Abstract

The concept of ecosystem services (ES) and its application in natural resources management decision making is a new conservation paradigm. A better understanding of ES in resource-rich developing countries can contribute to poverty alleviation and sustainable development, while at the same time conserving natural resources. This study assessed the flow of ES in Mida Creek, a marine reserve in Kenya, with the aim of characterizing land use/land cover (LULC) classes, spatially mapping distribution of ES, identifying important ES, and establishing the opinions of experts on ES flow. A qualitative and quantitative assessment was carried out coupling expert scores and LULC maps in a matrix structure. A participatory approach was used to engage and raise awareness with the community groups who actively participate in conservation activities in the creek, together with researchers/academics/managers who also are involved with the management of the reserve. The study was carried out between July and October 2015 and a total of 65 participants were involved. Datasets were collected using questionnaires in which ecosystem service flow was scored based on expert estimates per LULC class against the selected ES. Data were assessed using statistical and spatial analysis techniques. Results for the flow of provisioning services showed that, while palm trees were the main source of firewood (68%), other vegetation types were also an important source for wood products, including charcoal (46%), construction poles (54%) and fishing gear (68%). There was also a high flow of provisioning services (sea food and bait organisms) from water bodies (82%) and mangroves (80%). Flow for regulating services was mainly from mangroves, and for cultural services from beaches, mangroves and water bodies. Saline bare areas and sand flats scored least for all the ES. There were statistically significant differences in the scoring of the LULC against the different categories of provisioning, regulating and cultural services between the local communities and the other stakeholders. The method shows both the location of the resources utilized by the communities and, also, facilitates communication between these communities and the decision makers, thereby providing an example of a management strategy at the local scale for other coastal regions of Kenya and elsewhere.