

COUNTRY-WIDE ASSESSMENT OF ESTUARY HEALTH: AN APPROACH FOR INTEGRATING PRESSURES AND ECOSYSTEM RESPONSE IN A DATA LIMITED ENVIRONMENT

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ABSTRACT

Population and development pressures increase the need for proactive strategic management on a regional or country-wide scale. Reactively protecting ecosystems on an estuary-by-estuary basis against multiple pressures is ‘resource hungry’ and not feasible. Proactive management requires a strategic assessment of health so that the most suitable return on investment can be made. A country-wide assessment of the nearly 300 functional South African estuaries examined both key pressures (freshwater inflow modification, water quality, artificial breaching of temporarily open/closed systems, habitat modification and exploitation of living resources) and health state. The method used to assess the type and level of the different pressures, as well as the ecological health status of a large number of estuaries in a data limited environment is described in this paper. Key pressures and the ecological condition of estuaries on a national scale are summarised. The template may also

be used to provide guidance to coastal researchers attempting to inform management in other developing countries. The assessment was primarily aimed at decision makers both inside and outside the biodiversity sector. A key starting point was to delineate spatially the estuary functional zone (area) for every system. In addition, available data on pressures impacting estuaries on a national scale were collated. A desktop national health assessment, based on an Estuarine Health Index developed for South African ecological water requirement studies, was then applied systematically. National experts, all familiar with the index evaluated the estuaries in their region. Individual estuarine health assessment scores were then translated into health categories that reflect the overall status of South Africa's estuaries. The results showed that estuaries in the warm-temperate biogeographical zone are healthier than those in the cool-temperate and subtropical zones, largely reflecting the country's demographics and developmental pressures. A major finding was that, while a large number of South Africa's estuaries are still in an excellent to good condition, they tend to represent very small systems (<150 ha in size) in rural areas with few pressures. Larger systems, which are more important as nursery grounds because of their size, and also of higher economic and ecological importance, are in a fair to poor condition. This was due to pressures within the catchments influencing these downstream systems, and degradation as a result of direct development within the estuary functional zone.