

# Harmful Algal Research and Response: A Human Dimensions Strategy



Following the Recommendations of  
the National Plan for Algal Toxins  
and Harmful Algal Blooms









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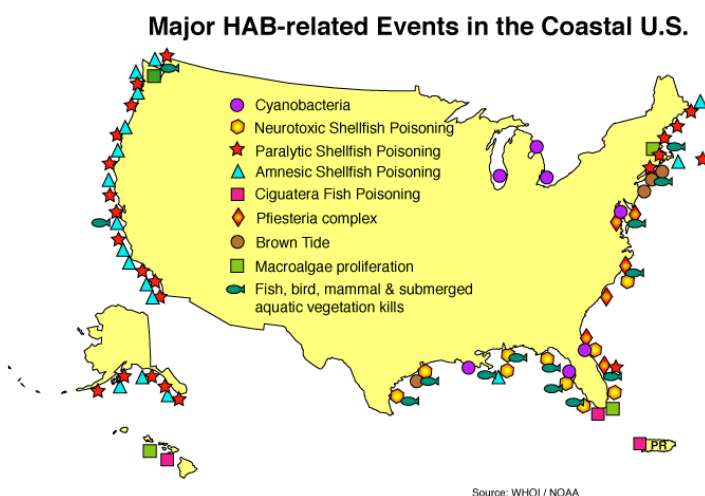
# Executive Summary

Harmful Algal Research and Response: A Human Dimensions Strategy (HARR-HD) justifies and guides a coordinated national commitment to human dimensions research critical to prevent and respond to impacts of harmful algal blooms (HABs). Beyond HABs, it serves as a framework for developing human dimensions research as a cross-cutting priority of ecosystem science supporting coastal and ocean management, including hazard research and mitigation planning. Measuring and promoting community resilience to hazards require human dimensions research outcomes such as effective risk communication strategies; assessment of community vulnerability; identification of susceptible populations; comprehensive assessment of environmental, sociocultural, and economic impacts; development of effective decision support tools; and improved coordination among agencies and stakeholders. HARR-HD charts a course for human dimensions research to achieve these and other priorities through coordinated implementation by the Joint Subcommittee on Ocean Science and Technology (JSOST) Interagency Working Group on HABs, Hypoxia and Human Health (IWG-4H); national HAB funding programs; national research and response programs; and state research and monitoring programs.

**Harmful Algal Blooms (HABs).** Harmful algal blooms (HABs) are “proliferations of microscopic algae that harm the environment [and humans] by producing toxins that accumulate in shellfish or fish, or through the accumulation of biomass that in turn affects co-occurring organisms and alters food webs in negative ways. Like much of the world’s coastlines, nearshore marine waters of the US have experienced increases in the number, frequency, and type of HABs in recent years. Freshwaters are also experiencing HAB events” (HARRNESS 2005) (Fig. 1).

**Human Impacts of HABs.** In their Final Report to the President and Congress, *An Ocean Blueprint for the 21st Century*, the US Commission on Ocean Policy recognizes that HABs are a significant threat to coastal environments and communities (USCOP 2004). The human impacts of HAB events are profound, including illness and mortality resulting from direct consumption of or indirect exposure to contaminated shellfish or fish; lost revenue for coastal economies dependent on seafood harvest or tourism; disruption of subsistence activities; loss of community identity tied to coastal resource use; and disruption of social relationships and cultural practices of families and communities.

**National HAB Plan and Legislation.** The recent National Plan for Algal Toxins and Harmful Algal Blooms, *Harmful Algal Research and Response: A National Environmental Science Strategy* (HARRNESS), calls for a coordinated, interdisciplinary national research and response program to reduce impacts from harmful algal blooms (HABs) (Fig. 2). By establishing recommendations for public health and socioeconomic research coupled with a comprehensive biophysical research and monitoring strategy, HARRNESS provides information critical to implement the 2004 reauthorization of the Harmful Algal Bloom and Hypoxia Amendments Act (HABHRCA) (PL 108-456). JSOST



**Figure 1.** Major HAB Events in the US. (NCCOS and WHOI, [www.whoi.edu/redtide/HABdistribution/HABmap.html](http://www.whoi.edu/redtide/HABdistribution/HABmap.html))

































































































































