Sediment Macrofaunal Communities Associated with Deep-Sea Hardbottom Environments in the Gulf of Mexico

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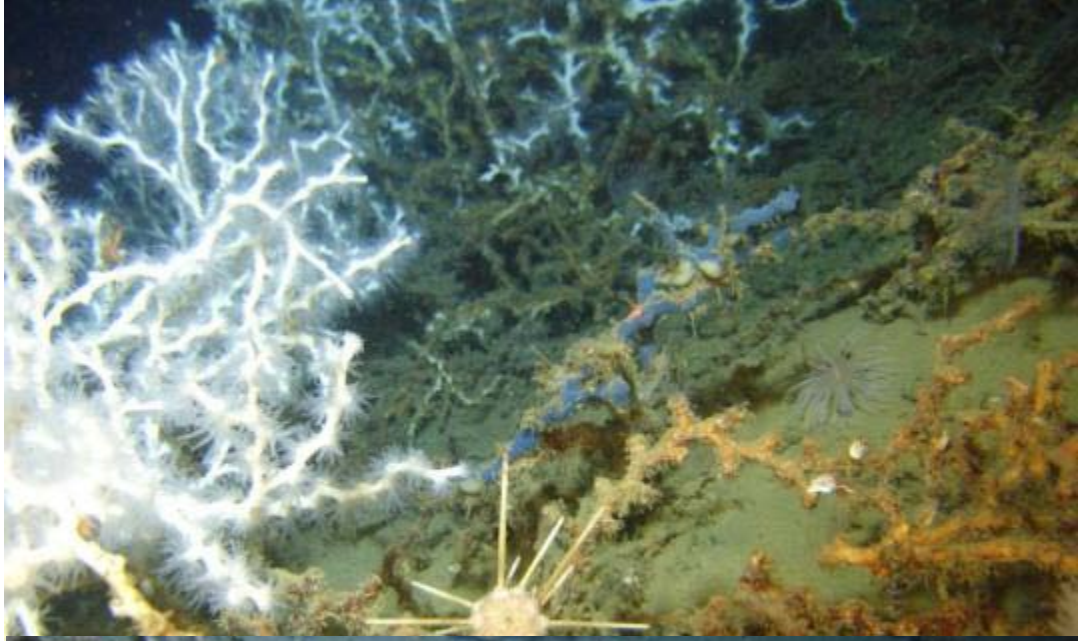
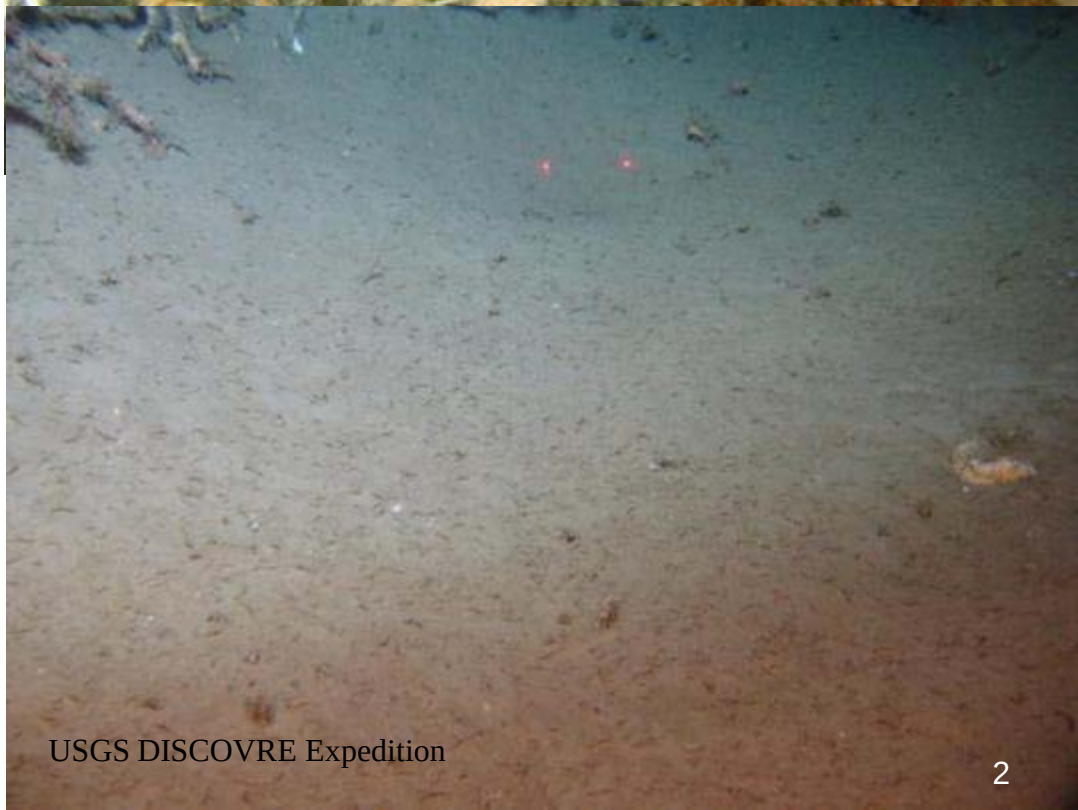
Background

Biotic Structure

- 3-D substrate is more complex than a sediment flat
- Sheltered cavities within colonies facilitate sediment accumulation
- Branching coral supplies substrate for encrusting organisms

Expectation:
Discrete communities reside within coral matrix relative to adjacent habitats





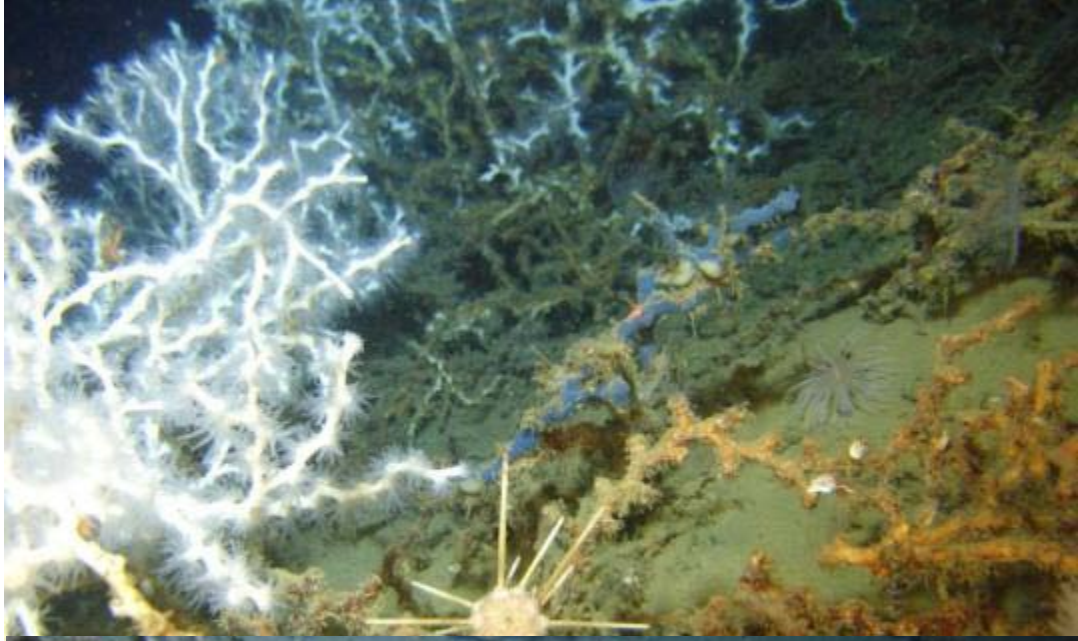
USGS DISCOVRE Expedition

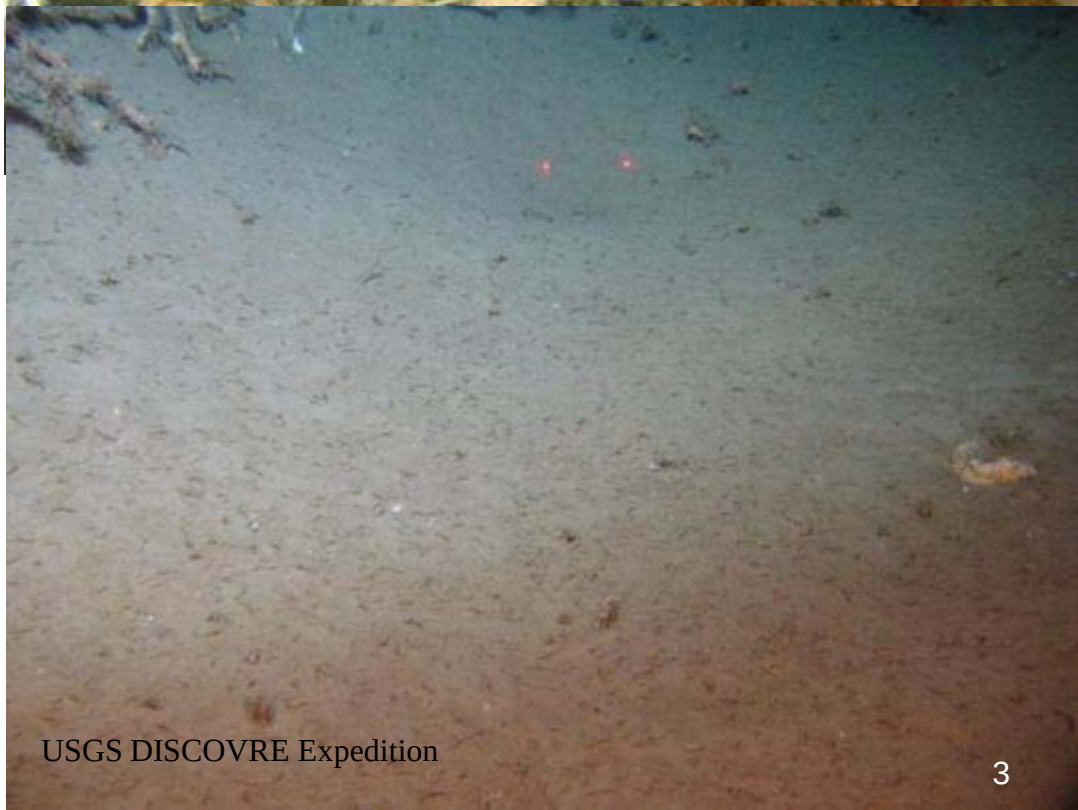
Background

However,

- Habitat heterogeneity effects on community structure is unknown
- Basic community information is lacking

Sediment macrobenthos provide important ecological services

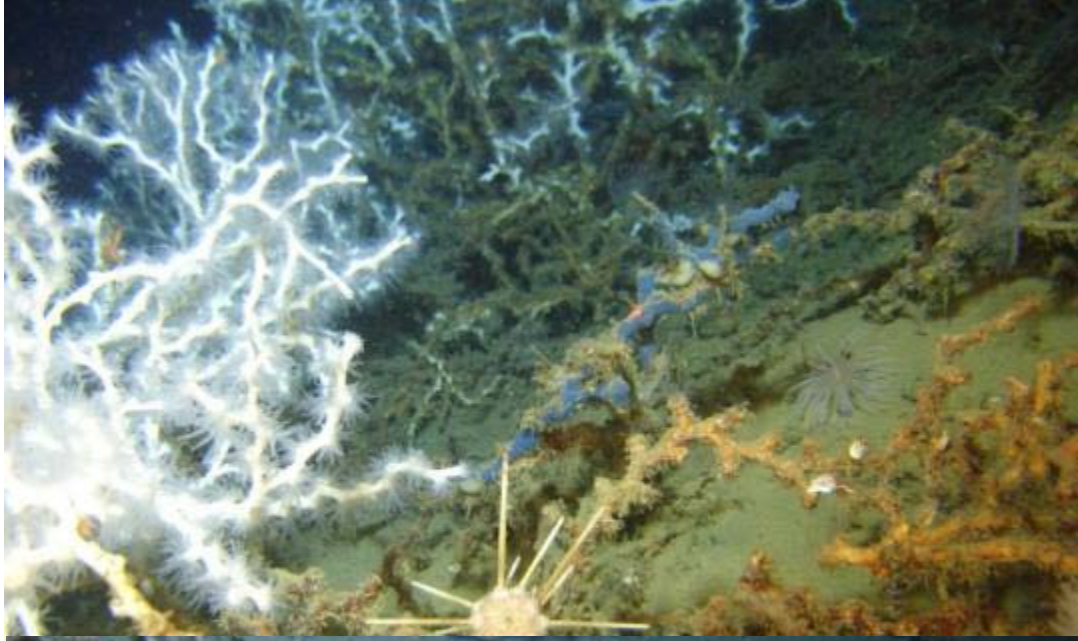




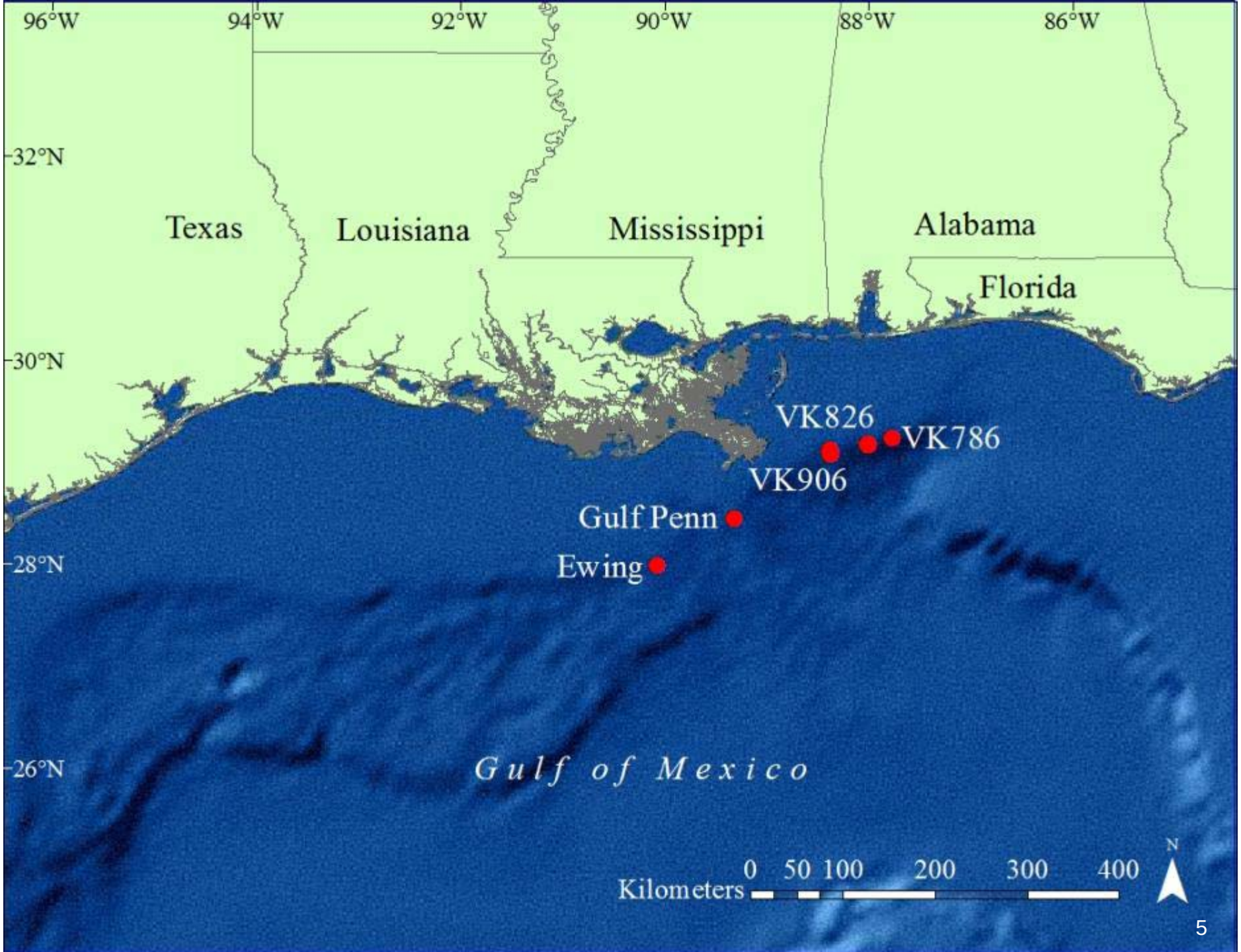
USGS DISCOVRE Expedition

Objectives

- To compare macrofaunal community composition associated with live *Lophelia pertusa* at several natural and artificial sites to background soft-sediment communities



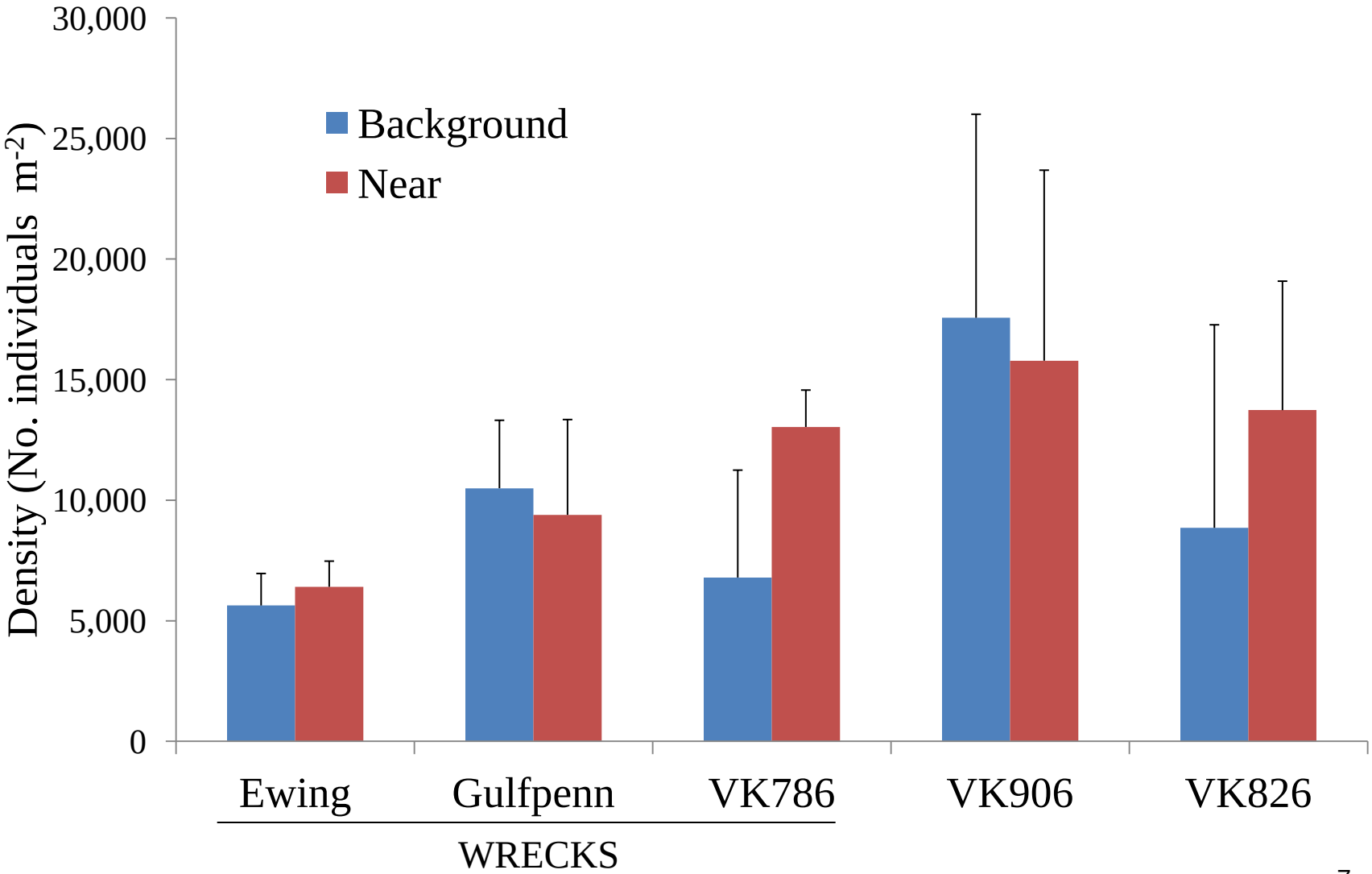
USGS DISCOVRE Expedition


96°W
94°W
92°W
90°W
88°W
86°W
32°N
30°N
28°N
26°N
Texas
Louisiana
Mississippi
Alabama
Florida
VK826
VK786
VK906
Gulf Penn
Ewing
Gulf of Mexico
Kilometers
0 50 100 200 300 400
N

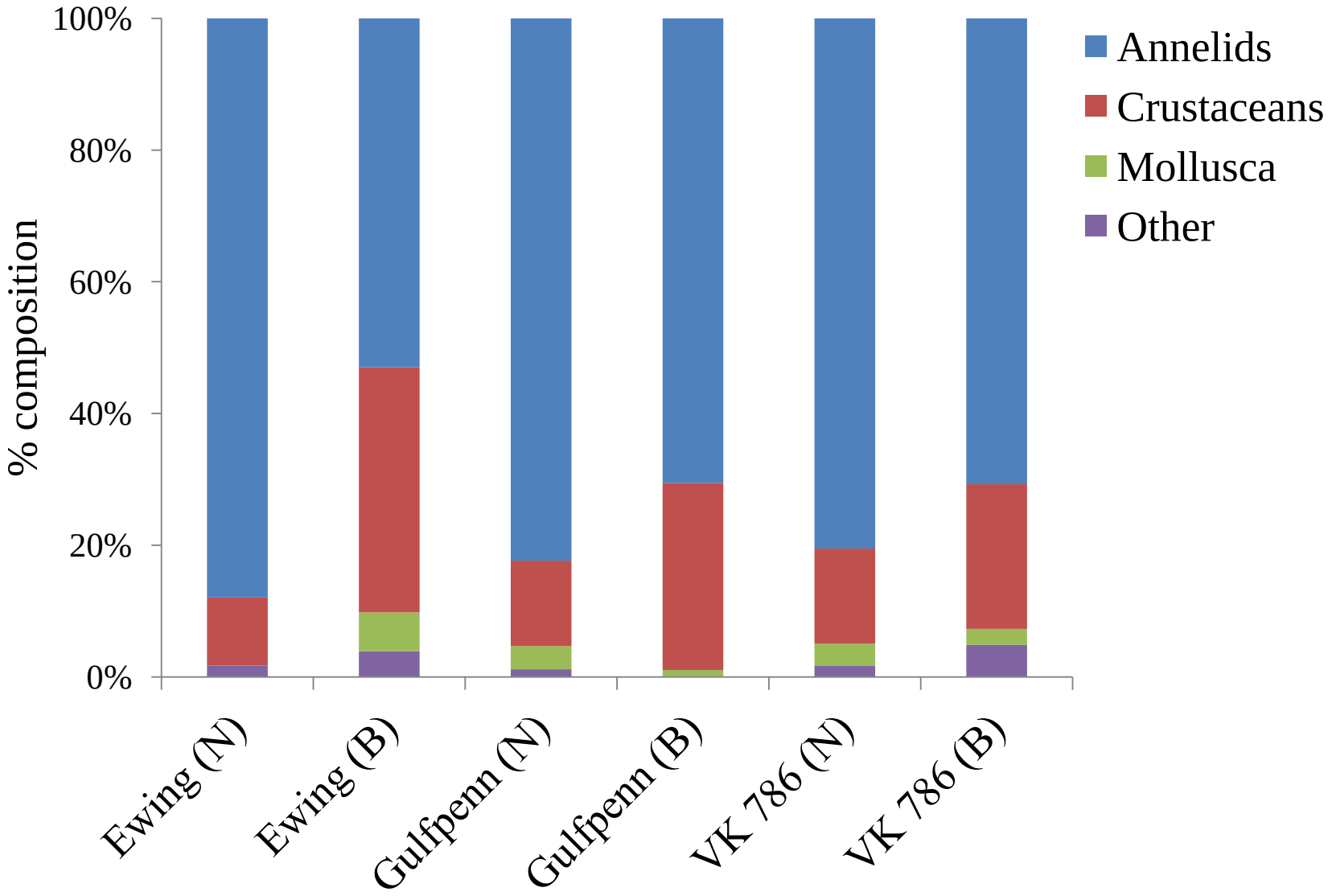
HARBOR BRANCH

JASON

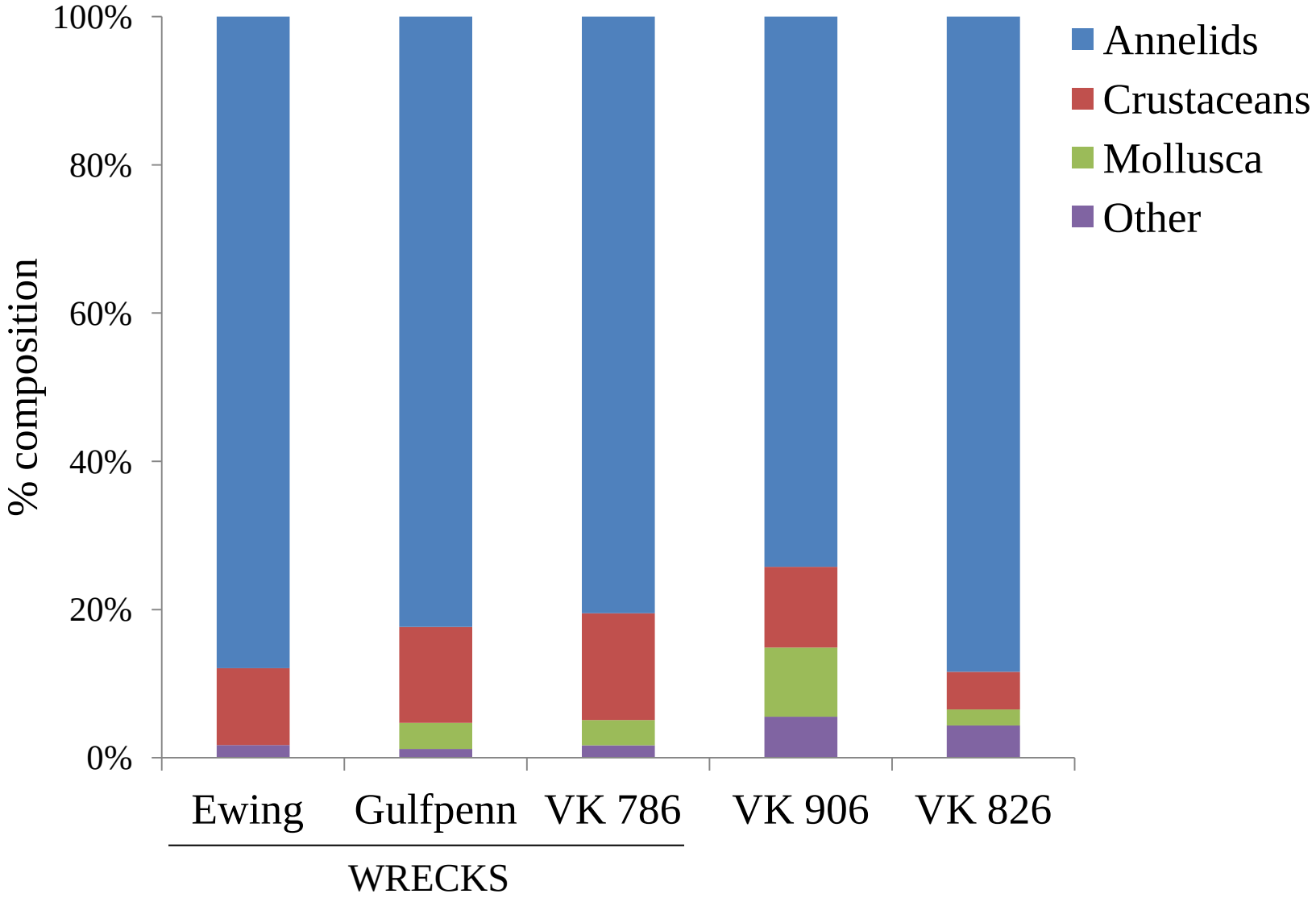
Mean Densities of Macrofauna – All Sites



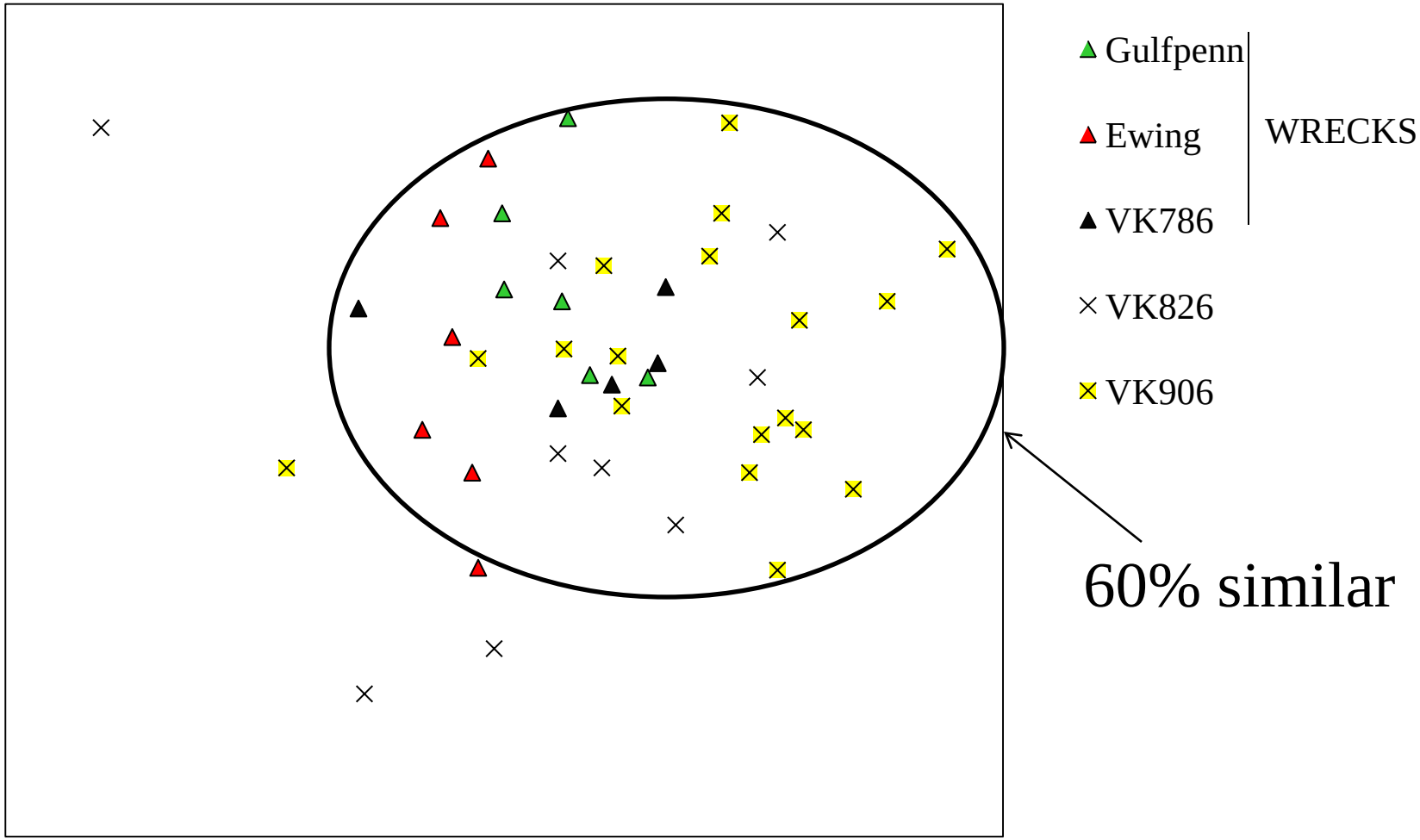
Macrofauna composition: Wreck Sites



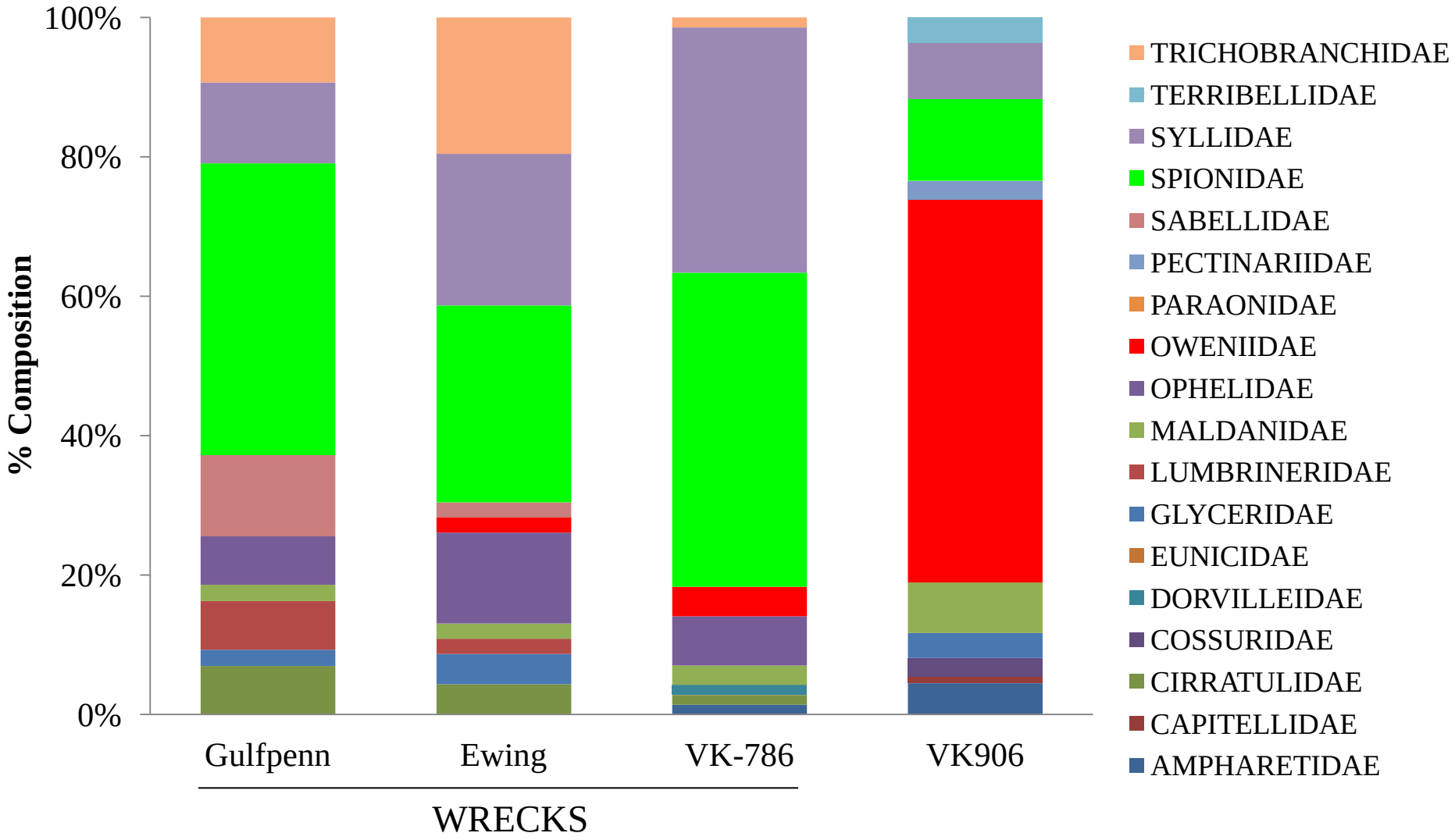
Macrofauna Composition: Natural and Wreck Sites



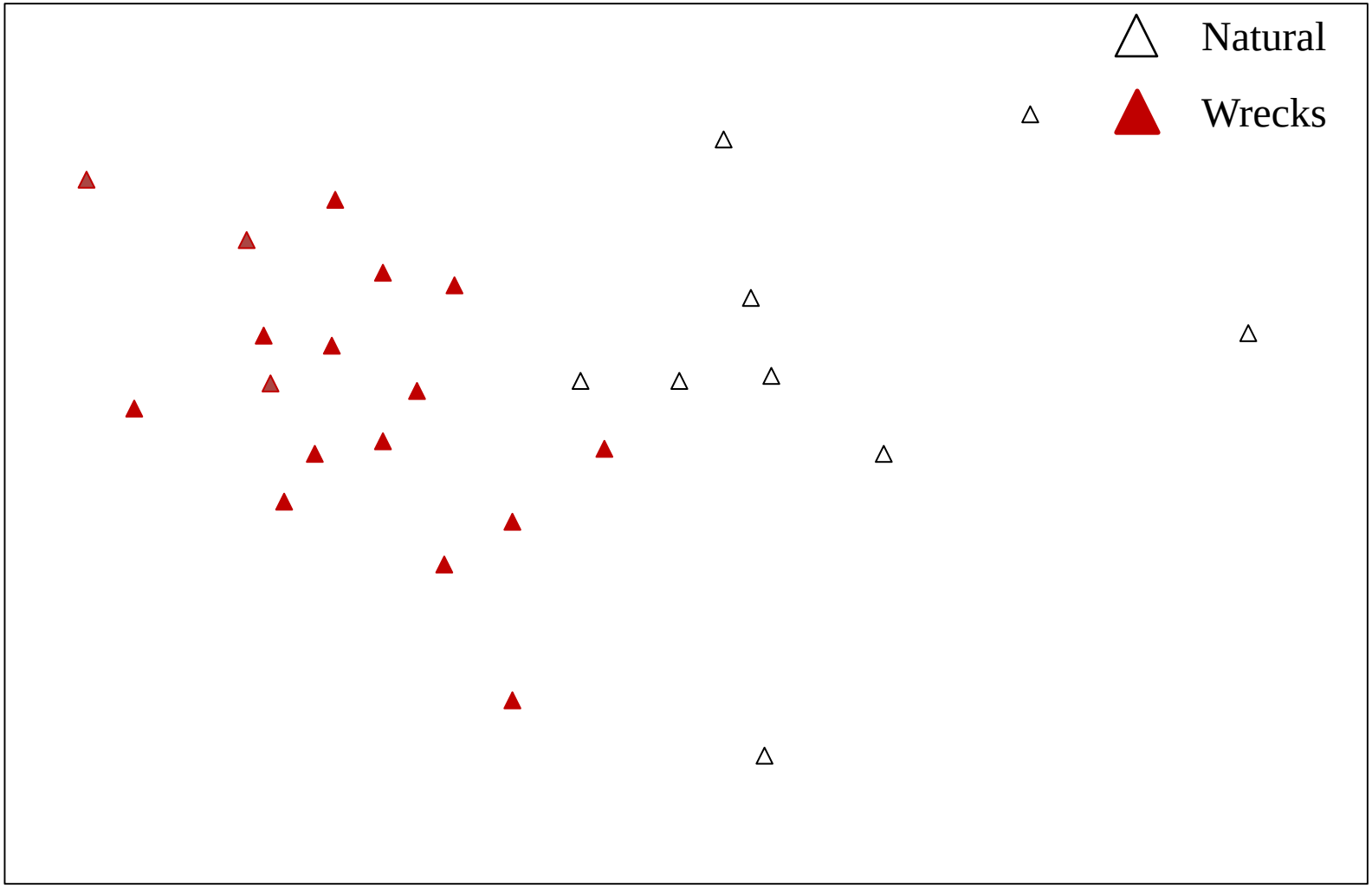
N-MDS – Macrofaunal Composition



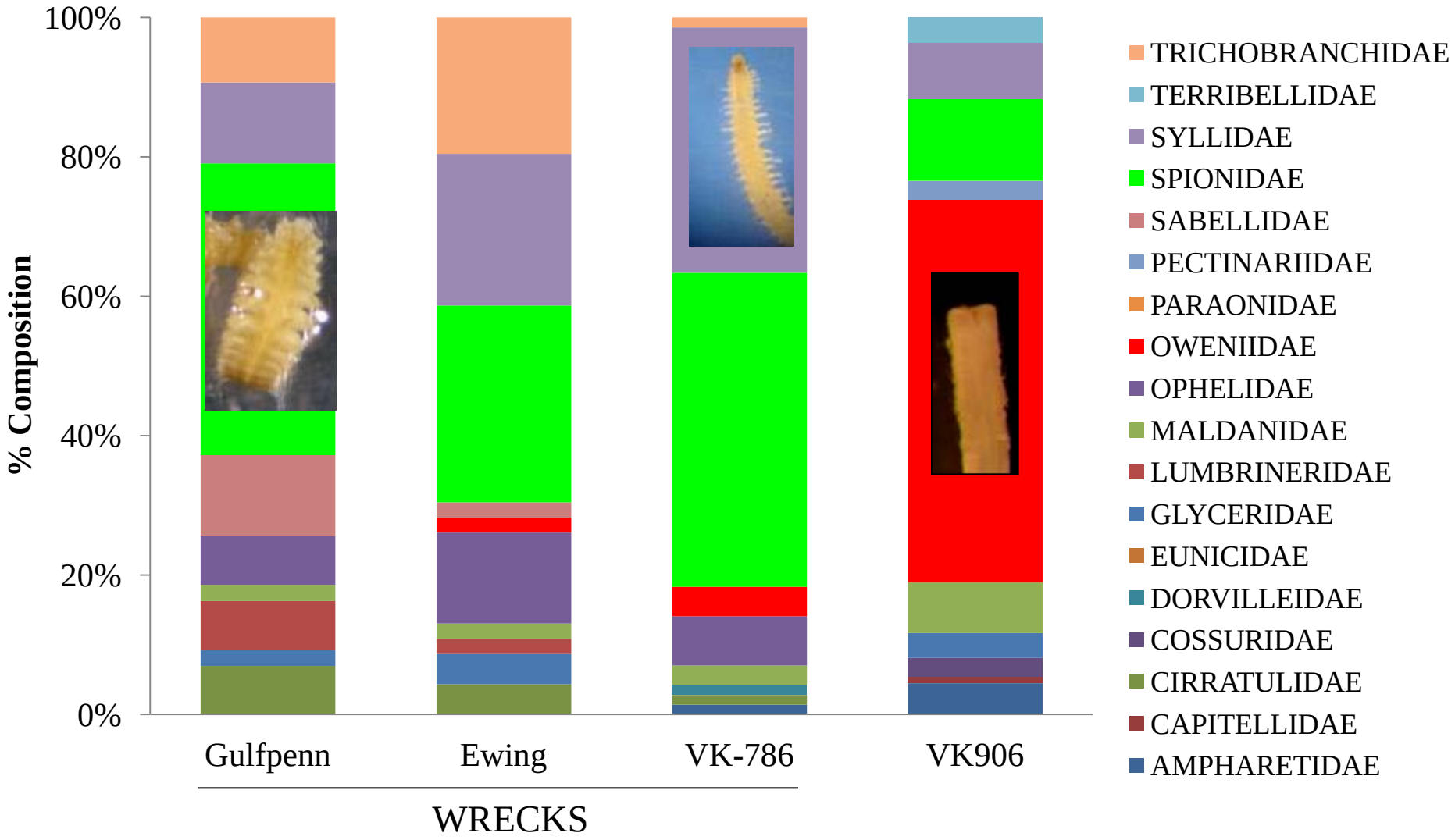
Polychaete Composition: Wrecks and Natural Sites



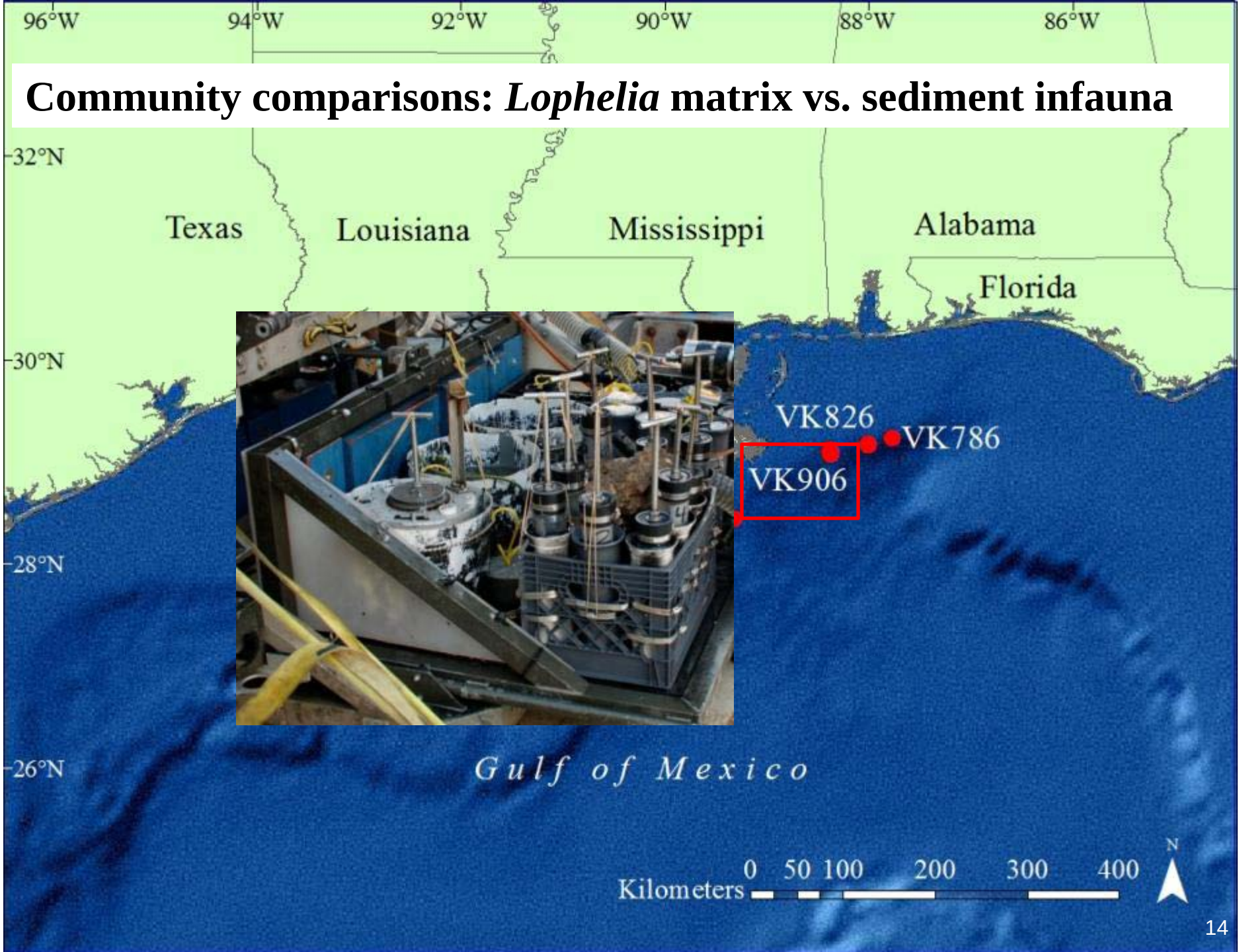
N-MDS-Polychaete Composition



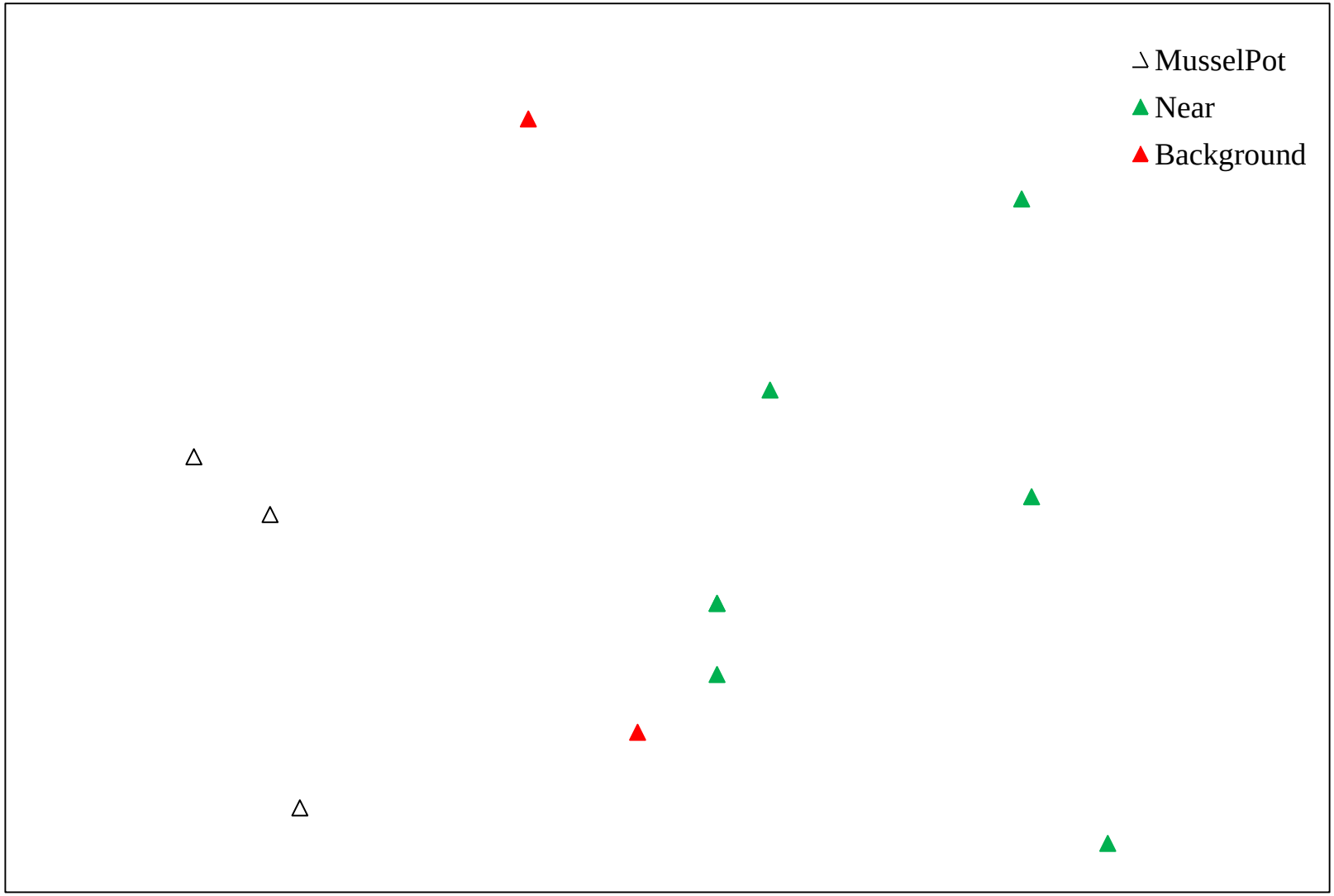
Polychaete Composition: Wrecks and Natural Sites



Community comparisons: *Lophelia* matrix vs. sediment infauna



N-MDS-Polychaete Composition-Presence/absence

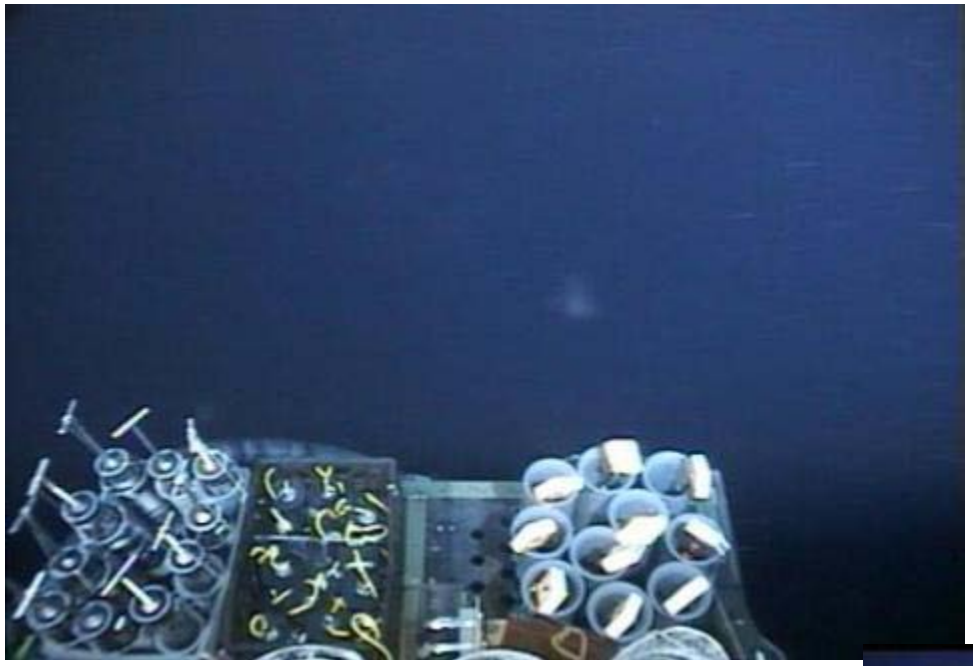


Conclusions and Future Directions

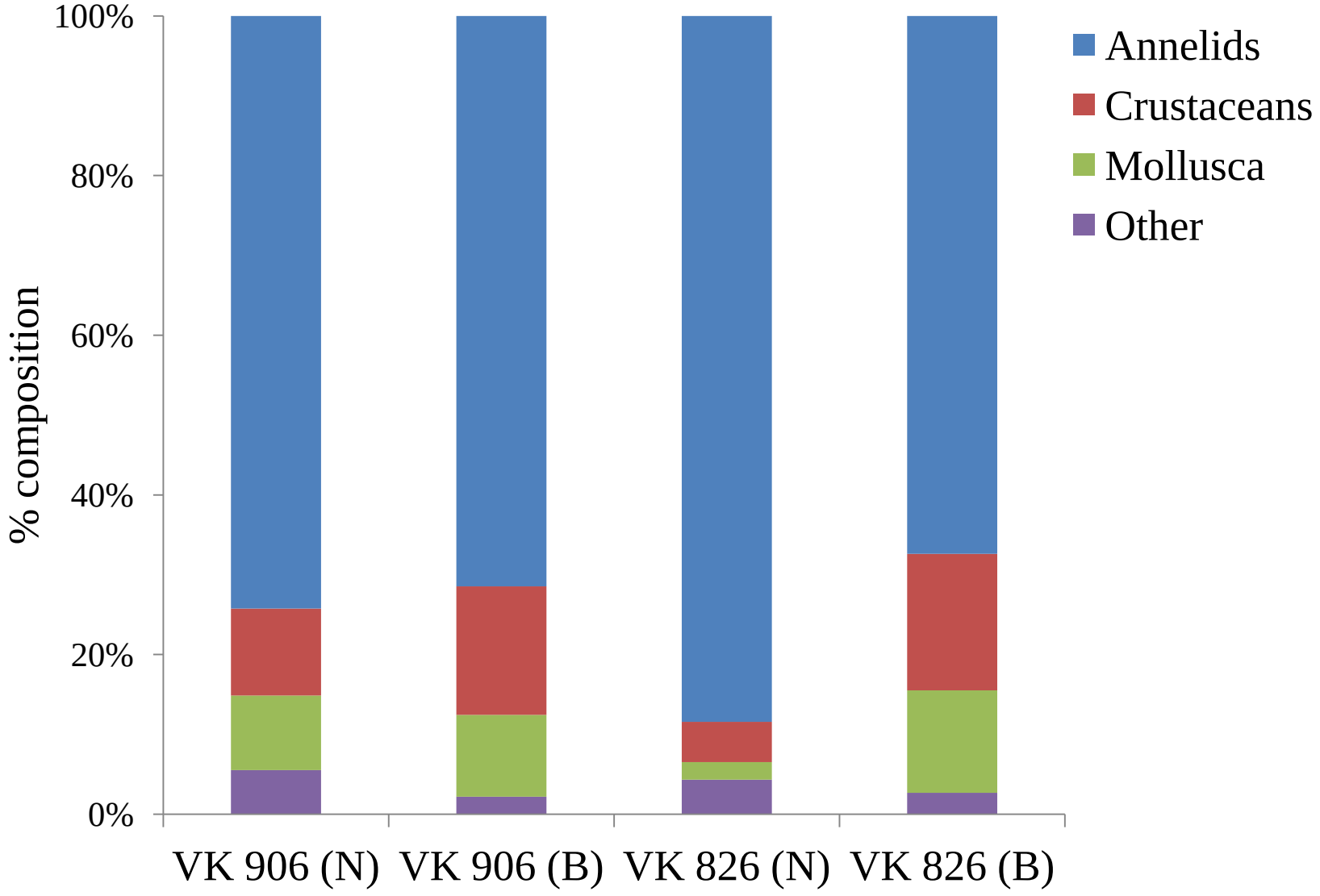
- Same major taxonomic groups present at all sites
- Polychaete soft-sediment assemblages near corals differ from wreck sites and *in situ* coral communities
  - Need to include natural sites VK 826, MC 751
- Biodiversity patterns yet to be resolved
  - Identification to at least family level required for many groups

Acknowledgments

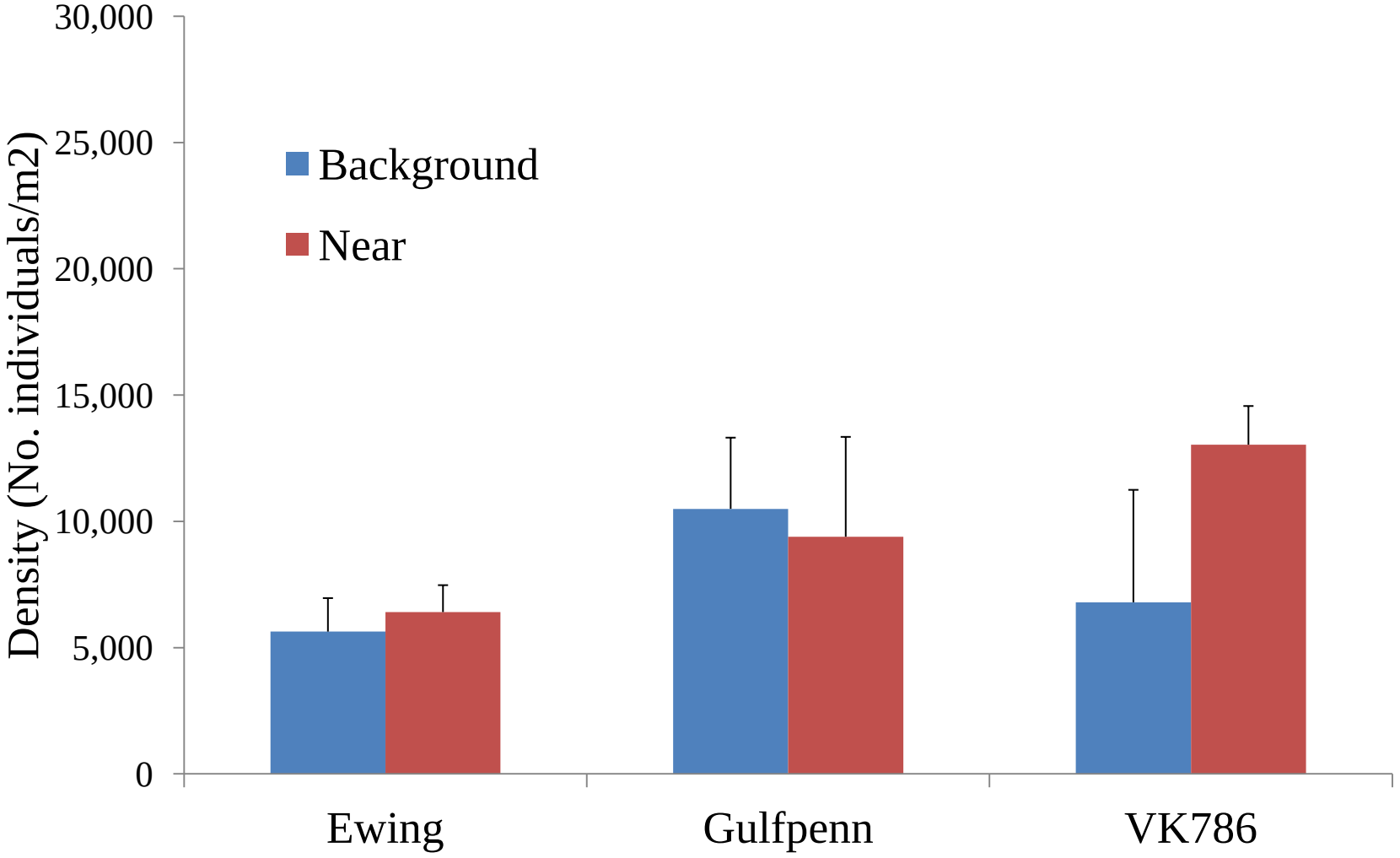
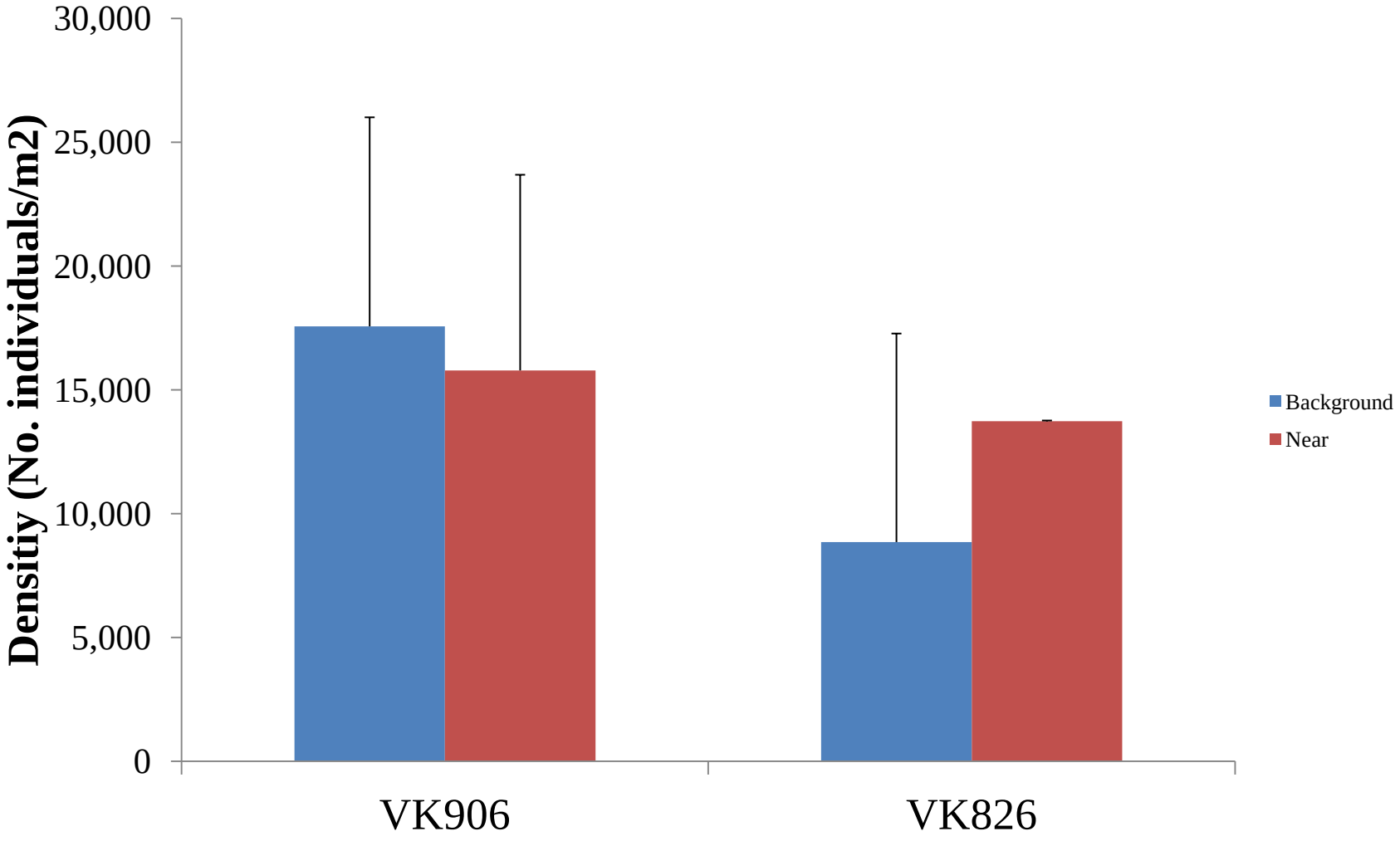
- USGS/DISCOVRE Team
- BOEMRE/NOAA/TDI Brooks, *Lophelia* II: Reefs, Rigs, and Wrecks
- Chuck Fisher, Erik Cordes
- Steve Ross and lab
- Demopoulos Lab: Kaitlin Kovacs, Allison Strong, Janessy Frometa, Elliot Hart
- Crews of RV *Seward Johnson*, *Ron Brown*, *Cape Hatteras*, *Jason* ROV



Macrofauna Composition: Natural Sites



Total Densities of Macrofauna at Wreck Sites



Total Densities of Macrofauna at Live Coral Sites