Pros vs. Joes

Comparing Professional and Volunteer Collected Monitoring Data From Southern California Rocky Reefs

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Volunteers & Professional Monitoring

- In a variety of ecosystems there are co-occurring monitoring efforts done by volunteers and professionals
  - FW streams, beach WQ, marine debris, etc.
- Multiple benefits
  - Increased data collection and public engagement
- Data quality is always a concern

Bight '08 Rocky Reef Monitoring

- The Bight '08 regional monitoring provided an opportunity for SCCWRP
- The opportunity to assess the quality of volunteer data from these local ecosystems
  - Reef Check California (RCCA)

Research Question

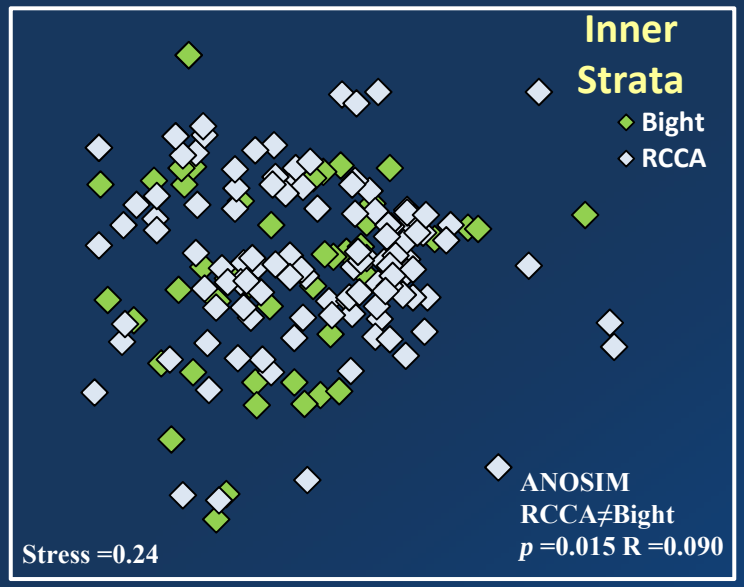
Are the monitoring data collected by trained volunteers comparable to that collected by professional scientists?

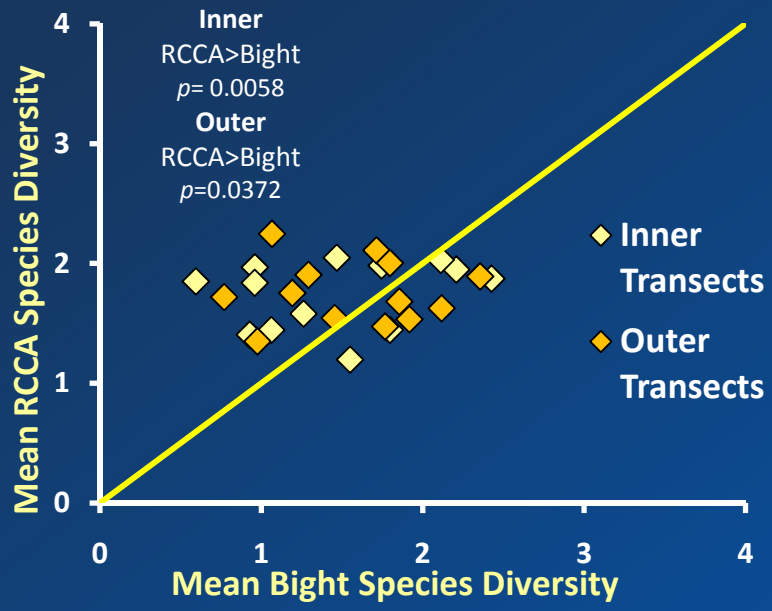
13 Sample Sites in Common

Data Analysis

- 3 aspects of rocky reef ecosystems
  - Physical habitat
  - Benthic invertebrates
  - Fish
- Compare community and species-specific aspects of the biotic data
  - Used a variety of multivariate and univariate approaches
- Constrain the datasets
  - Spatial & taxonomical equitability

Fish Community





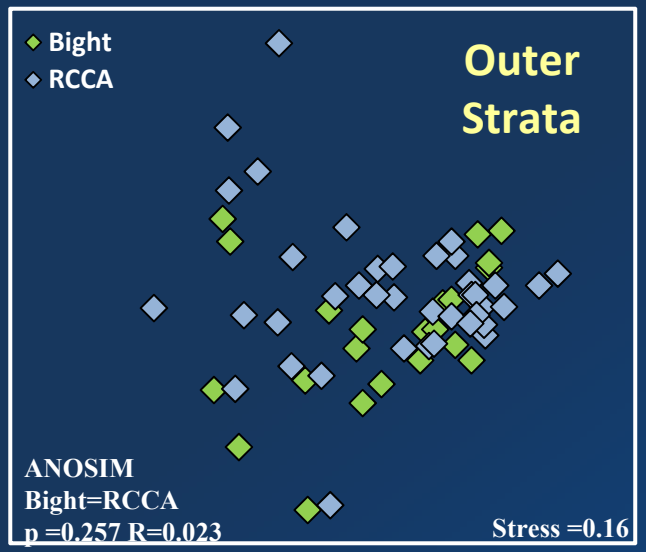
- Multivariate analyses
  - Relatively similar communities by both programs
    - Trivial differences
- Univariate analyses
  - RCCA observed greater diversity in both strata
    - More variance in Bight data
  - Similar richness in both datasets

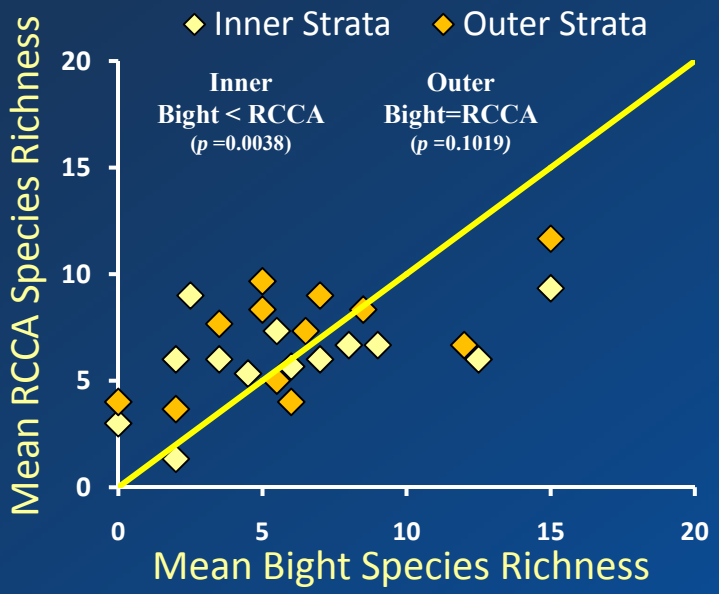
Individual Species of Fish

Dominant Species	Greater Abundance: Inner Strata	Greater Abundance: Outer Strata
Blacksmith		
Senorita		
Kelp Bass		
Black Surfperch		
Opal Eye	RCCA	RCCA
CA Sheepshead		
Rainbow Surfperch	Bight	

- Both programs observed similar abundances
- RCCA observed more opal eye
  - Possibly related to experience and fish behavior

Benthic Invertebrate Community





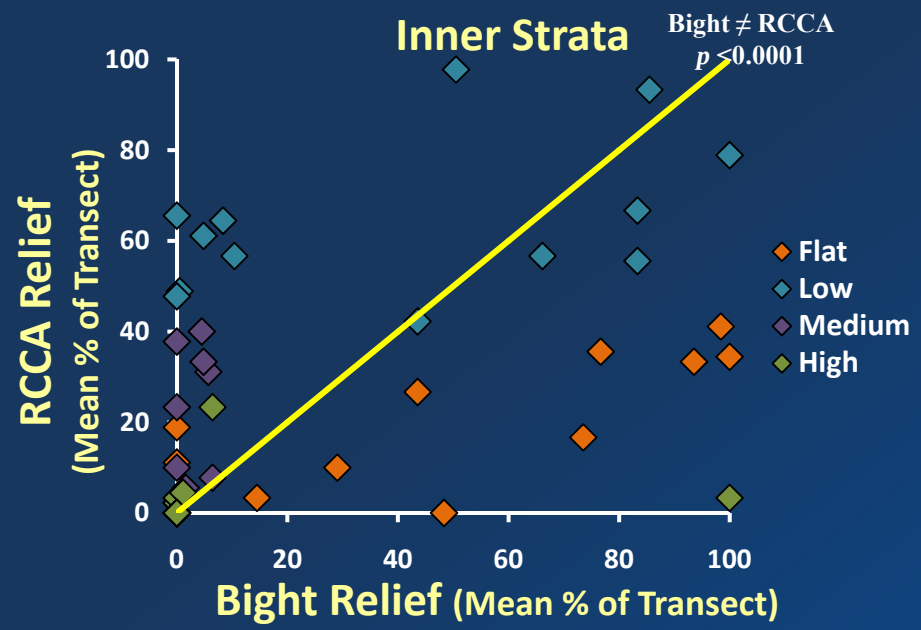
- Multivariate approach
  - No differences between datasets in both strata
- Univariate approach
  - RCCA had greater species richness and diversity in inner strata
    - More variance in Bight data
  - Datasets were similar in outer strata

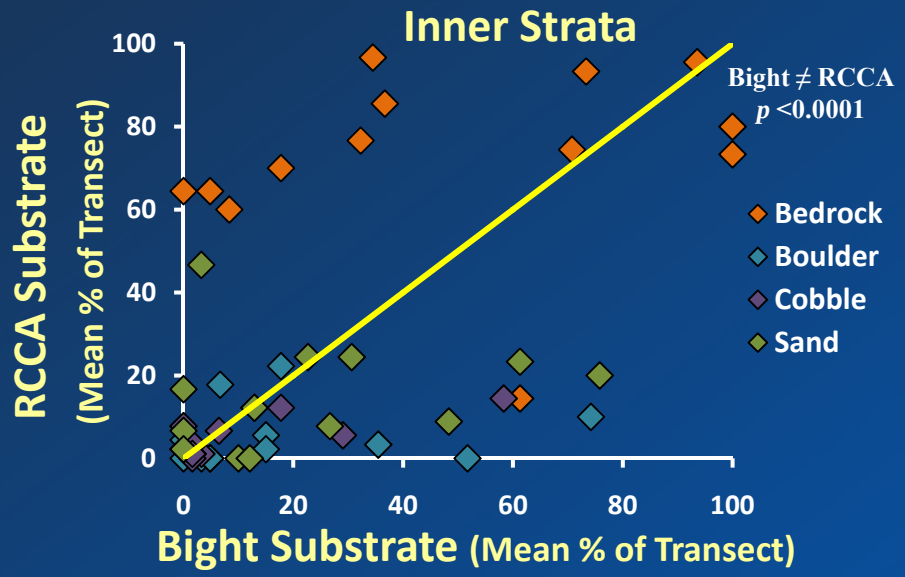
Individual Species of Benthic Invertebrates

Dominant Species	Greater Abundance: Inner Strata	Greater Abundance: Outer Strata
Purple Urchin	RCCA	RCCA
Red Urchin	RCCA	
Bat Star		Bight
Gorgonians		Bight
Turban Snails		
Giant Spined Sea Star	Bight	
Large Anemones	Bight	Bight

- RCCA observed more urchins
  - Due to estimation procedures
- For other taxa, Bight typically greater
  - Possibly related to experience levels

Physical Habitat





- Differences in both strata
  - Greater relief & more bedrock in RCCA
- Differences were likely related to a bias in transect selection
  - Random/haphazard

Summary of Results

- Fish were most similar
  - Both community and species-level comparisons were fairly comparable
- Mixed results from invertebrates
  - Community-scale comparisons were similar, but not species
    - related to extrapolation and possibly training
- Considerable differences in physical habitat
  - Related to bias in transect selection

Conclusions

- The volunteer and professionally collected monitoring data were comparable in many respects
- If volunteer monitoring efforts are constrained and directed, the data could be integrated
  - RCCA protocols need to be adjusted as well
- Ultimately, the utility of volunteer data will depend upon the goal(s) of a monitoring program

Thank you

Questions?

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