

## IS HISTORICAL RED TIDE RESEARCH VALID ?

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An article by Cathy Zollo (March 18, 2006) in the *Sarasota Herald Tribune* reported that the Florida Sierra Club urged investigations of the influence of land-based nutrient runoff on the growing problem of red tides off the southwest coast of Florida. Mote Marine Laboratory in Sarasota receives millions of dollars of federal and state research funds for red tide research. In recent years, Mote's scientists have claimed there are no data supporting a connection between land-based nutrient runoff and red tide blooms. This is contrary to the historical peer-reviewed research of Bostwick Ketchum (1947) and myself (1953) who were cited by Zollo for our pioneering research on red tides.

Dr. Richard Pierce, Director of Ecotoxicology at Mote Marine Lab, responded to the Zollo article in a guest editorial (March 24, 2006). Sadly, Dr. Pierce mistakenly cited two different studies, one by “Bostwick (in 1947)” and one by “Ketchum (in 1953)”. In fact, Bostwick Ketchum is a single scientist who published his seminal red tide work in 1947 and I published my follow-up research in 1953, as correctly cited in the original article by Zollo. Bostwick H. Ketchum was a leader in oceanography and Associate Director of Woods Hole Oceanographic Institution (WHOI) where he worked for 40 years. He was President of the Ecological Society of America in 1966 and, following his death in 1982, WHOI created the Bostwick H. Ketchum Award to support an annual lecture by an internationally recognized scientist who has shown innovative coastal research, leadership, and addressed societal and environmental aspects of coastal policy.

Dr. Pierce also stated “relying on suppositions made in the late 1940’s and early 1950’s is just not good science”. What of this objection to my research (and Ketchum’s) being over fifty years old? Indeed, new information may be made available by new technology and new observations. However, in the case of red tides, my work, and that of Ketchum, continue to be used. As a rule, if observations are performed

correctly, they preserve their validity. My work in the early 1950's in southwest Florida established the relation between land-based nutrient runoff, relatively stable water masses, and red tides. This empirical generalization continues to hold, as evidenced by use of my models by other scientists, including Dr. Okubo (1980), Dr. E. Carpenter (1989), and Dr. B.G. Crespo (2007). The fundamental fact that discrete water masses with components of land drainage support red tides has not been refuted or contradicted and has become basic to an understanding of harmful algal blooms (e.g. the recent review of this topic by Glibert et al. 2005).

I applaud the suggestions of the Sierra Club that researchers familiar with land-based nutrient pollution need to be engaged to study the red tide problem in southwest Florida. Based on Dr. Pierce's comments, it would appear that unbiased scientists literate in historical red tide research, as well as current research, need to be sought. Otherwise, considerable tax dollars will be wasted re-inventing the wheel while southwest Florida's coastal ecosystems, commercial and sport fisheries, endangered species, and tourist economy continue to decline.