
Jamie Perniciaro  
Ashley Rich-Robertson  
\*\* Kerri Roguske  
\*\* Chris Spruck  
Meghan Tait  
\*\* Brian Todd  
Blake Thomas  
Erin Vinson  
\*\* Tracy Walden  
\* Mark Warner

High School Research:

Mona Durban

**PUBLIC AND UNIVERSITY SERVICE:**

University Review Committee, UGA 2009–2011, 2013-2015, 2020-2022

\*University Council, UGA 2014-2020, 2023-2026

\*Faculty Affairs Committee 2014-2020, 2023-2026

HR Committee 2014-2020

\*Libraries Committee 2023-2026

\*Post-Tennure Review Appeals 2024-2026

PRAC Committee, UGA 2013-2016, 2018-2020

Sea Grant Program Review Committee 2010-2011

Graduate Council 2008-2011, 2014-2017

Administrative Committee

Program Committee

Life Sciences, University Review Committee 2008-2011

Faculty Senate (elected), Franklin College of Arts and Sciences, UGA 1989-1992

Chair, Committee on Academic Standards, 1990-1991

Committee on Professional Concerns, 1991-1992

Committee on Committees 1991-1992

Departmental Committees

Promotion and Tennure Committee, 2010-2013, 2017-2020

Executive Committee 2005-2008, 2015-2017

Executive Committee, Zoology, 1991-1993

Committee on Graduate Student Performance Zoology 1990-1992

Space Committee, Ecology 1994-5,

Semester Conversion, 1997-8

Curriculum Committee, Graduate Admissions 1998-2007

Awards Committee 2000

Graduate Coordinator 1998-2007  
Graphics Design hiring committee 2023  
Promotion Remediation Plan Committee 2024

## **OTHER SERVICES:**

### Memberships:

#### National and International

American Association for the Advancement of Science, current  
American Society of Zoologists  
International Society of Endocytobiology  
International Society for Reef Studies, current  
National Shellfisheries Association

#### University of Georgia

Graduate Council, 2014-2017  
University Council, 2014-2020, 2023-2026  
University Council HR Committee 2020-2022  
University Council FAC 2018-2020, 2023-2026  
PRAC Committee, 2013-2015, 2018-2020  
UGA Representative, Scientist, Highlands Biological Station 1999-2004  
Faculty of Parasitology, University of Georgia, 1988-1993  
Graduate Faculty, University of Georgia 1990-2025  
Faculty of Cellular and Developmental Biology, University of Georgia, 1992-1994  
Adjunct Professor of Marine Science (current)

### Chair and/or Organizer of Programs at Professional Meetings:

1992, Organizer of symposium "Biology, mariculture, and economics of giant clams", 7<sup>th</sup> International Coral Reef Symposium, Guam.  
1996 Co-Organizer of symposium "Settlement and metamorphosis of marine larvae" 8<sup>th</sup> International Coral Reef Symposium, Panama.  
2000 Co-Organizer of symposia "Bleaching of reef corals" and "Cellular Biology of Zooxanthellae symbioses", 9<sup>th</sup> International Coral Reef Symposium, Bali, October.  
2004 Co-Organizer of symposium "Flexibility and specificity in algal-invertebrate symbiosis: diversity, stability and physiological capacity", 10<sup>th</sup> Intl Coral Reef Symp, Okinawa, Japan  
2020 Co-Organizer of symposium "Cassiopea – a model organism", 14<sup>th</sup> Intl Coral Reef Symp, Bremen, Germany

### Ad Hoc Reviewer for (\* 2024):

National Science Foundation, Grant Proposals (Biological Oceanography, Microbiology, Physiological Processes; International Programs; Environ. & Ecol. Physiology; Symbiosis; Population and Ecological Processes, Graduate Fellowships)  
NERC  
Sigma Delta Epsilon: Graduate Women in Science  
International Research Fellowship Program  
\*NSF-Israel Binational Science Foundation  
Israel Science Foundation  
Marsden Fund Council  
North Carolina Sea Grant  
National Geographic Society,  
National Oceanic and Atmospheric Administration-Coral Reef Conservation Program  
City University at New York, Research Award Program

\*Post-Doctoral Fellowships, NSF

*Antioxidants*, Articles

*Biodiversity of Ecosystem Functioning*

\**Biology*, Articles

*Biological Bulletin*, Articles

*Biological Reviews*, Articles

\**Biomimetics*, Articles

*Biostat Diversity*

\**Bulletin of Marine Science*, Articles

\**Coral Reefs*, Articles

*Climate*, Articles

*Diseases of Aquatic Organisms*, Articles

\**Diversity*, Articles

*Ecology Letters*, Articles

*Ecology*, Articles

\**Ecotoxology*, Articles

*Estuaries and Coasts*, Articles

\**Foods*, Articles

\**Frontiers in Ecology and Evolution*, Articles

\**Frontiers in Marine Sciences*, Articles

*Frontiers in Molecular Biosciences*, Articles

*Geochimica et Cosmochimica Acta*, Articles

\**Genes*, Articles

*Helgoland Marine Research*

*Hydrobiologia*, Articles

\**International Journal of Developmental Biology*, Articles

\**International Journal of Molecular Sciences*

“Jellyfish Blooms Symposium”

*Journal of Coastal Research*

\**Journal of Experimental Biology*, Articles

*Journal of Experimental Marine Biology and Ecology*, Articles

\**Journal of the Marine Biological Association UK*, Articles

*Journal of Marine Science and Engineering*, Articles

\**Journal of Molecular Sciences*, Articles

*Journal of Morphology*, Articles

*Journal of Phycology*, Articles

*Journal of Sea Research*

*Journal of Shellfish Research*, Articles

*Journal of Zoological and Botanical Gardens*, Articles

\**Limnology and Oceanography*, Articles

\**Marine Biology*, Articles

*Marine Biodiversity*, Articles

*Marine Biotechnology*

*Marine Ecology Progress Series*

*MDPI (Open Access Journal)*

\**Marine Ecology Progress Series*, Articles

*Marine Environmental Research*, Articles

*Marine Drugs*, Articles

\**Metabolites*, Articles

*MicrobiologyOpen*, Articles

\**Microbiology Research*, Articles

\**Microorganisms*, Articles



*Molecular Ecology*, Articles  
*Molecular Phylogenetics and Evolution*, Articles  
\**Nature*, Articles  
\**Oceans*, Articles  
*Pacific Science*, Articles  
*Peer Journal*, Articles  
\**Plants*, Articles  
*Philosophical Transactions B*, Articles  
*Proceedings of the Royal Society*, Articles  
*Phycology*, Articles  
*Plants*, Articles  
*PloS ONE*, Articles  
*Proceedings of the National Academy of Sciences*, Articles  
*Regional Studies in Marine Science*, Articles  
\**Sustainability*, Articles  
\**Toxins*, Articles  
*TREE*, Articles  
\**Water*, Articles

#### Editorial Board for:

Proceeding of the 7<sup>th</sup> International Coral Reef Symposium, 1992-3  
Proceeding of the 8<sup>th</sup> International Coral Reef Symposium, 1996-7  
Proceeding of the 9<sup>th</sup> International Coral Reef Symposium, 2000-1  
Proceeding of the 10<sup>th</sup> International Coral Reef Symposium, 2004-5  
Proceeding of the 14<sup>th</sup> International Coral Reef Symposium, 2020-2021  
Journal of Experimental Marine Biology and Ecology 2000-2017  
Handling Editor, *Frontiers in Ecology*, 2023  
Marine Ecology, Invitation to be on Editorial Board, 2023

#### NSF Panel member

NSF Ocean Acidification 2012  
NSF Biological Oceanography 1987, 2000, 2002  
NSF Ecological and Evolutionary Physiology 2001  
NSF Symbiosis, Infection, and Immunity 2023, Invitation received

#### International Service

Member: United Nations UNESCO/IOC Ocean Sciences “Study Group on Indicators of Coral Bleaching and Subsequent Effects” 2000-2004

Coral Reef Targeted Research and Capacity Building Project, World Bank and Global Environment Fund Project, Funded for \$18,200,000 for 5 years, 2005-2010 (82 scientists directly involved)

#### **AWARDS AND HONORS:**

1992 Phi Beta Delta, Tau Chapter, Society of International Scholars, University of Georgia  
1980 Graduate Teaching Award, University of California, Santa Barbara  
1974 Graduation with Honors, University of California, Irvine