Abstract

Coral reefs are sensitive to environmental perturbations, and an unprecedented decline in corals has been reported globally as a result of increasing global and local stressors including excessive input of anthropogenic nutrients. This study investigated the effect of land-based sources of nutrients (N and P) associated with sewage, on ocean water quality and the health of corals in Mombasa Marine National Park and Reserve in Kenya to inform integrated coastal zone management and ocean governance. A year-long study was conducted to determine water quality according to protocols described in Grasshoff *et al*. (2007). Coral health status was also monitored using Underwater Visual Census (UVC) to record coral reef ecological parameters. The study area's temperature, salinity, pH and dissolved oxygen were within the recommended standards for healthy coral reefs. The study indicated that land-based nutrients, Chlorophyll-*a* (*Chl a*) and total suspended solids (TSS), are the key factors affecting corals and could be the reason for the observed coral health, which ranged from fairly healthy to unhealthy. On average, nutrient concentrations were higher than recommended to maintain at least 50% coral coverage. Ammonia was the dominant form of nitrogen ranging from 0.105 to 0.4130 mg/l, while nitrate concentrations were 0.0348-0.0468 mg/l, indicating the possibility of blooming algal species in the area. Total suspended solids were above the recommended values, ranging between 33.5 and 79.3mg/l and *Chl a* 0.7114 and 1.58 μg/l. The study concluded that land-based nutrient load influenced coral reef health during the study period. It recommends that land-based pollution needs to be addressed as part of a holistic, integrated coastal zone management approach supporting practical, sustainable and legal management of nutrient discharge into the marine environment to preserve the water quality of Mombasa Marine National Park and Reserve.