

Biodiversity “hotspots”, patterns of richness and endemism, and distribution of marine sponges in South Africa based on actual and interpolation data: A comparative approach

TOUFIEK SAMAAI^{1,2}

¹CSIR, Natural Resources and Environment, Pollution and Waste, Coastal and Marine Pollution, P.O. Box 17001, Congella, 4013, Durban, South Africa.

²School of Biological and Conservation Sciences, University of KwaZulu-Natal (Westville Campus), P.O. Box X54001, Westville, Durban, 4001

Abstract

“Hotspots” of biodiversity at a meso-scale diversity were examined for marine sponge populations throughout the temperate, subtropical and tropical South Africa. Actual and interpolated (predicted) data sets are presented in a comparative manner to compare the diversity patterns of South African Demospongiae species and their distribution in contiguous 5° grid sections, to demonstrate current knowledge of the sponge fauna in various coastal regions. Richness and endemism varied considerably between marine areas and grid sections, for species at all spatial scales. Richness and endemism were equally effective indicators of biodiversity “hotspots”, but differed in patterns between the two datasets. Species richness appears to be fairly unevenly distributed along the coast, and marked peaks occur in the south of the country, the greatest being in the area surrounding Cape Town (Sector 11); almost certainly the consequence of a disproportionately intense sampling effort at these locations. Levels of apparent endemism varied considerably between sectors, ranging from zero (Sector 1) to 71 species (Sector 11), with an average of 57% apparent endemic species recorded for all 35 regions based on the actual data, vs. 20% apparent endemics for the predicted data. The Bray-Curtis analysis (without transformations) showed no clear pattern of faunal relationships between the 35 selected sectors for the actual dataset, but the predicted data set showed three distinct faunal groups, the West Coast fauna extending from Cape Point northwards, a South Coast fauna, and an East Coast fauna.

Keywords: Porifera, sponges, Demospongiae, species richness, endemism, biogeography, South Africa

Introduction

Southern Africa straddles two great oceans, which include a marvelous diversity of ecosystems, ranging from tropical coral reefs to cool-water kelp forests. These shores are