Umbrella species in marine systems: using the endangered humphead wrasse to conserve coral reefs - DTU Orbit (29/12/2018)

Extinction risk is closely tied to body size, home range, and species distribution. Quantifying home range is critical for conservation, and can enable the use of concepts such as ‘umbrella species’, whose conservation protects other species due to shared habitat. To determine the value of the humphead wrasse as an umbrella species for coral reef conservation, we conducted a multi-year study of humphead wrasse home range at Palmyra Atoll, Central Tropical Pacific, tagging juvenile, female, and male individuals with acoustic transmitters. We quantified home range using 2 metrics, length and area, and determined if these metrics were related to the sex and maturity status of the individual. We recorded individual movements during 5030 fish-days, yielding detailed records for 14 individuals comprising 3 juveniles, 5 females, and 6 males. The home range of humphead wrasse measured over a 2 yr study was 0.4 to 14 km and changed with ontogeny. Females had larger home ranges than other reef fishes studied to date (n = 68), indicating value as an umbrella species for coral reefs. We compared the home range of the species to the size distribution of tropical marine protected areas (MPAs), and used a model to estimate the MPA length necessary to retain humphead wrasse. Most MPAs are too small to effectively protect the humphead wrasse.