



Paul Louis Jokiel

20 May 1941 – 29 April 2016

Over the span of his 47-year career, Paul Jokiel was always well ahead of the times, whether it was in describing thermal stress thresholds in the 70s, stress to marine organisms by UV light, lunar periodicity in coral larval release, photoinhibition by sedimentation, dispersal over long distances by “rafting”, and the vortex model for biogeography in the 80s, the response of corals to high flow and low flow conditions, measuring water motion by clod cards, the use of monitoring in guiding policy decisions, community metabolism, and coral physiology of stress caused by temperature, salinity, or nutrients in the 90s, and more recently the effects of acidification on crustose coralline algae and his “Photon Flux Model” provides us with a better understanding of coral metabolic responses as they relate to ocean acidification. He developed or refined buoyant weighing of corals as well as CO₂ dispersion techniques. He described the “Phoenix Effect” of regrowth after apparent mortality in corals with deep calices.

Paul's early research on tolerances of corals to temperature was developed as an applied science application that later turned out to be valuable for interpreting major coral bleaching occurrences. NOAA and others currently use this concept as the basis in predicting thermal thresholds for global bleaching alerts. Paul's models continue to guide and aid management and research such as the Coral Mortality and Bleaching Output model (COMBO), a method to predict different climate change scenarios, and the Ecological Gradient Model (EGM) to determine reef "health" and compare Hawaiian reefs. He was definitely ahead of his time in understanding the future of our reefs. His predictive models forecasted future climate change a decade before global bleaching events occurred. He was in the lead in research involving coral restoration, reproduction, dispersal, physiology, photoinhibition, community metabolism, and local and global impacts on coral reefs. His publications have been cited in the literature over 7,000 times.

His contributions to Hawai'i were frequent and extraordinary. His work was instrumental in the diversion of the sewage and the prevention of the construction of a nuclear power plant in Kāne'ohe Bay. He developed the first widespread monitoring program in the state, the Coral Reef Assessment and Monitoring Program (www.cramp.wcc.hawaii.edu) that continues today in partnership with the Division of Aquatic Resources. His research and testimony provided the scientific data for landmark court decisions on reef destruction and water rights. His studies of reef recovery after treated sewage abatement, effects of storm water inundation and coral bleaching events in Kāne'ohe Bay provided managers with the basis for understanding the reefs connection to, and impacts from, urbanization, watersheds and climate change. The Kahekili Herbivore Fisheries Management Area on Maui was based on data from the long-term monitoring he initiated there. He was instrumental in the first and largest settlement in the State of Hawai'i for damages to a reef by a landowner in Pila'a, Kaua'i. Numerous legislative actions, management strategies, and educational curricula surrounding the marine environment are based on his research and guidance.

Along with his outstanding career in research, Paul was a major help to and influence on the professional development and well-being of many students and associates; from high school volunteers, undergraduate marine options and graduate students to world-recognized researchers and professors. For many years, he organized and coordinated the Hawaii Institute of Marine Biology (HIMB) Pauley Summer Program in which students had the great opportunity to work with Paul and other mentors doing coral-related research at the HIMB marine laboratory. For many of these students, who have since gone on to their own research, academic or management careers, this was their first experience in

working with corals in the lab or in the field. Through them, and through the students that they have advised, Paul's inspiration has been far reaching. In his capacity as a University of Hawai'i faculty member, Paul was chairman and thesis advisor for 15 Masters and PhD students, 12 of whom completed their degrees under his guidance and three who were still working with him. His former students encompass a variety of backgrounds and life experiences, and many have said that they would never have considered pursuing an advanced degree had it not been for Paul's encouragement and guidance. His former graduate students now continue his legacy with the positions they hold in higher education, federal and state government, and management agencies through the management decisions and research they conduct.

Paul's research in Hawaii began in the 1960s in a small one-room shack at the far eastern point of the HIMB on Moku o lo'e Island. Paul and his graduate student colleagues expanded and developed the facilities into the lab in which he was still working when he passed away. He designed a set of large tanks and trough seawater mesocosm system that produced high volumes of flowing seawater at controlled, fixed temperatures above and below ambient, enabling long-term experiments on coral temperature effects on corals and reef organisms. This system has since been used by many for manipulative experimentation for nearly half a century and accommodated research that was in the forefront of a variety of fields of coral biology.

In addition to his scientific career Paul was committed to helping people in other important ways. In the past 30 years, as a sponsor in various 12-step programs, he helped over 50 individuals and their families recover their lives from substance addictions, and he was involved with many other humanitarian efforts. He adopted two children of addicted parents, spread his message of environmental sustainability through the Vegetarian Society, and advocated for reducing carbon footprints through workshops, management agencies and public education. Paul considered these aspects of his life as important as his scientific achievements. He never missed an opportunity to help others, and his positive outlook on life and his compassion will live on in the legacy he leaves behind. He dedicated his life to the service of mankind and he will be sorely missed.