

**Kealakehe Intermediate School
Ms. Diaz's 7th grade Biology Class
(Amy Lowe, Tristan Ross, Philip Moffat, James Fisher)**

Comparing Kahalu'u Beach Park & Kukio Beach Park:

- Marine H₂O Quality (10 tests)**
- Human Activity / Impact**
- 3 Snorkel Transect Surveys:
"Reef Watchers" Fish Count
Urchin Quadrant Count (3 species)
Coral Cover Quadrant Survey**



TRISTAN

Our class accomplished 10 Marine Water Quality Tests @ both Sites

CONCLUSION: NO SIGNIFICANT DIFFERENCE IN OVERALL H₂O QUALITY BETWEEN 2 SITES

2010

H₂O Quality HI MOES study

Test Type	Kahalu'u 4/23/10	Kahalu'u 4/23/10	Kukio 4/24/10	Spencer 4/2/10
Time	10:00 AM	12:30 PM	12:45 PM	12:45 PM
PH	8.4	8.5	8.4	8.2
Temperature C	25.9	28.2	27	26.7
EC	20 mS	20 mS	20 mS	20
TDS	10 ppt	10 ppt	10 ppt	10 ppt
Temperature C	26.7	28.6	26.7	27.7
Temperature C	27	30	26.7	27
PPM Salinity	1.02-1.03	1.023	1.025	1.02
Phosphate	< 1	0	< 1	< 1
Nitrite	< 2	< 0.1	< 0.2	0
Nitrate	0 mg	0 mg	0 mg	10 mg
Amonia	< 0.5	0.5	< 0.5	< 0.5

TRISTAN

CONCLUSION: SIGNIFICANTLY HIGHER HUMAN ACTIVITY @ KAHALU'U

Kahalu'u Beach Park

Friday, April 23, 2010

9:00 am – 1:00 pm

Number of People on the Beach:

10:00 am	12:00 pm	1:00 pm
139	173	153

Number of People... Fishing...

Time	Snorkel	Swim	Surf	Spear	Line	Net	Vessels	Turtles
10:00 am	35	5	20	0	0	0	1	1
12:00 pm	24	16	13	0	0	0	1	2
1:00 pm	21	11	30	0	0	0	0	2

Kukio Bay

Saturday, April, 24, 2010

9:00 am – 1:00 pm

Number of People on the Beach:

10:00 am	12:00 pm	1:00 pm
10	27	20

Number of People...

Fishing...

Time	Snorkel	Swim	Surf	Spear.	Line	Net	Vessels	Turtles
10:30 am	0	0	2	0	0	0	1	20
12:00 pm	1	3	0	0	0	0	1	10
1:00 pm	3	5	2	0	0	0	0	6

Kukio Tidepool
 Saturday, April, 24, 2010
 9:00 am – 1:00 pm

Number of People on the Beach:

10:00 am	12:00 pm	1:00 pm
46	41	22

Number of People... Fishing...

Time	Snorkel	Swim	Surf	Spear	Line	Net	Vessels	Turtles
10:30 am	0	3	0	0	0	0	1	0
12:00 pm	0	7	0	0	0	1	1	0
1:00 pm	5	3	4	0	0	0	0	0

Kealakehe Inter. School
Reef Watcher's Fish Transect Survey

	Kahalu'u 4/23/10	Kukio 4/24/10
Convict Surgeon/ Manini	23	
Gold ring Surgeon/ Kole	2	
Lavender Tang		5
Orange Spine Naso		3
Yellow Tang	27	10
Achilles Tang	1	1
Moorish Idol		4
Hawaiian Sergeant		
Indo- Pacific Sergeant		3
Pacific Gregory		
Multiband Butterfly		
Four Spot Butterfly	2	2
Saddle Wrasse	3	
Bird Wrasse		
Cleaner Wrasse	2	
Yellowtail Wrasse		
Pale Nose Parrotfish	9	1
Bullet Head Parrot	5	
Red Lip Parrot		
Black Durgon	8	7
Yellow Fin Goatfish	1	
Manybar Goatfish		
Roi	1	
Ta'ape		
Forceps Butterfly		
Reef Triggerfish	3	
Total Fish	87	36

Kukio



Kahalu'u



Water Quality Tests



Kukio



Kealakehe Intermediate School:
Kahalu'u & Kukio Urchin Count Summary

Philip & James

Kahalu'u April 23, 2010:

1. One collector urchin (all though many were seen outside quadrant)
2. No long spine urchins
3. Two pencil urchins (all though many were seen outside quadrant)

Kukio April 24, 2010:

1. No collector urchins
2. One long spine urchin
3. One pencil urchin

Comments/Differences:

Kahalu'u is an open access public beach, therefore more people go there and could collect urchins or cause pollution.

Kukio is a limited public access beach which means less people, less pollution, & more urchins.

Kukio is a lot larger area than Kahalu'u which could mean that urchins could be spread out and that's why we didn't find as many as we expected in the quadrants at Kukio.

Kahalu'u has a break wall that stops the waves and Kukio didn't so there could've been more circulation in the water.

OVERALL CONCLUSIONS

- Kahalu'u is an open access county public beach park established more than 30 years ago.
- Kahalu'u Beach Park is the most popular snorkeling beach park in West Hawaii.
- Hundreds of people enjoy Kahalu'u Beach Park daily.
- Ceptic tank sewage system may be old and need to be upgraded-
we could smell a little sewage on 4/23/10
- Kukio (Kikaua Point Park) is a limited public access beach w/ much less human activity
- **Entry is controlled** by security guards at a gate. Only 30 cars are allowed to enter with a pass
- Passes are controlled at the gate- when a car goes out, another can come in with a pass.
- **Kukio is a NEW private resort** of exclusive homes.
- Public Beach Restrooms built in 2004.
- **Sewage at Kukio is treated** through a central plant, mauka of the highway far from ocean.
- "Gray water" is used on plants, golf course, landscaping.
- Kukio is a larger area than Kahalu'u –
We conducted the marine life transect/quadrant surveys in the bay, north of tide pools
We counted human activities at both the bay, and at the tide pool area
- Kukio Bay has many immature green sea turtles- 6 were seen hauled out & basking on beach
- **Fish & urchin diversity lower @ Kukio**—maybe because larger area & species spread out. High surf warning day before.
- Coral Cover significantly more @ Kukio—possibly due to less people using snorkel area

FUTURE PLANS:

- **We plan to return to both sites at least 2 times each next school year**
- **New 7th graders in Ms. Diaz's class will join us**
- **We will improve our data collection techniques**
- **We will research the cultural history of each beach sites**

ACKNOWLEDGEMENTS:

We wish to especially thank Samantha Birch of Kohala Center for her hard work in helping us obtain resources & conduct our project study.

Big Mahalos to Caroline (Kohala Center), Courtney Couch (Cornell University), Ms. Lillian Murphy, Ku'ulei Rogers (HIMB) and our Science teacher, Ms. Lisa Diaz for helping us.

We also wish to especially thank NOAA for providing the BWET grant and for allowing us to participate.