Survey of Invertebrate Species Abundance in Three West Hawaii Tidepool Areas

Presented by

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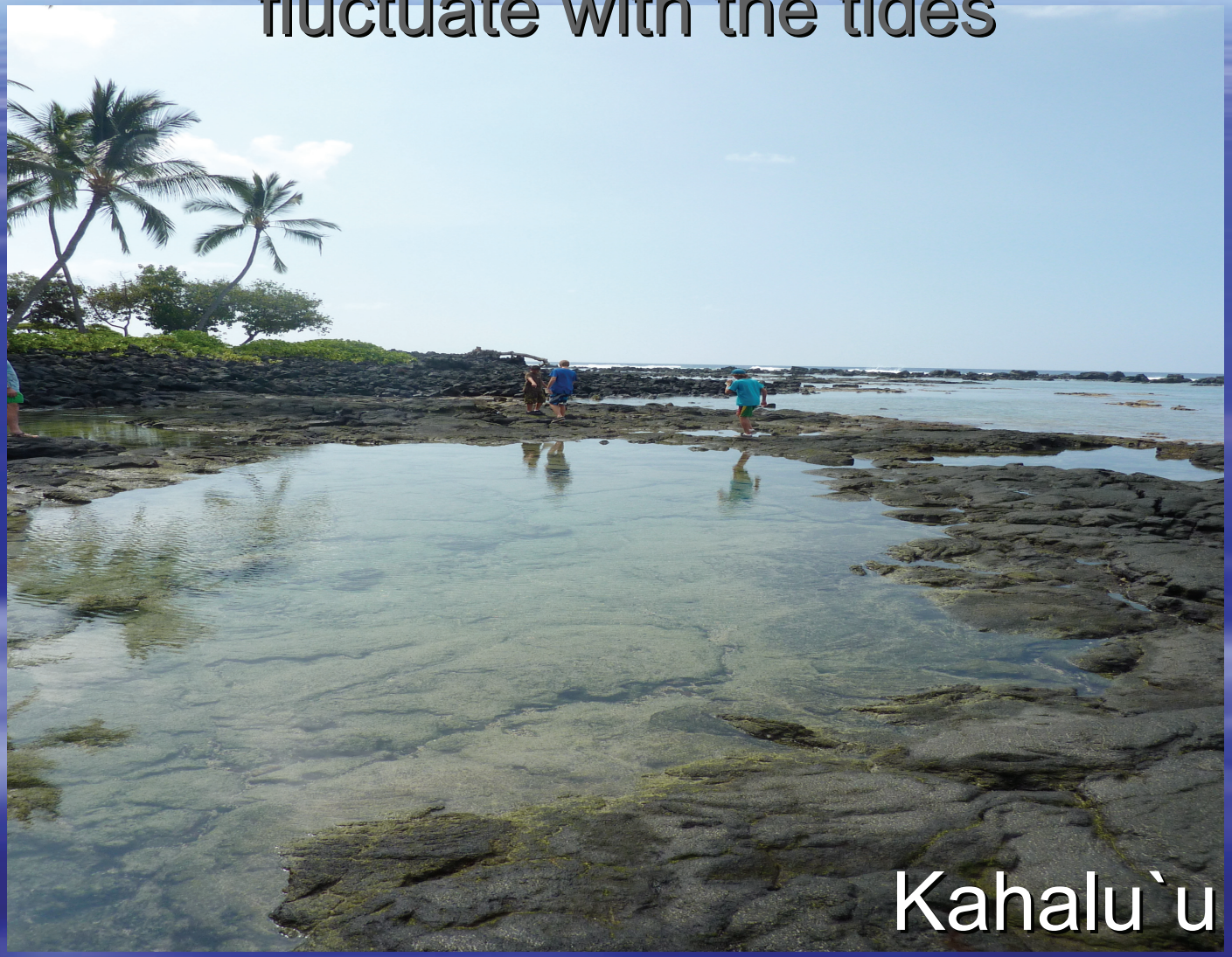
This is the tidepool project for West Hawaii Explorations Academy Middle School.

We surveyed the diversity of invertebrates at three different sites along the coast of West Hawaii. Those sites are:

Kahalu`u, Makalawena, and Keahole Point.

Tidepools are unique ecosystems that fluctuate with the tides



Tidepools provide a home for many marine invertebrates

Question

What is the difference in tide pool invertebrate abundance between Kahaluu, Makalawena, and Keahole Point?

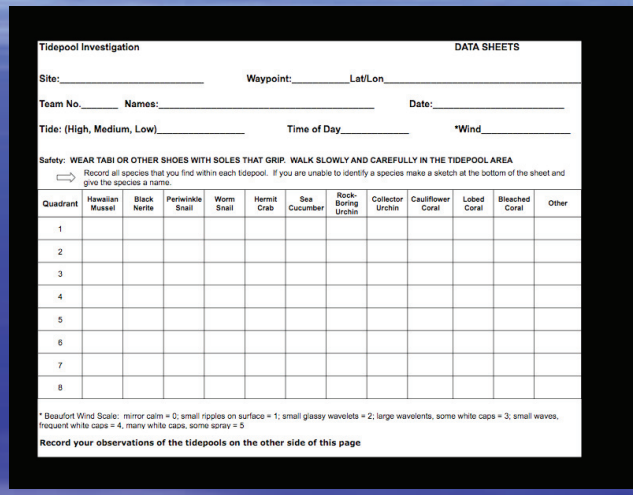
Hypothesis

If the three sites are compared for invertebrates abundance, then Kahalu`u is expected to have the higher species diversity because it is a well visited snorkeling spot for visitors

Materials

- 3 50-Meter Tape
- 3 Quarter Meter quadrants
- Identification Books
- Marine Invertebrates by John P. Hoover
- I.D. Cards
- Data Sheets
- Tabis

Methods



Tidepool Investigation DATA SHEETS

Site:_____ Waypoint:_____Lat/Lon_____

Team No._____ Names:_____ Date:_____

Tide: (High, Medium, Low)_____ Time of Day_____ *Wind_____

Safety: WEAR TABI OR OTHER SHOES WITH SOLES THAT GRIP. WALK SLOWLY AND CAREFULLY IN THE TIDEPOOL AREA

Record all species that you find within each tidepool. If you are unable to identify a species make a sketch at the bottom of the sheet and give the species a name.

Quadrant	Hawaiian Mussel	Black Nerite	Periwinkle Snail	Worm Snail	Hermit Crab	Sea Cucumber	Rock-Boring Urchin	Collector Urchin	Cauliflower Coral	Lobed Coral	Bleached Coral	Other
1												
2												
3												
4												
5												
6												
7												
8												

* Beaufort Wind Scale: mirror calm = 0; small ripples on surface = 1; small glassy wavelets = 2; large wavelents, some white caps = 3; small waves, frequent white caps = 4, many white caps, some spray = 5

Record your observations of the tidepools on the other side of this page

- A measuring tape was used as a transect line and stretched to 25 meters
- Invertebrates were identified and counted within a quarter meter quadrant every two meters
- The data was recorded using the data sheets

Results

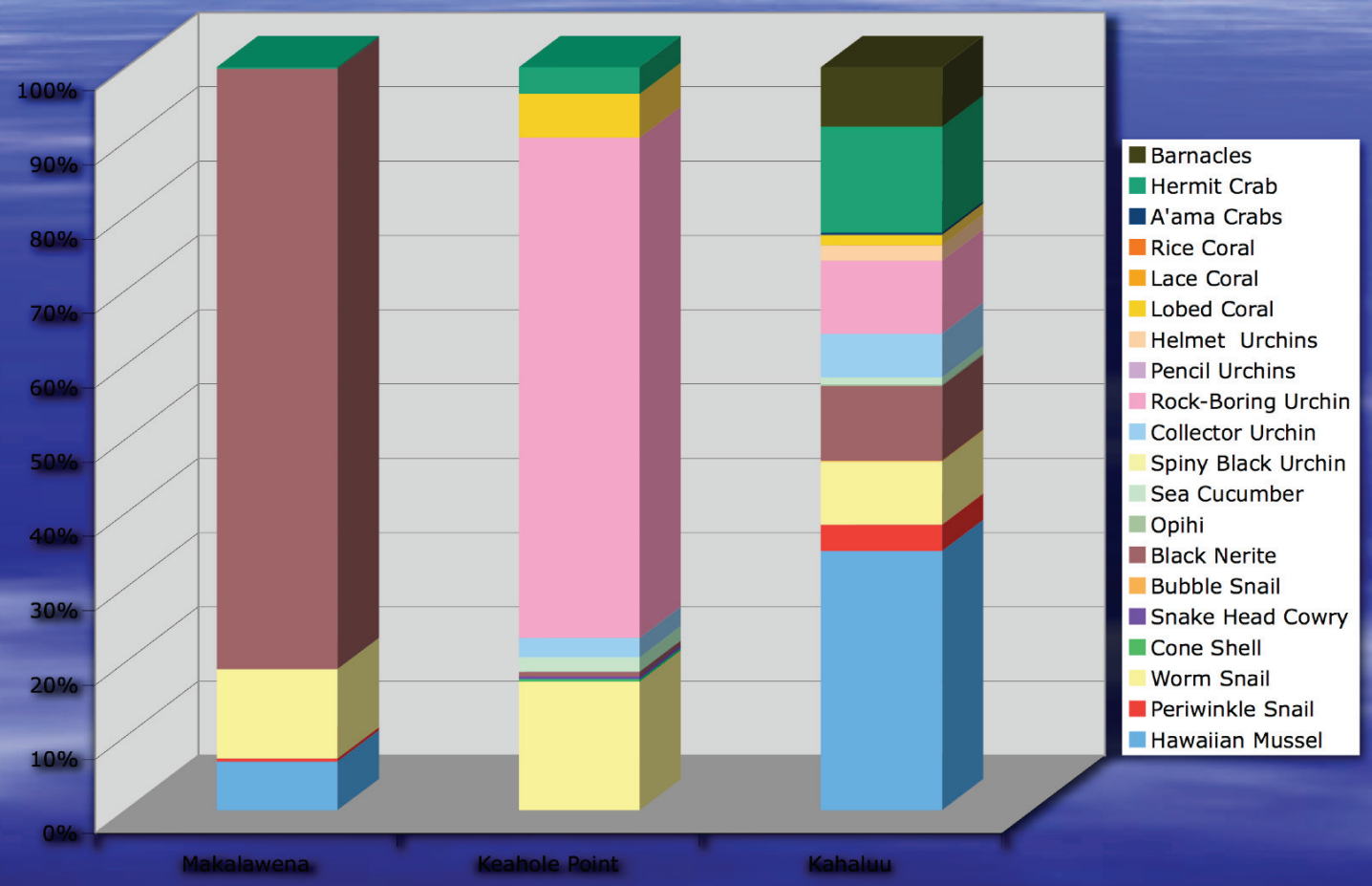
	Makalawena	Keahole Point	Kahaluu
MOLLUSKS			
Hawaiian Mussel	35		218
Periwinkle Snail	2		22
Worm Snail	64	53	53
Cone Shell		1	
Snake Head Cowry		1	
Bubble Snail			1
Black Nerite	431	2	63
Opihi			1
ECHINODERMS			
Sea Cucumber		6	6
Spiny Black Urchin			
Collector Urchin		8	37
Rock-Boring Urchin		206	61
Pencil Urchins			
Helmet Urchins			13
CNIDARIANS			
Lobed Coral		18	9
Lace Coral			
Rice Coral			
ARTHROPODS			
A'ama Crabs			2
Hermit Crab	1	11	89
Barnacles			50
TOTALS	533	306	625

Makalawena resulted in five species with a total of 533 invertebrate Individuals counted

Keahole tidepools resulted in 9 species found, totaling 306 individuals counted

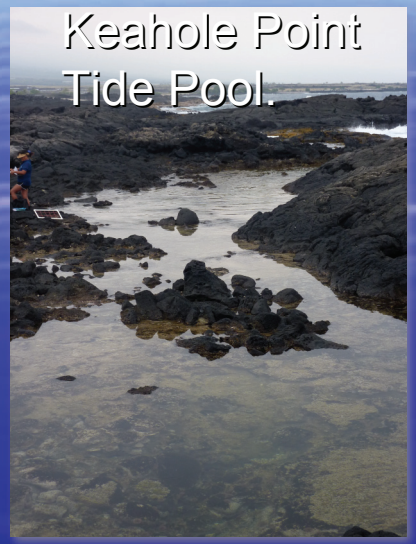
Kahalu`u resulted 14 species found with a total count of 625 Individuals

Comparing Specie Diversity



Kahalu`u shows more diversity of species in this graph

Tide Pool Differences



Keahole Point does not
Have much of a reef

Makalawena and Kahalu`u
Have young reefs nearby

Conclusion

In studying the tide pool invertebrates of three sites, it was found that Kahalu`u had the highest specie diversity, and relative abundance.

The hypothesis that Kahalu`u was expected to have the higher diversity was supported by the data of 17 species identified and 625 individuals counted

For further research

Water quality and algae studies would be good to compare similarities and differences.

Gather more data from more transects at each site.

Pictures

References

Hawaii's Sea Creatures. John P. Hoover, 1999.

Kona Community Cultural and educational Foundation Inc. Patrick M. Cunningham Pres.

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THANK YOU

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