Project WQP 09/04:

ASSESS THE IMPACTS OF HARMFUL ALGAL BLOOMS ON THE INSHORE ENVIRONMENT

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Harmful Algal Blooms HABs are experienced in the coastal waters of all three Benguela countries and regularly incur damage to inshore organisms. In both Namibia and South Africa a formal Shellfish Safety Monitoring Programme is mandatory for the sale of commercially farmed shellfish and involves regular monitoring of phytoplankton and biotoxins; in Angola monitoring of HABs forms part of the general environmental monitoring programme. This project addresses the monitoring of HABs in Namibia and Angola, and specifically harm caused by high biomass blooms in these two countries.

Monitoring of HABs and environmental parameters in Angola takes place from the Ponte Cais de Luanda, Lobito and Namibe. Mortalities of fish occur fairly regularly due to decay of high density blooms. In both 2010 and 2011 such mortalities were experienced : in September 2011 in Luanda Bay and October 2011 in Tombua Bay. The events commonly take place between July and October. Toxic dinoflagellates are also responsible for some of the events: in such instances public warnings inform the public not to eat the possibly contaminated fish and shellfish. Because of this risk period an Ordinance published in December 2011 forbids the harvesting of bivalves between August and October in Luanda, Lobito and Namibe Bays and other areas of proven risk.

Namibia's HAB monitoring programme covers daily sampling from jetties at both Swakopmund and Lüderitz, as well as fortnightly sampling from the sea-based shellfish farms. Marked differences in the relative abundance and species composition are apparent between these two regions. The dinoflagellate blooms responsible for inshore mass blooms and for toxic impacts are most prevalent from midsummer to early winter (March to July), and toxic species tend to occur in early winter months, of notable concern *Alexandrium* sp. in the south. Decaying high biomass dinoflagellate blooms inshore leading to severe oxygen depletion mortality events were last experienced in Namibian waters in the late summer of 2009 with no comparative event to date. Biotoxin testing is carried out for shellfish consumer safety in Namibia with sporadic events of closure due to Paralytic Shellfish Poisoning PSP in the Lüderitz area and Diarrhetic Shellfish Poisoning DSP in the central and southern areas. Of interest is the recent finding of yessotoxins in the central coastal area. Local culture of species over the past two years opens the possibilities for toxin analyses and feeding experiments from toxic species.