

SCCWRP Annual Report 2013

Seasonal and annual dynamics of harmful algae and algal toxins revealed through weekly monitoring at two coastal ocean sites off southern California, USA

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ABSTRACT

Reports of toxic harmful algal blooms (HABs) attributed to the diatom *Pseudo-nitzschia* spp. have been increasing in California during the last several decades. Whether this increase can be attributed to enhanced awareness and monitoring, or to a dramatic upswing in the development of HAB events remains unresolved. Given these uncertainties, the ability to accurately and rapidly identify an emerging HAB event is of high importance. Monitoring of HAB species and other pertinent chemical/physical parameters at two piers in southern California, Newport and Redondo Beach, was used to investigate the development of a site-specific bloom definition for identifying emerging domoic acid (DA) events. Emphasis was given to abundances of the *P. seriata* size category of *Pseudo-nitzschia* due to the prevalence of this size class in the region. *P. seriata* bloom thresholds were established for each location based on deviations from their respective long-term mean abundances, allowing the identification of major and minor blooms. Sixty five percent of blooms identified at Newport Beach coincided with measurable DA concentrations, while 36% of blooms at Redondo Beach coincided with measurable DA. Bloom definitions allowed for increased specificity in multiple regression analysis of environmental forcing factors significant to the presence of DA and *P. seriata*. The strongest relationship identified was between *P. seriata* abundances two weeks following upwelling events at Newport Beach.

Full Text

http://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2013AnnualReport/ar13_273_291.pdf