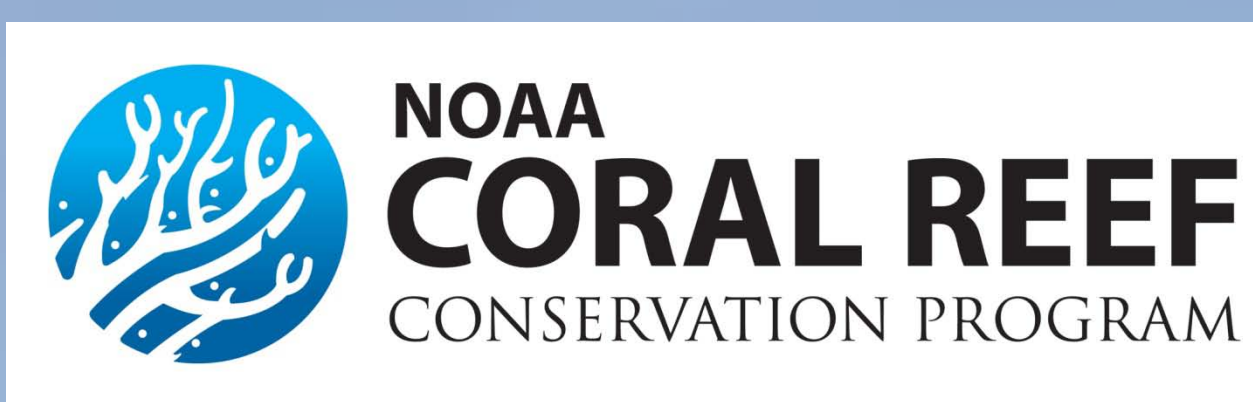


# Where are the Baby Corals in the Florida Keys?

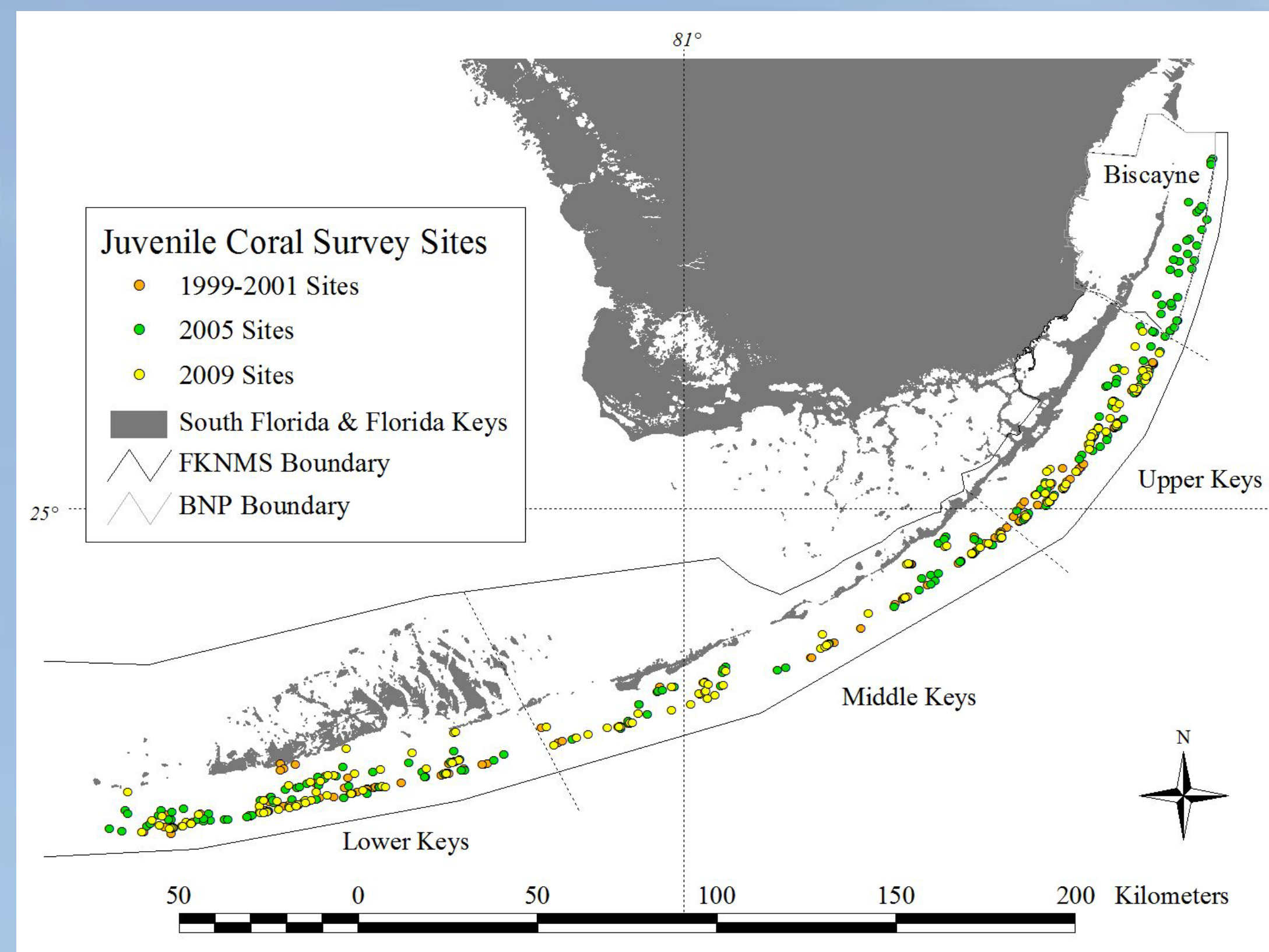


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## Background

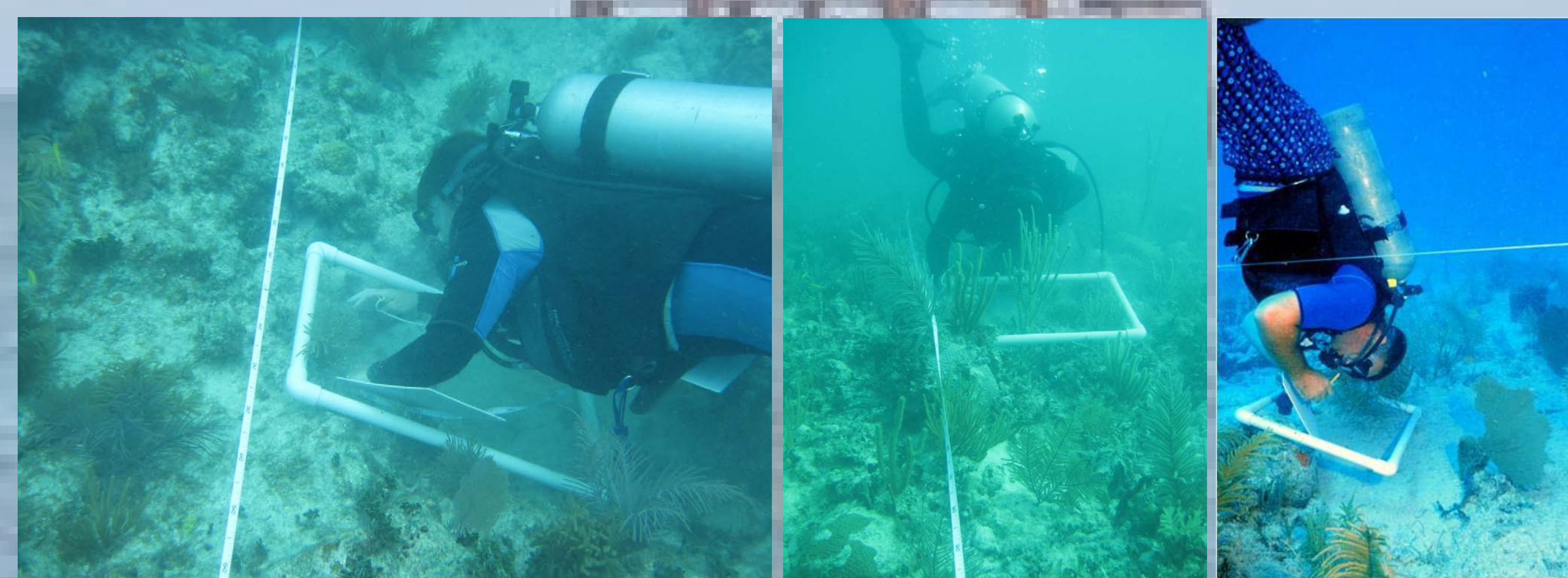
Recruitment is critical in the maintenance of coral populations, yet many previous studies have been limited in geographic scope and habitats sampled. Juvenile corals, defined as early post-settlement individuals from ~1 mm up to 4 cm in maximum diameter, are an important component of the population dynamics of corals, yet are often overlooked due to their small size and cryptic nature. This study, part of a larger sampling program for benthic coral reef organisms, investigated patterns in density and species composition of juvenile corals during 1999-2001 (211 sites), 2005 (195 sites), and 2009 (160 sites) distributed from the northern reef tract to the Marquesas Keys.



Survey locations for juvenile corals in the Florida Keys during 1999-2001, 2005, and 2009.

## Methods

A stratified sampling design incorporated cross-shelf habitats, along-shelf position, and areas inside and outside of no-take zones. Underwater visual surveys were used to identify, enumerate, and measure juvenile corals by sampling ten 0.65-cm x 0.48-cm quadrats along two replicate transects per site. A total of 566 sites encompassing ten coral reef and hard-bottom habitats and 4,643 m<sup>2</sup> of substratum were sampled from 1999-2009.

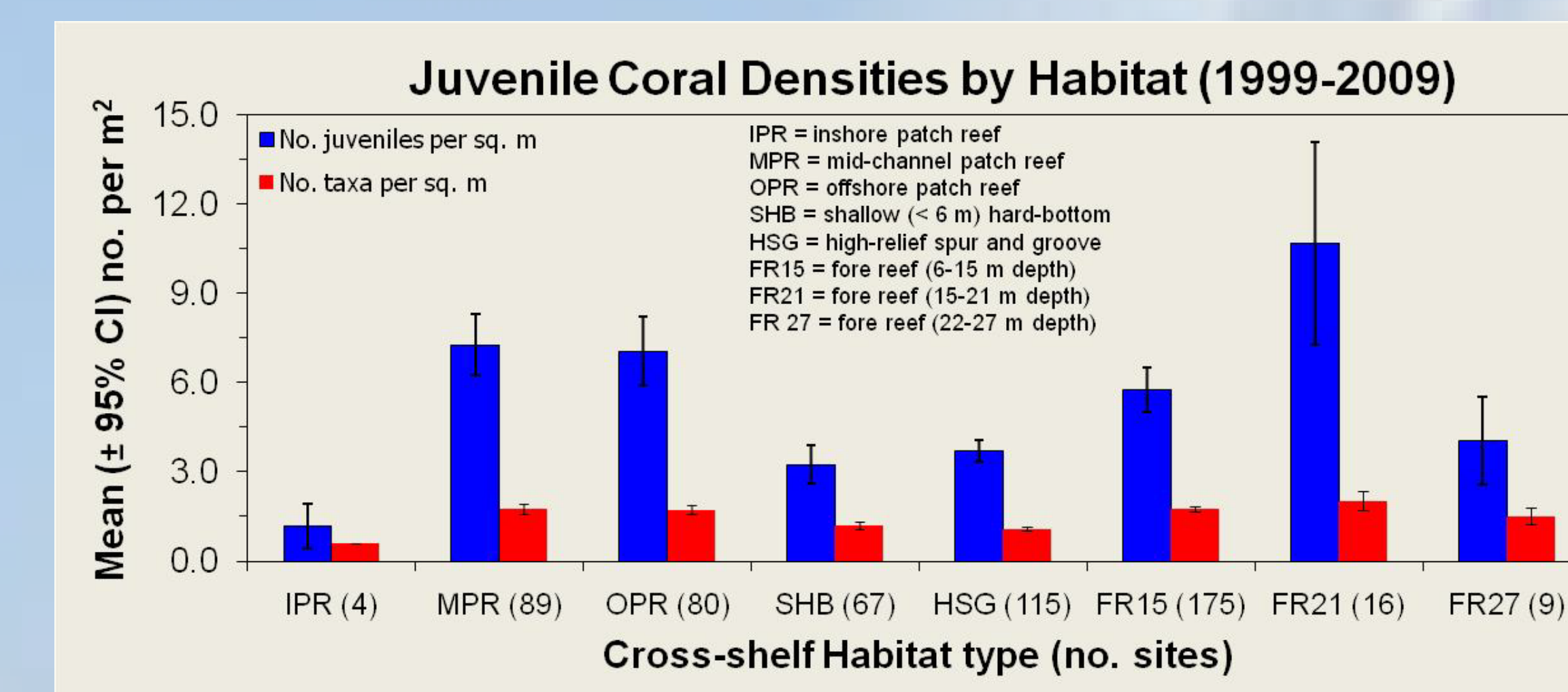


## Results

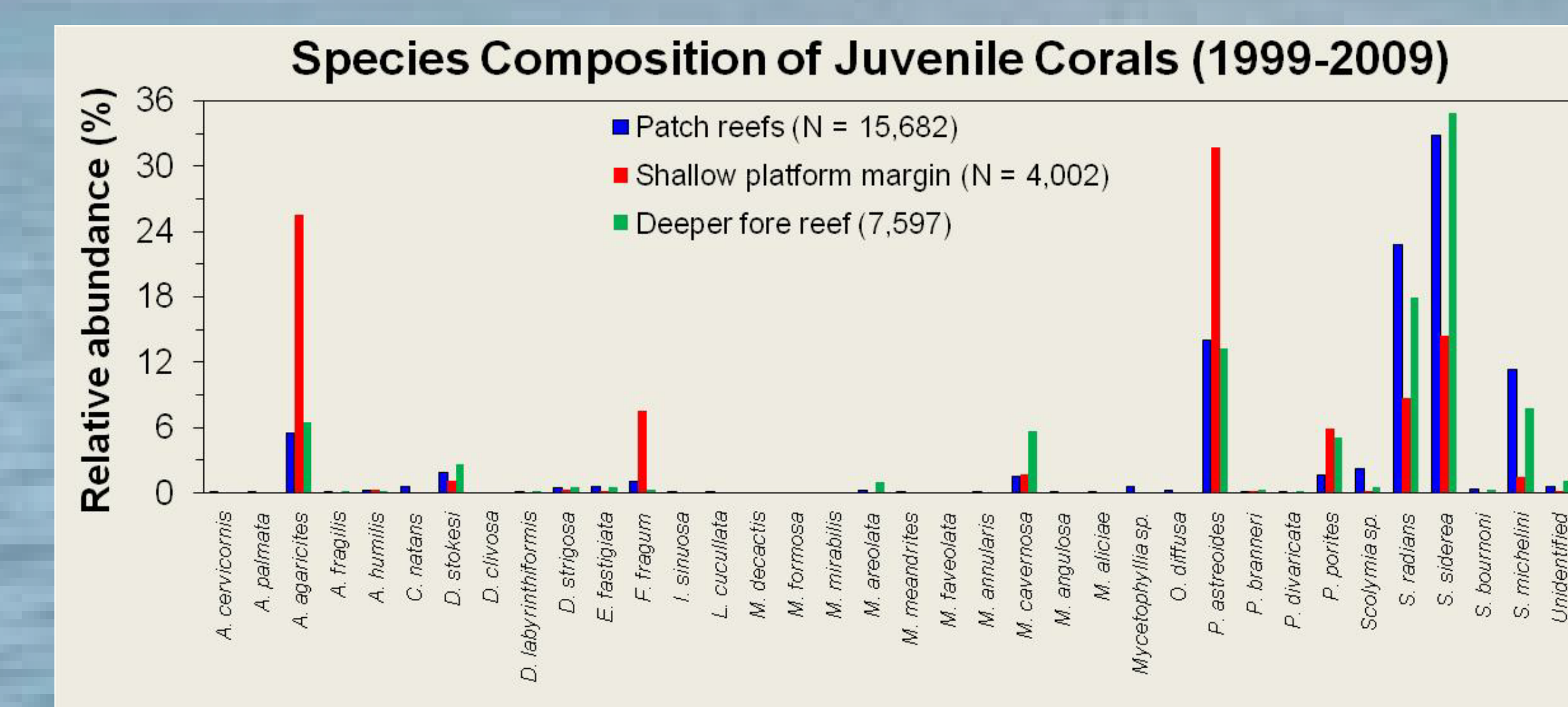
Mean densities of juvenile corals exhibit significant variations among habitat types, with significantly greater densities on mid-channel (7.3 juveniles per m<sup>2</sup>) and offshore patch reefs (7.1 per m<sup>2</sup>), as well as on the fore-reef slope (5.8-10.7 per m<sup>2</sup>). Juvenile *Porites* and *Siderastrea* were generally the most abundant, with notable shifts in species composition corresponding to differences in depth, topographic complexity, and the established coral assemblage.

## Results

On both mid-channel and offshore patch reefs, two broadcast spawning species, *Siderastrea siderea* (33%) and *Stephanocoenia michelini* (11%), as well as two brooding species, *S. radians* (23%) and *Porites astreoides* (14%), comprised more than 80% of all juveniles encountered. *Agaricia agaricites* was relatively more abundant on shallow hard-bottom and high-relief spur and groove, along with *Favia fragum* in the latter habitat. The most abundant juveniles tended to correspond with the most abundant established corals. Juvenile *Acropora* and *Montastraea* corals were present, but very rare.



Spatial comparisons of mean juvenile coral densities (no. per m<sup>2</sup>) in the Florida Keys during 1999-2009. Numbers on the x-axis are the number of survey sites, with twenty 0.65-cm x 0.48-cm quadrats sampled per site.

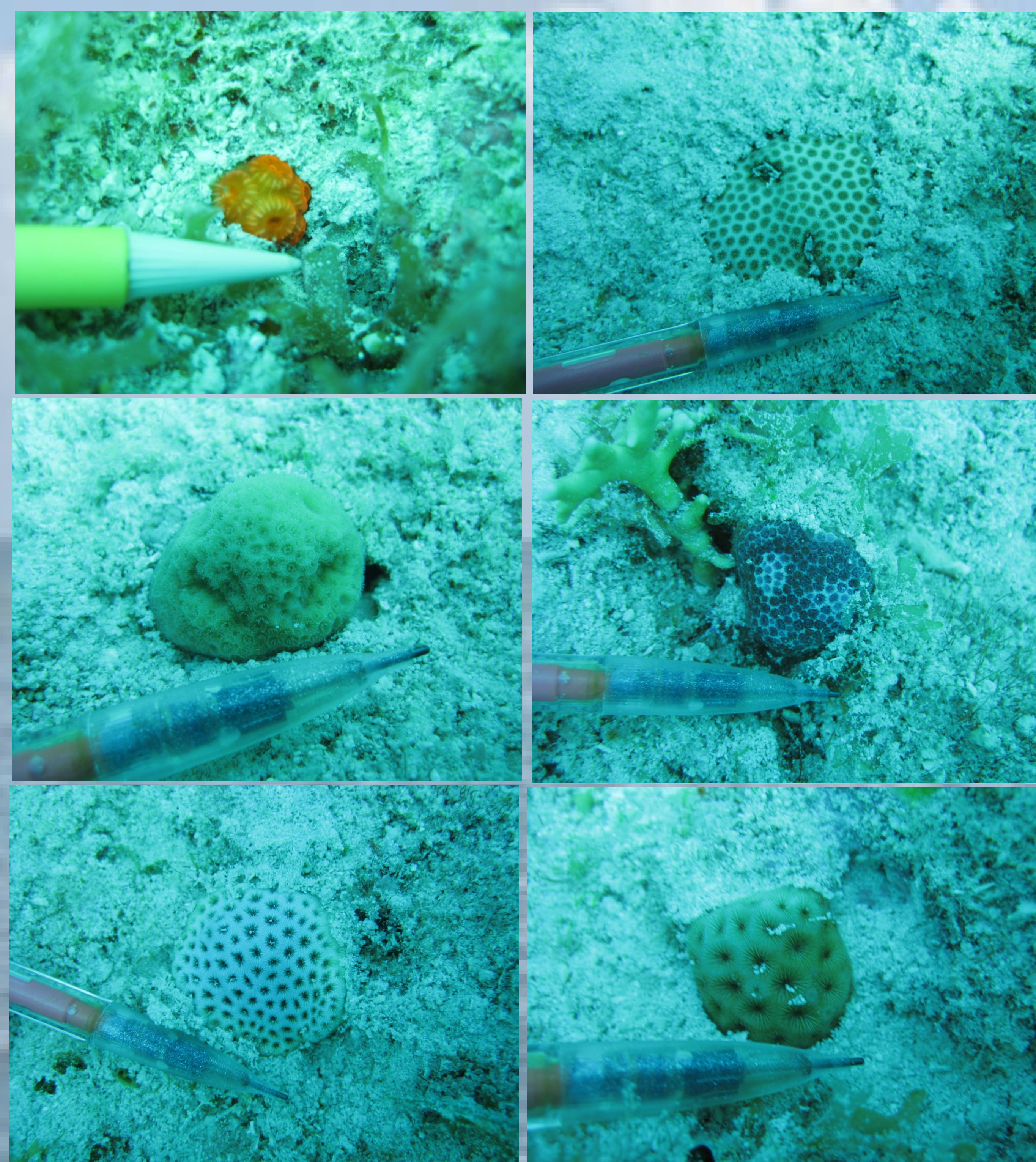


Contrasting patterns in relative abundance of juvenile corals between patch reefs, the shallow platform margin, and the deeper (> 6 m) fore-reef slope

## Acknowledgments

NOAA's CRCP and Aquarius Reef Base Program, Emerson Associates International, FKNMS, CMS/UNCW, Biscayne National Park, Dry Tortugas National Park, O. Rutten, J. Ault, S. Smith, B. Altmeier, M. O'Connor, D. Ward, B. Keller, and J. Delaney

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Examples of juvenile corals (< 4 cm max. diameter) in the Florida Keys. Top left: *Montastraea cavernosa*, Top right: *Stephanocoenia michelini*; Middle left: *Porites astreoides*, Middle right: *P. branneri*, Bottom left: *Siderastrea radians*, Bottom right: *S. siderea*