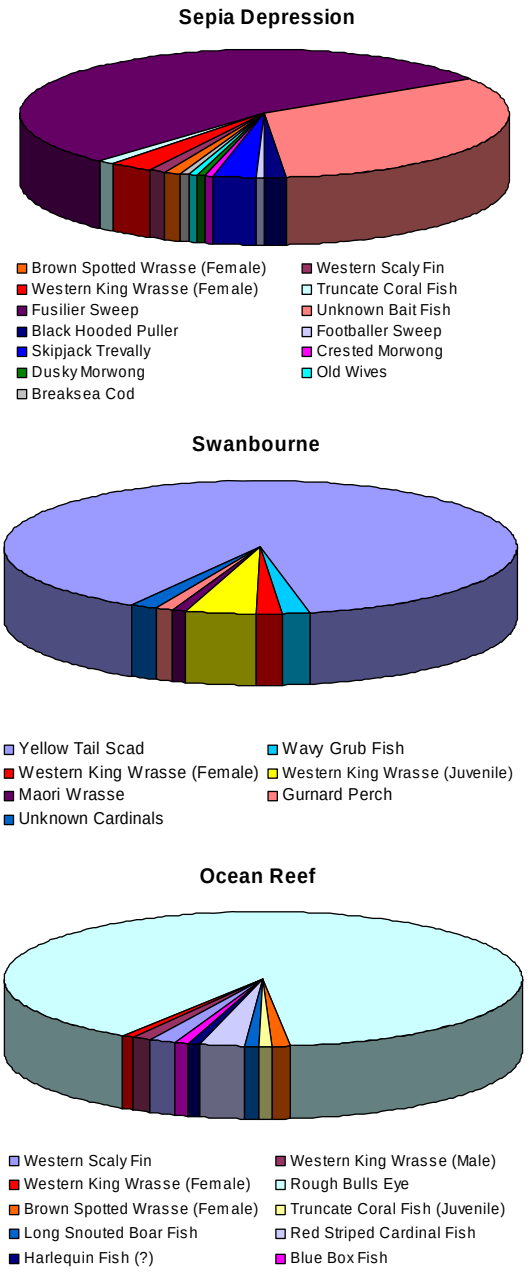
Fish Diversity

Between the 26th and 28th February, 2008, divers from the Murdoch University Marine and Freshwater Research laboratory collected rare under-water video footage of each of the ocean outlets including Sepia Depression, Swanbourne and Ocean Reef. Although the footage was initially collected for an educational DVD, the footage also allowed for a semi-quantitative analysis of the finfish assemblages. This was made possible by the fact that the footage consisted of timed swims of roughly ten minutes per outfall.

Methods

On completion of the dives, video footage consisting of roughly ten minutes per outlet was viewed by a trained observed. Finfish species were first identified and the total number of individual visible in any one frame enumerated. This method, whilst unable to provide total abundance data, does succeed in providing relative abundance data (probably representing the minimum number of each species present).



Finfish assemblages at the Sepia Depression, Swanbourne and Ocean Reef outlet diffusers.

Results

Analysis of finfish assemblages across each of the three outfalls found 22 species in total (adjacent Figure). At least four of these species, the skipjack trevally, harlequin fish, breaksea cod and the long snouted boarfish can be considered important recreational species. The dusky morwong in contrast, whilst targeted by some anglers, is not considered a prized recreational species. At least two of the observed species, the truncate coral fish and the western king wrasse were observed in the presence of juveniles. This may indicate that the outfalls have some significance as nursery areas.

Each of the outlets were characterised by different species assemblages, with only one species being common to all three outlets (the western king wrasse). The predominance of wrasse in Western Australia's temperate waters may be a top-down controlled ecological symptom of over fishing (Peter Barnes UWA, pers. com.). Three species were present at least two of the outlets (scaly fin, brown spotted wrasse and the truncate coral fish). Sepia Depression maintained the highest diversity of finfish species with 13 species, Ocean Reef the second highest with 19 species; Swanbourne was the least diverse with seven species.

In all, the analysis of the video footage has proven to be a useful exercise. Results suggest that the outlet diffusers provide important habitat for a suite of finfish species, including juveniles. Future analysis may include identification and enumeration of algal and invertebrate fauna (including sponges, echinoderms, crustaceans and molluscs), with a view to elucidating the biodiversity of the outfall diffusers further. We also advocate the use of regular surveys to determine temporal changes in population assemblages (particularly that related to juvenile recruitment).