Finfish Movement Patterns and Habitat Use within a Marine Protected Area in the Florida Keys National Marine Sanctuary

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Objectives

Document finfish movement patterns, habitat use, and determine spatial applicability of reserve design within and offshore of the Western Sambo Ecological Reserve (WSER).

Methods

Forty two groupers were surgically implanted with sonic tags and tracked using forty eight sonic receivers (VR2s).

Results

- Fig. 1) Fish were captured by hook & line or fish traps and implanted with V13 & V16 Vemco coded sonic tags.
- Fig. 2) Sonic receivers (VR2s) were arranged in three interlocking rings around patch reefs, fore reef, and outlier reef.
- Fig. 3) Mean total length of tagged groupers.
- Fig. 4) Apparent home ranges (km2) estimated by minimum convex polygon (MCP) method for selected groupers between June – September 2006 indicating strong site fidelity to patch reefs within the WSER.
- Fig. 5) Mean latitude position per hour for a nassau grouper (480mm), tagged in the fore reef zone indicating movement between the WSER and open fishing zone.
- Fig. 6) Estimated location of tag 1319 black grouper (760 mm TL) between October 2006 – February 2008 with frequency of detection by VR2 receivers in fore reef and outlier reef areas.

Conclusions

- Groupers captured on patch reefs appeared to remain on patch reefs; however, fish captured in the fore reef zone and from a deeper outlier reef exhibited significant movement between these habitats.
- Fore reef fish habitat utilization included both protected (i.e. no-take marine reserve) and open fishing zones.
- Our results indicate that the Western Sambo Ecological Reserve, (30 km²), is effective in providing adequate protection for patch reef habitat groupers.

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- Fig. 4
- Fig. 5
- Fig. 6