Journal of FISH BIOLOGY

fsbi An International Society for Fish Biology

Journal of Fish Biology (2017) **90**, 265–282
doi:10.1111/jfb.13180, available online at wileyonlinelibrary.com

Environmental drivers of diurnal visits by transient predatory fishes to Caribbean patch reefs

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(Received 3 May 2016, Accepted 7 September 2016)

Video cameras recorded the diurnal visitation rates of transient (large home range) piscivorous fishes to coral patch reefs in The Bahamas and identified 11 species. Visits by bar jack *Caranx ruber*, mutton snapper *Lutjanus analis*, yellowtail snapper *Ocyurus chrysurus*, barracuda *Sphyraena barracuda* and cero *Scomberomorus regalis* were sufficiently frequent to correlate with a range of biophysical factors. Patch-reef visitation rates and fish abundances varied with distance from shore and all species except *S. regalis* were seen more frequently inshore. This pattern is likely to be caused by factors including close proximity to additional foraging areas in mangroves and on fore-reefs and higher abundances close to inshore nursery habitats. Visitation rates and abundances of *C. ruber*, *L. analis*, *O. chrysurus* and *S. regalis* also varied seasonally (spring *v.* winter), possibly as fishes responded to temperature changes or undertook spawning migrations. The abundance of each transient predator species on the patch reefs generally exhibited limited diurnal variability, but *L. analis* was seen more frequently towards dusk. This study demonstrates that the distribution of transient predators is correlated spatially and temporally with a range of factors, even within a single lagoon, and these drivers are species specific. Transient predators are considered an important source of mortality shaping reef-fish assemblages and their abundance, in combination with the biomass of resident predators, was negatively correlated with the density of prey fishes. Furthermore, transient predators are often targeted by fishers and understanding how they utilize seascapes is critical for protecting them within reserves.

Key words: barracuda; mangroves; marine reserves; snapper; The Bahamas; video analysis.

INTRODUCTION

Predation is a key influence on the structure of reef-fish assemblages (Hixon, 1991) and has led to an extensive literature on the importance of predator refuges for prey (Hixon

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