

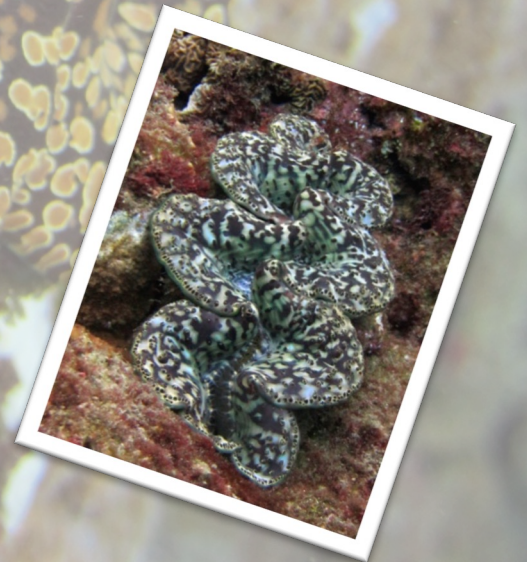
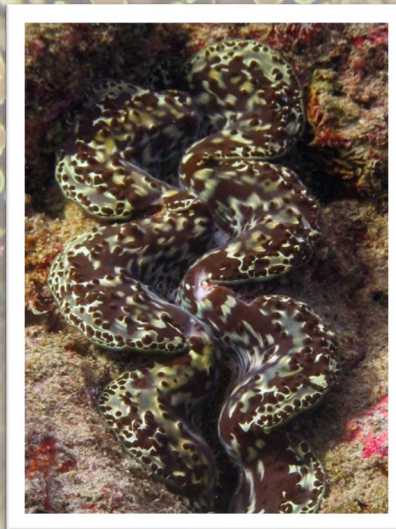


Faisua Size and Density Correlations with Depth in the National Park of American Samoa

Presentation By: Olyvia Ta'ase
Mentored By: Ian Moffitt

Giant Clams(Faisua)

- ◆ Giant Clams(Faisua), part of the Tridacnidae family are bivalve mollusks that live among tropical waters in the coral reef ecosystem
- ◆ Adapt to low nutrient levels in seawater of coral reefs



Giant Clams(Faisua)

- ◆ Typically found in shallow waters
- ◆ As a source of energy, Faisua harbor photosynthetic zooxanthellae, much like coral.



PROBLEM

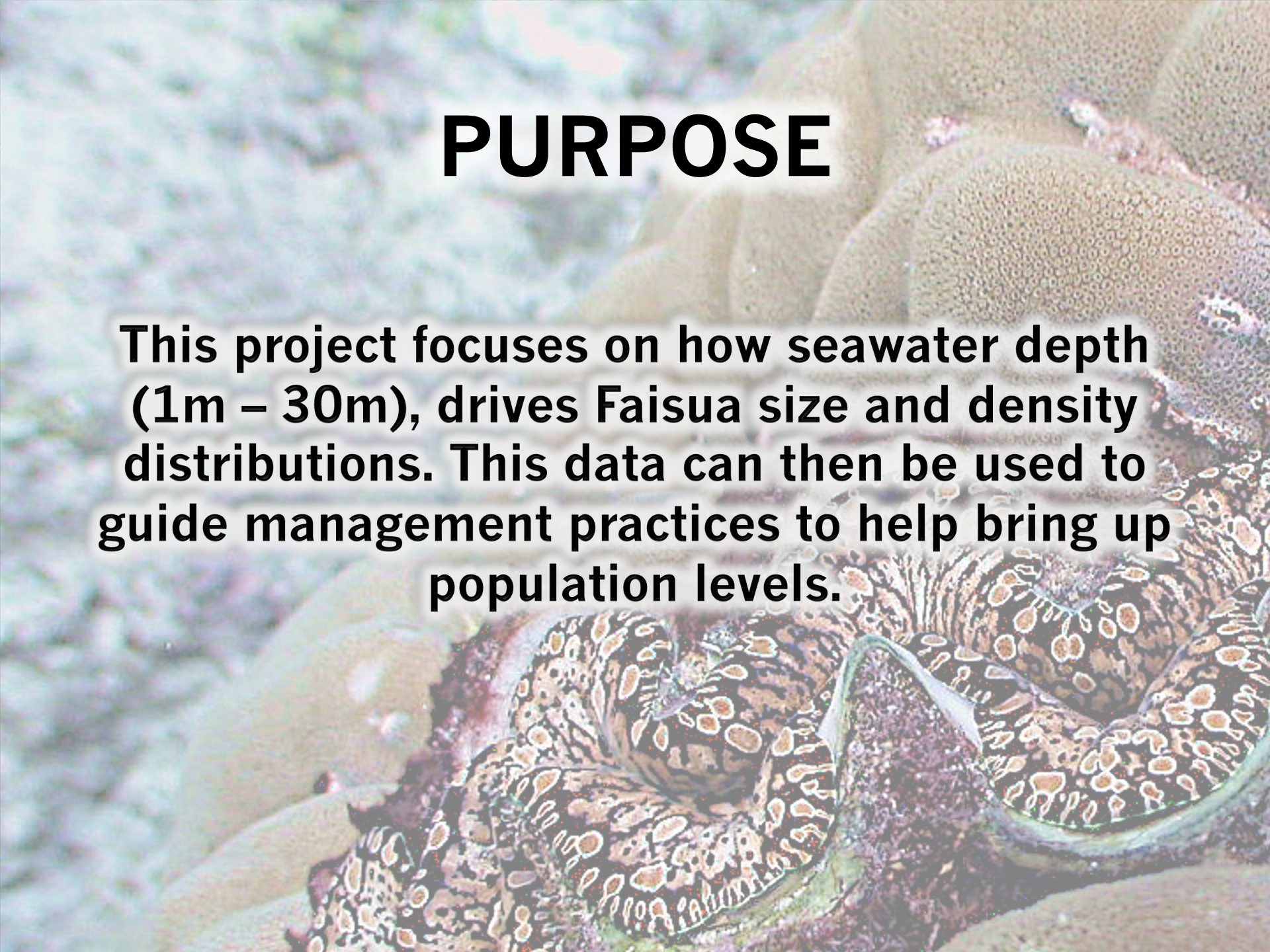
(Threats to Faisua population)

Throughout the years, Tutuila has been experiencing a decline of Faisua population within its Bays

The diminishing population is mainly caused by overfishing (Lucas, 1994) (Green & Craig, 1999).

PURPOSE

This project focuses on how seawater depth (1m – 30m), drives Faisua size and density distributions. This data can then be used to guide management practices to help bring up population levels.



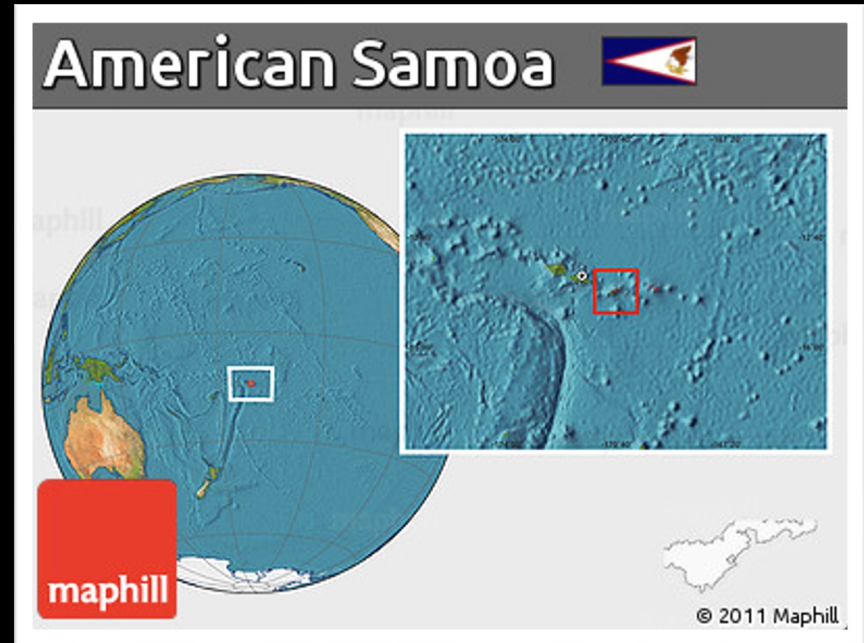
HYPOTHESIS

In comparing seawater depth with Faisua size and density, we hypothesize that there would be higher density and larger clam size in shallower depths because there would be better light availability for photosynthetic processes.

STUDY SITE

American Samoa is situated in the South Pacific Ocean, and is made up of 5 islands and 2 atolls.

- Observations made in Fagasa Bay, Tutuila



FAGASA BAY



METHODS

1. Lay out 50m (length) x 2m (width) transect
2. Take starting and ending GPS point & time
3. Go along transect using 1m stick perpendicular to transect tape



METHODS

- **Faisua identification**
 - Size
 - Color
 - Valve Margins
 - Photo-Intake siphon tentacles
 - Time/GPS

METHODS

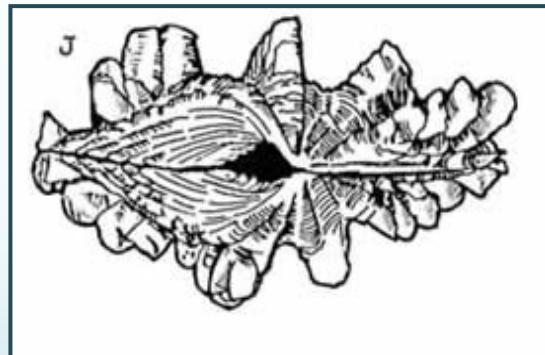
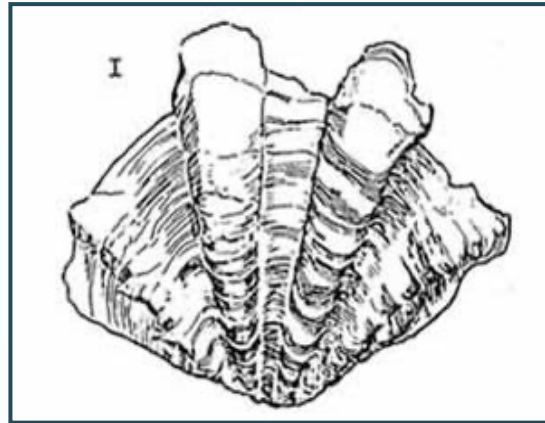
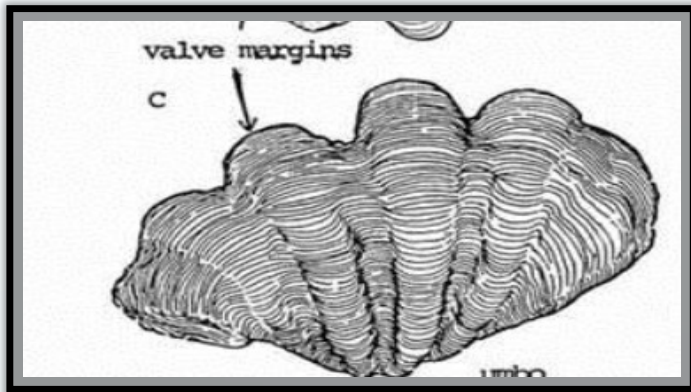
- When finding Faisua on transect
 1. Take GPS point
 2. Take photo(Surroundings, closer detail, intake siphon tentacle, shell)
 3. Approach and sizing
 - Use calipers to measure length



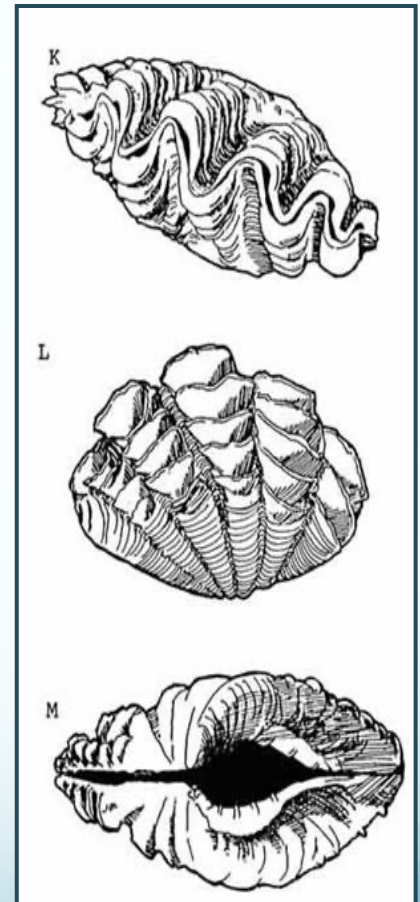
METHODS

- **When finding Faisua on transect**
 - 1. Take GPS point**
 - 2. Take photo(Surroundings, closer detail, intake siphon tentacle, shell)**
 - 3. Approach and sizing(Use calipers to measure length)**
 - 4. Count valve margins**

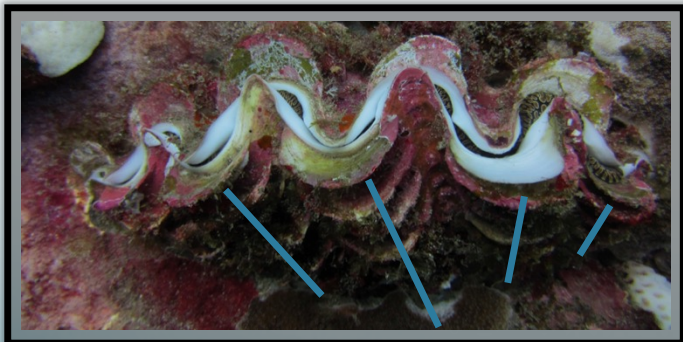
Valve Margins



Australian National Parks and Wildlife Service



Australian National Parks and Wildlife Service



DATASHEET

Faisua Survey Datasheet

Observer: _____ GPS _____ Date: _____ I&M Site: _____ Lat/Long: _____

Each I&M site: 3 transects, each 50 X 2m at three different depths (10m, 20m, 30m). Stake pins, pull float tight, record time, Take heading once stakes are in place. For each faisua found: record size, time, distance along transect, distance perpendicular to transect, color, # valve margins. Zip tie cattle tag near clam, record number. Take photo (Record photo #) If larger than 10cm, take tissue sample and record tissue sample #

Estimate % hard substrate on transect (50m long, so 1m of sand is 1%). Survey # is in DDMMYY1530 (Day,Month,Year,Fix Site,Depth)

Transect # 1 Depth(m) _____ Heading _____ Start Time _____ Mid Time _____ Survey # _____

Start Lat/Long: _____ End Lat/Long: _____ % Hard Sub _____

[illegible]

DATA

- Conducted five 50m transects on Fagasa reef flat & slope

Transect 1&2

Faisua(s) on

Transect: 5

Faisua(s) off

Transect: 6

Total Count: 11

Faisua Survey Logsheet

Observer: JAN ROBERT GPS: 78 Date: 13/06/12 Site: Fagasa

Stake pins, pull float tight, record time. Take heading once stakes are in place. For each Faisua found: record size, time, distance along transect, distance perpendicular to transect, color, # valve margins. Take photo (Record photo #) if larger than 10cm, take tissue sample and record tissue sample #

Estimate % hard substrate on transect (50m long, so 1m of sand is 2%). Survey # is in DDDMMYYSSS (Day, Month, Year, Fix Site, Depth)

Transect # 1 Depth(m) 5 Heading 50 Start Time 10:42 End Time 11:28 COTS Y/N N

Start Lat/Long: -14.28610 -170.72125 End Lat/Long: -14.28610 -170.72125 % Hard Sub 100

Faisua #	Distance along Transect	Distance perpendicular Transect	GPS point	Size cm	Color	# Valve Margins	Photo #	Tissue Sample #	RNA valves #
1	91	25.15	14.28608 -170.72128	5.3	Green w/ purple	5	1606		
2	97	21.65	14.28608 -170.72128	4.8	Green w/ blue	4	1607		
3	93	8.80	14.28608 -170.72128	11.7	Green	5	1610		
4									
5									
6									

Notes

Off Transect: +14.28610 -170.72128 / 9.4cm / photo # 1608-1609
+14.28610 -170.72128 / 6.3cm / 1609
+14.28608 -170.72128 / 4.6cm / 1611
+14.28608 -170.72128 / 7.5cm / 1612

Transect # 2 Depth(m) 5 Heading 50 Start Time 11:49 End Time 12:23 COTS Y/N N

Start Lat/Long: -14.28605 -170.72125 End Lat/Long: -14.28605 -170.72125 % Hard Sub 90

Faisua #	Distance along Transect	Distance perpendicular Transect	GPS point	Size cm	Color	# Valve Margins	Photo #	Tissue Sample #	RNA valves #
1	94	22.35	14.28605 -170.72125	3.3	Purple	3	1613		
2	95	19.61	14.28605 -170.72125	5.6	purple w/ blue	4	1615		
3									
4									
5									
6									

Note

Off Transect: +14.28605 -170.72126 / 7cm / photo # 1612
+14.28603 -170.72126 / 6.9cm / photo # 1616

Data Entry

- Data Input into Database

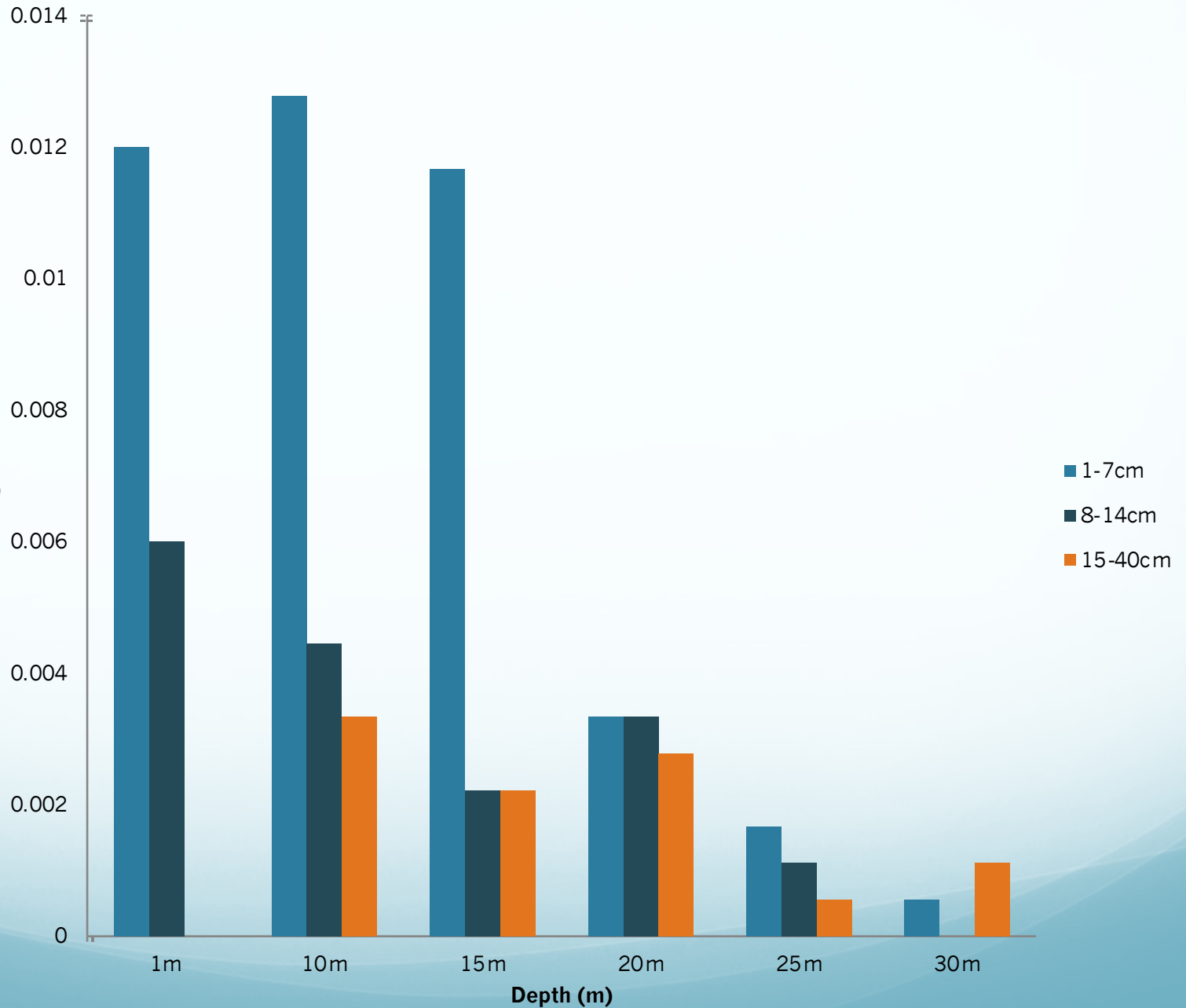
S:\Marine\MarineResources\ResearchProjects\Giantclams\Data

	GPS Tracks
	New Location Table
	NEW_Faisua Table
	NEW_Transect Table
	Observer
	OLD_Faisua_Table
	OLD_Location Table
	OLD_Transect Table
Queries	
	OLD_Clams at depth
	OLD_Depth Bins
	OLD_Size Depth Location
Forms	
	NEW_Faisua Table subform
	NEW_Transect Form
	OLD_Alt Transect Form
	OLD_Faisua_Table subform
	OLD_Transect Form

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RESULTS

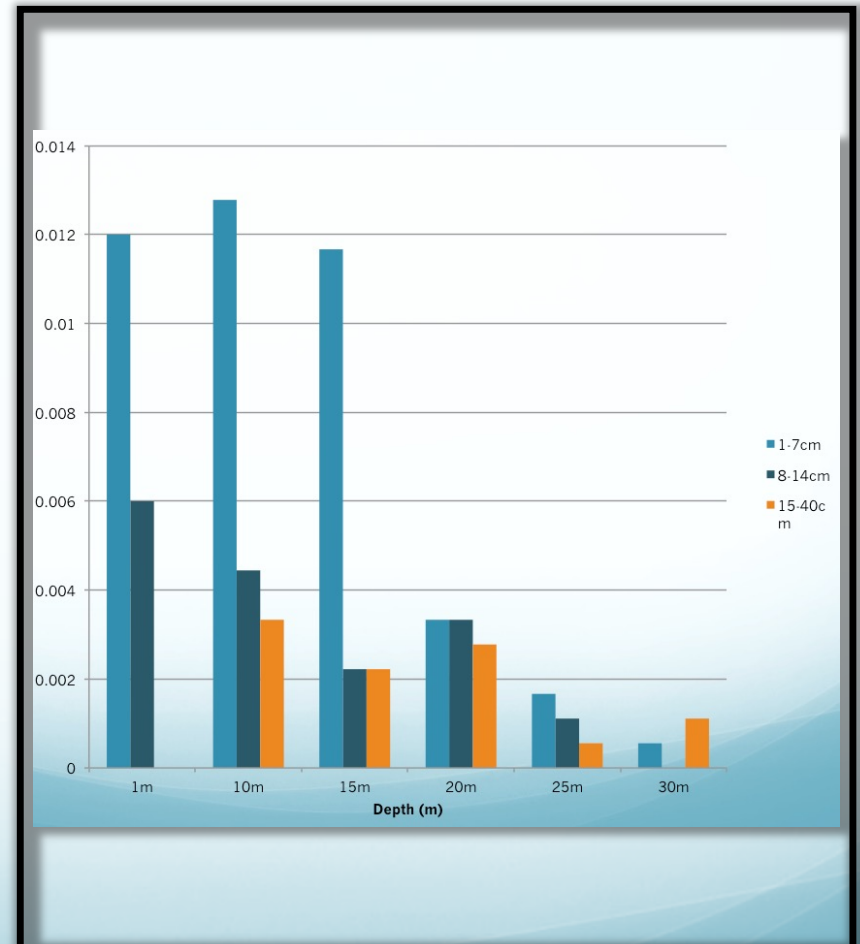
Faisua density and size correlations with depth



DISCUSSION

The reef-flat data and previous NPSA surveys at depths of 10m-30m suggest the shallower depths (1m-15m) had a higher density of Faisua. (Supports Hypothesis)

However, the majority of the Faisua density in shallow depths were of 1-7cm clams, and contained only a few number of larger clams(8-14cm, 15-40cm). (Faisuas may be poached)



MANAGEMENT IMPLICATIONS

- Faisuas are most abundant in shallow depths, but mostly of sizes that are $<12\text{cm}$. An explanation for this, is that shallow depths can become easily accessible for fishermen
- **Solution**
 - Start a Faisua hatchery to restock populations. Outplant at depths that are out of reach of typical poachers, but shallow enough for growth.
 - Enforce regulations on illegal poaching.

REFERENCES

- National Park of American Samoa
- Lucas, John S. “The Biology, Exploitation, and Mariculture of Giant Clams(Tridacnidae).”Reviews in Fisheries Science 2.3(1994): 181-223
- Green, A., & Craig, P. (1999). Population size and structure of giant clams at Rose Atoll, an important refuge in the Samoan Archipelago. Coral Reefs, 18(3), 205-211

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