

Environmental Interactions

Purpose:

To promote understanding of the interactions between the environment and aquaculture.

Current research projects:

1. Assessment of the benthic impacts of bivalve culture
 - 1.1. Measures of benthic impacts of shellfish culture in Saldanha Bay.
 - 1.2. Estimates of sediment capacity to assimilate organic rich biodeposits.
2. Assessment of potential impacts of effluents from land-based aquaculture systems
 - 2.1. Database of key dissolved and particulate water quality parameters for abalone farms.
 - 2.2. Initiation of database of key water quality parameters for land-based finfish farms.
3. Assessment of key environmental characteristics of existing and proposed aquaculture zones
 - 3.1. Environmental data informing existing shellfish and proposed finfish farms in Algoa Bay.
 - 3.2. Environmental data informing the reproductive cycle and settlement of spat of the scallop *P. sulcicostatus* in False Bay.
 - 3.3. Physical and biological data for Saldanha Bay in support of oyster and scallop grow-out projects, and for improved estimates of carrying capacity for shellfish farming.
 - 3.4. Oyster culture in South Africa: optimizing growth through genetic and environmental analyses.
 - 3.5. Environmental data informing proposed finfish farms in fresh water systems.
4. Identification of harmful algal bloom [HAB] species, their toxins, and their transfer through food webs.
 - 4.1. Understanding of the risk posed by: *Pseudo-nitzschia* species, domoic acid, and Amnesic Shellfish Poisoning; and *Protoceratium reticulatum*, and yessotoxins.
 - 4.2. Understanding the PSP vectors of contamination in abalone and development of possible mitigation measures.
 - 4.3. Participation in IAEA project: Nuclear analytical techniques to support HAB management in the context of climate and environmental change.
5. Improved understanding, detection and prediction of HABs and their impacts

- 5.1. Determination of the role of small scale physics and nutritional strategies in HAB development
- 5.2. Understanding the physical and biological [HABs] processes controlling hypoxia and anoxia on the West Coast.
- 5.3. Methods of bio-optical detection of HABs
- 5.4. Nuclear analytical techniques to support HAB management in the context of climate and environmental change.

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