

O40.2**A country-level estuarine pressure assessment and activity disaggregation to better inform resource management and protection**

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Abstract

Effective management requires an understanding of the extent of anthropogenic pressures on estuaries. We present a systematic approach to identify, characterise, quantify and rate global change pressures at a country-level scale, using South Africa as a case-study. Six pressure categories were identified based on estuarine resources use globally: freshwater flow modification; pollution; exploitation of fish and invertebrates; habitat destruction; inlet manipulation; and biological invasions. The degrees to which pressures influenced estuaries were rated and aggregated to reflect the impact on biogeography and estuary types. Key activities within each pressure category were also identified, quantified / qualified, including the expected trajectory of change and a confidence rating. Finally, management responses were recommended to mitigate the impacts of activities associated with high pressures.

Results showed that a third of freshwater flow no longer reaches the coast (from 36 900 to 24 800 $\times 10^6 \text{m}^3/\text{a}$), with 15% of estuarine area under severe pressure. Near 40% of estuarine area are subject to severe land-use and development pressure; with agriculture responsible for 10% change, and urban expansion about 4%. Further, small-scale, mostly illicit, mining of sand, diamonds and heavy minerals is causing permanent habitat destruction in 12% of estuaries. There has been a significant increase in pollution pressure (e.g. $840 \times 10^6 \text{L.d}^{-1}$ wastewater discharge into estuaries), with 34% of extent under severe pressure. About 15% of estuarine inlets are artificially manipulated, but these estuaries represent more than 60% of total area. Over 3 730t of fish is caught annually of which 2 600t (60%) is by illegal gillnetting, with 78% of extent severely impacted. Alien terrestrial vegetation has infested about a third of the country's estuaries, with 6% of systems being highly invaded. Aquatic invasive plant species occur in 8% of systems, whilst alien or extralimital fish occur in 25% of South Africa's estuaries.

Keywords

Pressure level assesment, South Africa, Country-level, Management Responses