

Intertidal Workshop Presenters

Dr. Carlos Robles, California State University, Los Angeles

Dr. Robles is a community ecologist working in rocky shore communities of the west coast. His research (1) revealed spiny lobsters as keystone predators in the intertidal community of the California Channel Islands (2) provided evidence that lobsters and fishes are part of a diverse group of transient consumers impacting the rocky shore community of Southern California, and (3) experimentally demonstrated that the vertical boundaries of intertidal mussel beds are set by complex equilibrium processes. The equilibria maintain stationary boundaries despite varying mussel recruitment.

Current projects on shores of British Columbia examine (1) the effects of altered salinity incurred by global climate change on the benthic community, and (2) how landscape processes explain the frequency and extent of wave-generated gap formation in mussel beds. Much of the theory is developed in collaboration with theorists adept in control theory and spatially explicit population models.

From 1998 to 2009, Dr. Robles served as the Director of the Center for Environmental Analysis (CEA-CREST), an environmental science institute sponsored by the National Science Foundation. Under Dr. Robles' Direction, CEA-CREST became a nationally recognized model for diversity-focused education, reaching out to pre-college students and placing numerous graduates from underrepresented groups in Ph.D. programs and government agency positions.

Dr. Robles has served as an expert technical advisor to the US Fish and Wildlife Service and the Damage Assessment Office of the National Oceanic and Atmospheric Administration, Western Region. He is recipient of awards from CSULA and national education organizations for his contributions to higher education. He received a B.A. in Biology in 1973 from the University of California, Santa Barbara, and a Ph. D. in Zoology in 1979 from the University of California at Berkeley.

Recent publications

- Robles, C.D., R.A. Desharnais, C. Garza, M.J. Donahue and C.A. Martinez. 2009. Complex equilibria in the maintenance of boundaries: Experiments with mussel beds. *Ecology* in press.
- Robles, C.D. 2008. Intertidal zonation: test bed of ecological theory. In *Encyclopedia of Ecology*, edited by S.E. Jorgensen. Elsevier.
- Robles, C.D. 2007. Lobsters. In *An Encyclopedia of Tide Pools*, edited by M.W. Denny and S.D. Gaines, 333-335. University of California Press.

Dr. Patti Halpin, University of California, Los Angeles

I am a marine ecologist studying how physical and biological factors affect populations and community structure. My current research centers on how disturbance from winter storms affects mussel bed communities. Mussel beds provide habitat for other organisms on the shore much like corals reefs and forests. Large waves generated by winter storms remove large chunks of mussels from the shore, destroying habitat but also opening up space for other species.

In collaboration with Carlos Robles at CSULA, we wish to integrate disturbance with other important processes such as predation and competition. What makes some parts of the mussel bed more vulnerable to damage than others? Is there a critical point at which damage becomes widespread? Much of this work is carried out at Bamfield Marine Science Station in British Columbia.

Past work has included examining the effect of heat stress on shoreline organisms, nutrients and algal growth, herbivore effects on rocky shores, movement of fish in marine reserves, and habitat use by salt marsh fish.

Selected Publications

- Freidenburg T., B. A. Menge, P. M. Halpin, M. Webster, A. Sutton-Grier, "Cross-scale variation in top-down and bottom-up control of algal abundance", *Journal Of Experimental Marine Biology and Ecology*, 347 : 8-29 (2007) .
- Helmuth, B., B. R. Broitman, C. A. Blanchette, S. Gilman, P. Halpin, C. D. G. Harley, M. J. O'Donnell, G. E. Hofmann, B. A. Menge, D. Strickland, "Mosaic Patterns of thermal stress in the rocky intertidal zone: implications for climate change", *Ecological Monographs*, 76 (4): 461-479 (2006) .
- Halpin, P. M., B. A. Menge, and G. E. Hofmann., "Experimental demonstration of plasticity in the heat shock response of the intertidal mussel, *Mytilus californianus* (Conrad)", *Marine Ecology Progress Series*, 276 : 137-145 (2004) .
- Fitzhenry T., P. M. Halpin, and B. Helmuth., "Testing the effects of wave exposure, site, and behavior on intertidal mussel body temperatures: Applications and limits of temperature logger design", *Marine Biology*, 145 (2): 339-349 (2004) .

Dr. Karen Martin, Pepperdine University

Karen Martin is a well-known expert on the California grunion. She has received funding from California Sea Grant College, the National Fish and Wildlife Foundation, National Geographic Society, National Marine Fisheries Service, and others to study the grunion population, and also the harmful effects of beach grooming on grunion and California beach health. She is a Fellow of the American Institute of Fishery Research Biologists, a research associate at Scripps Institution of Oceanography, a recipient of the Environmental Partnership Award from the American Shore and Beach Preservation Association, and the Friday Harbor Postdoctoral Fellowship.

Martin has written extensively on grunion, tidepools, the ecology of California marine fishes, and beach spawning. Her media credits span many publications and media pieces, including the Los Angeles Times, Sunset and Westways magazines, television, and radio shows.

- Martin, K. L., K. Bailey, C. Moravek, and K. Carlson. 2011. Taking the plunge: California Grunion embryos emerge rapidly with environmentally cued hatching (ECH). *Integrative and Comparative Biology* 51:1-12. doi:10.1093/icb/icr037
- Moravek, C. L. and K. L. Martin. 2011. Life goes on: Delayed hatching, extended incubation and heterokary in development of embryonic California Grunion *Leuresthes tenuis*. *Copeia* 2011(2): 308-314. DOI 10.1643/CG-10-164
- Martin, K. L. M., C. L. Moravek, and A. J. Walker. 2011. Waiting for a sign: Extended incubation postpones larval stage in the beach spawning California Grunion *Leuresthes tenuis* (Ayres). *Environmental Biology of Fishes* 91:63-70. doi:/10.1007/s10641-010-9760-4
- Martin, K. L. M., C. L. Moravek, A.D. Martin, and R. D. Martin. 2010. Community based monitoring improves management of essential fish habitat for beach spawning California Grunion. *Bulletin de l' Institut Scientifique* (in press).