



# NCRMP Socio-economic Monitoring



Presented By: The NCRMP Social Science Team

**NOAA Coral Reef Conservation Program  
& National Centers for Coastal Ocean Science**

for more information on visit the web-portal at:

[http://www.coris.noaa.gov/activities/projects/ncrmp\\_socio/](http://www.coris.noaa.gov/activities/projects/ncrmp_socio/)



April 9, 2015

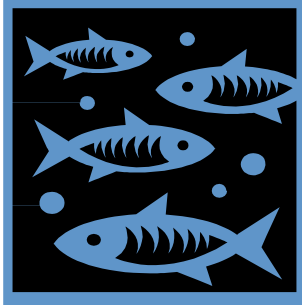




NOAA  
**CORAL REEF**  
CONSERVATION PROGRAM

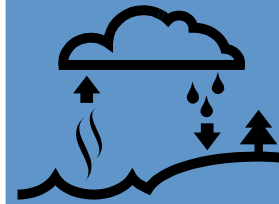


# National Coral Reef Monitoring Plan



Biological  
Indicators

Climate  
Indicators



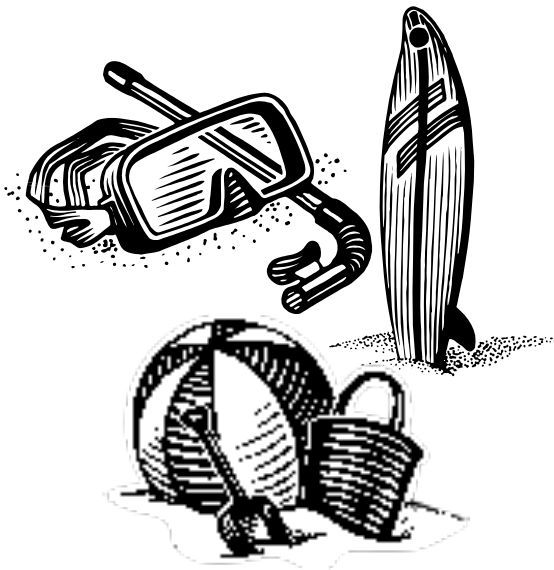
Socioeconomic  
Indicators

## Socioeconomic Component

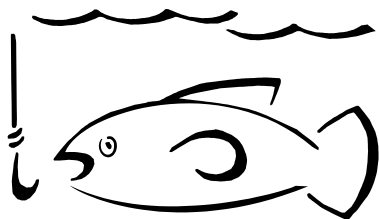
- ❖ Scientific information is needed to track the health of both coral reefs and their dependent communities in order to develop effective management plans and actions for coral reef conservation



## Examples of the types of data we collect



Use of coral reef resources



Population change



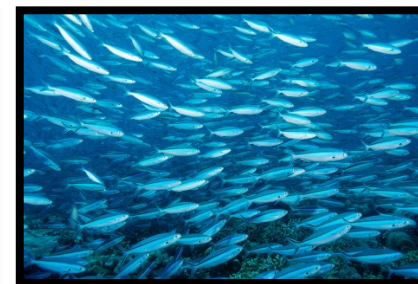
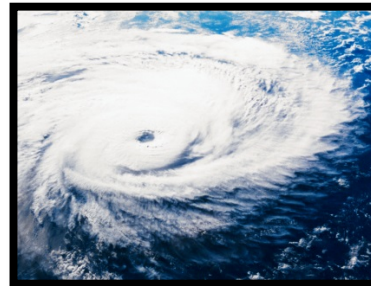
Knowledge, attitudes, & perceptions of coral reefs and coral reef management

## Why do we need social monitoring?



Coral reefs are highly valuable ecosystems

We need to track management success and public support



Coral reefs offer many benefits to society



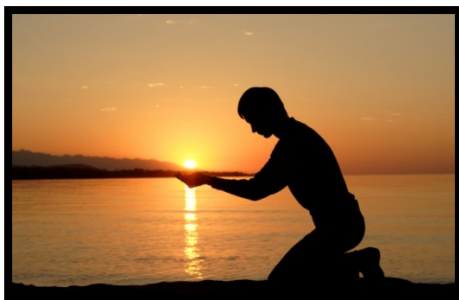
## Project Team

- ❖ Peter Edwards
- ❖ Arielle Levine
- ❖ Maria Dillard
- ❖ Jarrod Loerzel
- ❖ HML social science team
- ❖ Jurisdictional management agencies
- ❖ Key jurisdictional stakeholders
- ❖ CRCP and NMFS management liaisons





# MONITORING METHODS



# Indicators for NCRMP Social Monitoring

Participation in reef activities

Perceived resource condition

Attitudes towards coral reef management strategies and enforcement

Awareness and knowledge of coral reefs

Human population changes near coral reefs

Economic impact of coral reef fishing to jurisdiction

Economic impact of dive/snorkel tourism to jurisdiction

Community well-being

Cultural importance of reefs

Participation in behaviors that may improve coral reef health

Physical infrastructure

Awareness of coral reef rules and regulations

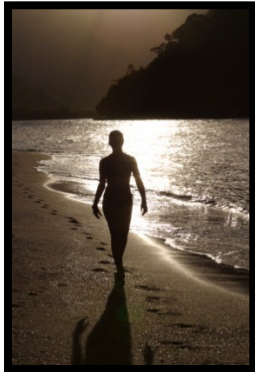
Governance





# Survey Methodology

- ❖ Core module vs. jurisdiction specific module:
  - ❖ Asking some of the same questions in all areas allows comparisons across jurisdictions
  - ❖ Asking some specific questions for each area allows jurisdictional management and resource issues to be addressed
- ❖ Survey sample:
  - ❖ Random sample of adult residents in the jurisdiction
  - ❖ Representative of population demographics (age, race, sex, income)
- ❖ Survey implementation:
  - ❖ By a contracted entity with experience conducting surveys in the jurisdiction
  - ❖ Survey mode (phone, face to face, internet) and language(s) are jurisdiction specific



## Secondary Data Methodology

- ❖ Existing socio-economic data will be compiled from sources like US Census Bureau, jurisdictional government agencies in a central database
- ❖ Data will be analyzed using social science methods to create indicators, such as:
  - ❖ Population density
  - ❖ Community well-being
  - ❖ Physical infrastructure



The socioeconomic monitoring data are stored in a database that allows the project team to select and export data.

The database allows for selection by geography (FIPS codes) and category (aligned to the indicators).

Future plans include a publicly accessible version of this database.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	fips_code	geo_name	asian_00	asian_10	black_00	black_10	charterco_13	femage_00	femage_10	female_00	fishcom_13	fishcom13_13	fishlic_13	fishlicost_13	fishlicor_13	fishlicres_13
2	12011	Broward, Florida	2.3	3.2	20.5	26.7	9	38.9	40.7	0	-999999999	890	-999999999	-999999999	-999999999	-999999999
3	12085	Martin, Florida	0.6	1.1	5.3	5.4	2	49.4	51.3	0	-999999999	583	-999999999	-999999999	-999999999	-999999999
4	12086	Miami-Dade, Florida	1.4	1.5	20.3	18.9	6	36.9	39.4	0	-999999999	2353	-999999999	-999999999	-999999999	-999999999
5	12087	Monroe, Florida	0.8	1.1	4.8	5.7	20	42.6	46.4	0	-999999999	4500	-999999999	-999999999	-999999999	-999999999
6	12099	Palm Beach, Florida	1.5	2.4	13.8	17.3	5	43.4	45.2	0	-999999999	1258	-999999999	-999999999	-999999999	-999999999

**NCCOS Coral Social Monitoring**

Welcome to the Social and Economic Conditions of Coral Reef Jurisdictions Monitoring Database. This database incorporates a variety of publicly available social, economic, and environmental secondary quantitative data collected by federal, state, and local agencies, as well as primary data collected through social science methodologies. Data is available for the US coral reef jurisdictions of Florida, Hawaii, US Virgin Islands, Puerto Rico, American Samoa, Guam, and CNMI.

To access the data, please make selections from left to right, starting with geography, then category. Use CTRL to select multiple items from each box. After making the selections, export data to a desired file format. Metadata files are also available for download upon selection of data. For more information about this database, please contact [maria.dillard@noaa.gov](mailto:maria.dillard@noaa.gov) or [jarrold.loerzel@noaa.gov](mailto:jarrold.loerzel@noaa.gov).

**Add Geography(s)**

- Florida
- Hawaii
- Guam
- Northern Mariana Islands
- Puerto Rico
- Virgin Islands of the United States
- Broward, Florida
- Martin, Florida
- Miami-Dade, Florida
- Monroe, Florida
- Palm Beach, Florida

Buttons: Add, Add All, Delete, Delete All

**Add Category(s)**

- Economic impact of dive/snorkel
- Economic impact of fishing
- Management
- Reef activities
- Resource condition
- Population trends
- Well-being

Buttons: Add, Add All, Delete, Delete All

Export to Excel | Export to .csv | Downloads: Parameter Table | Geo Table

**Data Preview**

fips_code	geo_name	asian_00	asian_10	black_00	black_10	cadkathd_10	cadkathd_10	cancer_10	cod_00	d001_00	d002_00	d003_00	d004_00	d005_00
0000000080	American Samoa	0.0000	3.6000	0.0000	0.0000	52.9000	152.6000	152.5000	2.0000	57201.0000	9349.0000	7216.0000	5035.0000	2184.00

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# WHEN AND WHERE

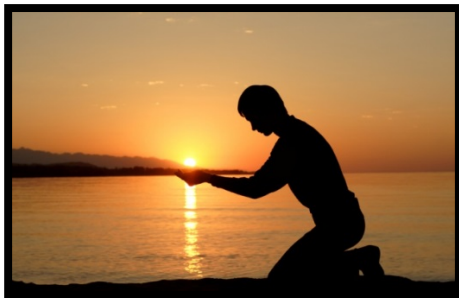




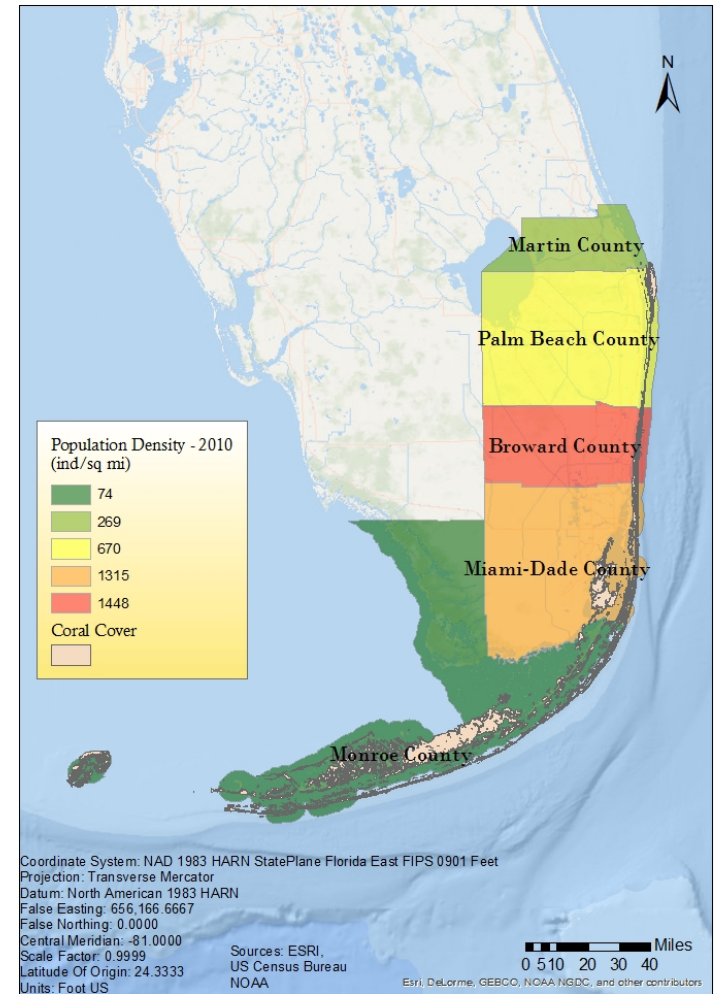
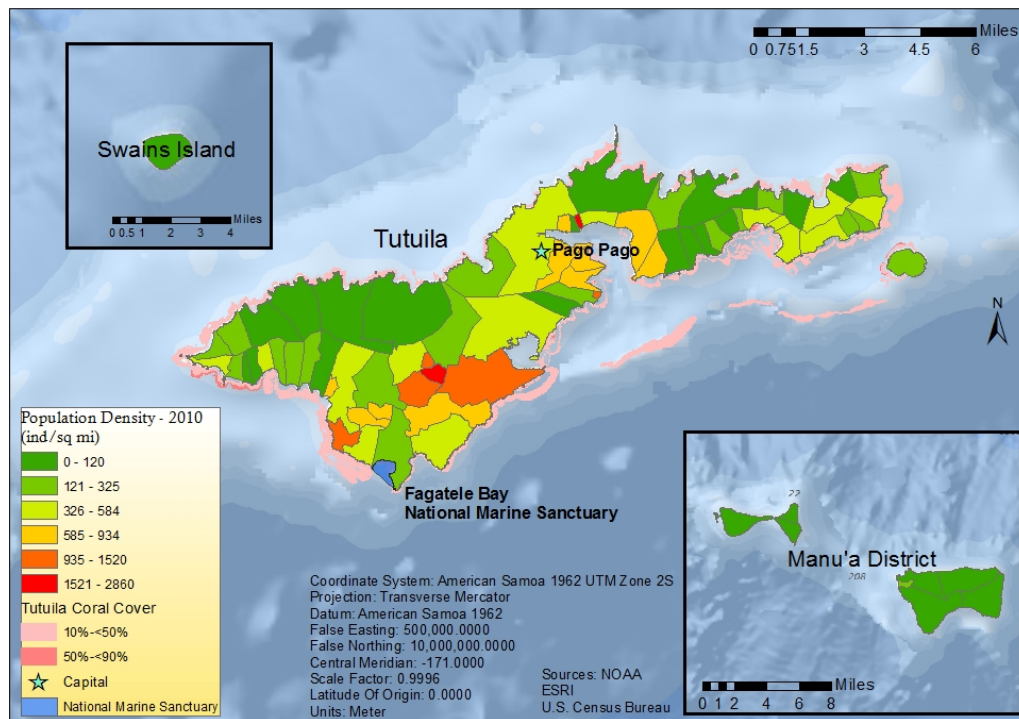
## Social Monitoring by Geography and Year

Jurisdiction	Geographic scope	Year
American Samoa	Island of Tutuila	2013-14
Florida	Martin, Palm Beach, Broward, Miami-Dade, Monroe Co.	2013-14
Hawai'i	Islands of Kauai, Maui, Moloka'i, O'ahu, Hawai'i, Lana'i	2014-15
Puerto Rico	Islands of Puerto Rico, Vieques, Culebra	2014-15
CNMI	Islands of Saipan, Tinian, Rota	2015-16
Guam	Entire island of Guam	2015-16
USVI	Islands of St. Croix, St. Thomas, St. John	2016-17

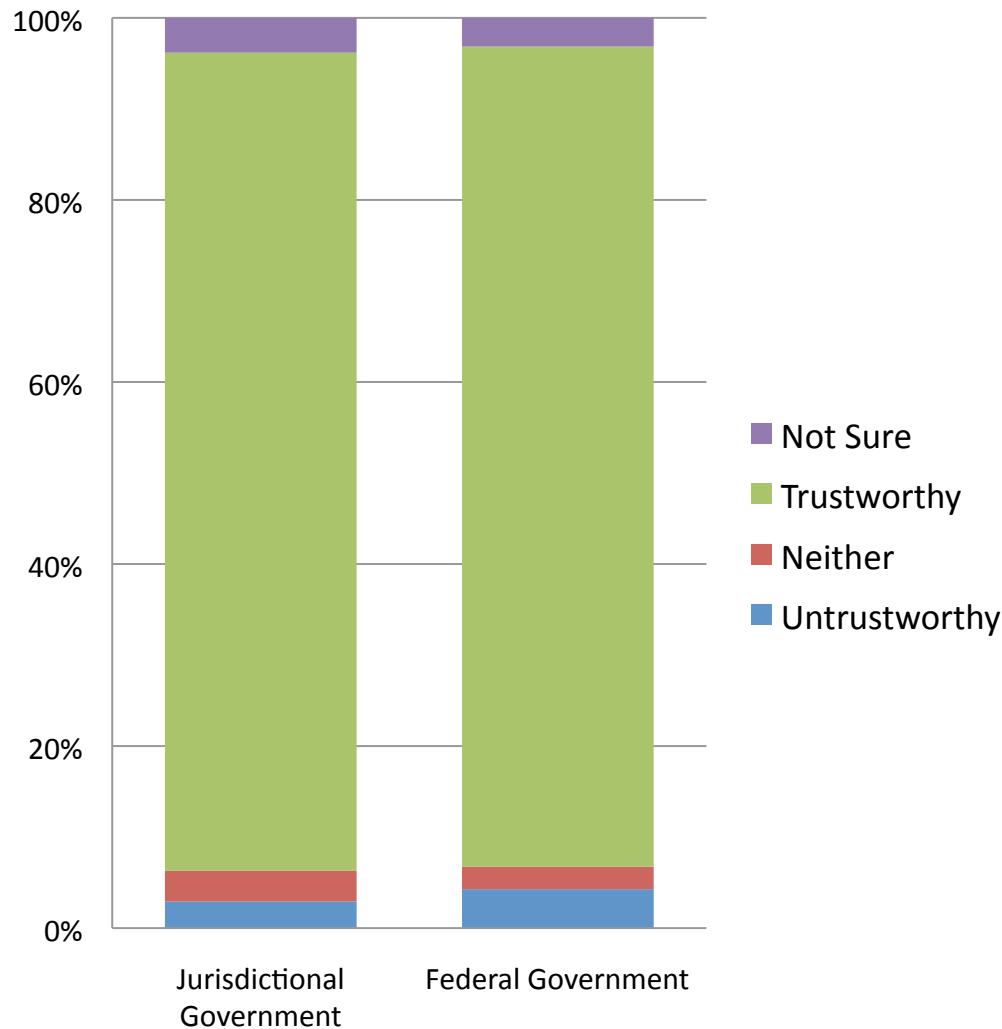
# RESULTS



# Population density in relation to coral cover: American Samoa (left) and South Florida (right)



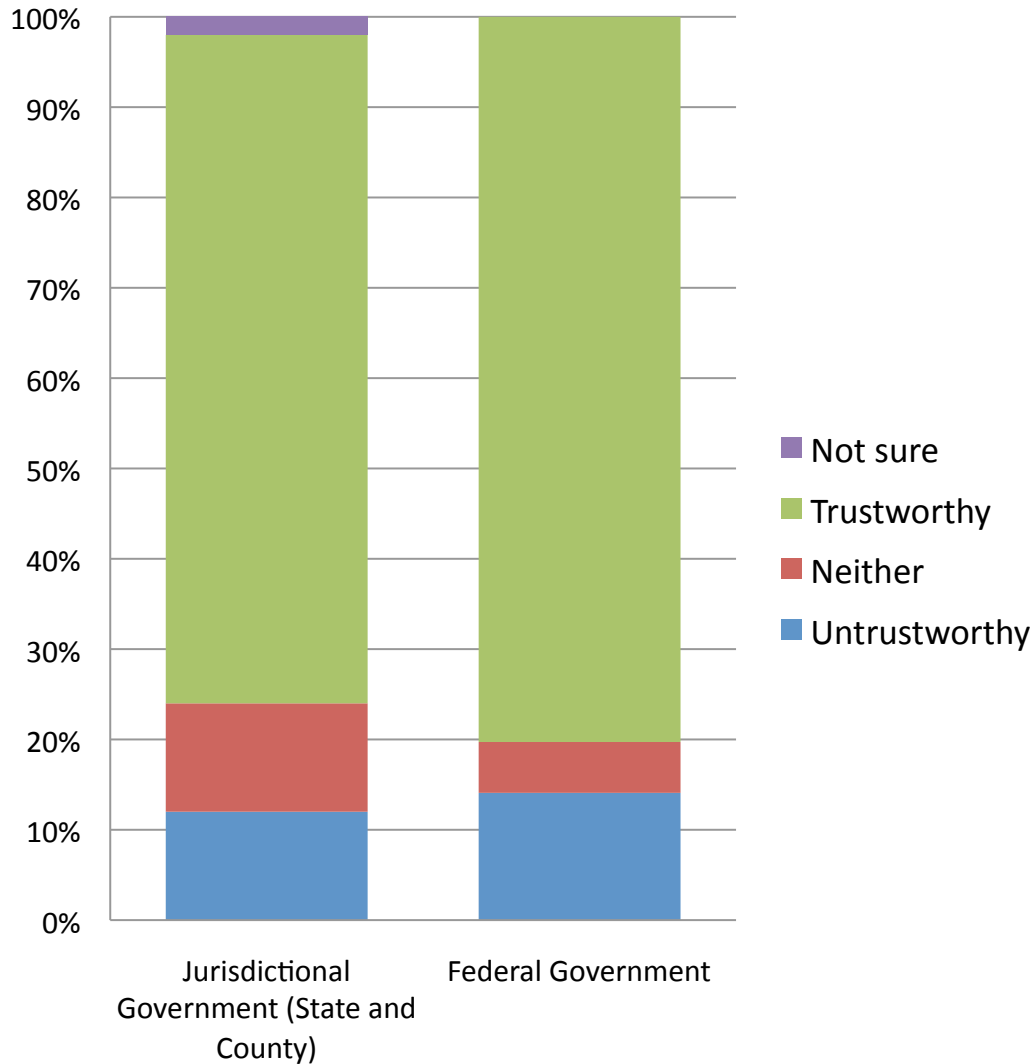
# American Samoa: Trust in Government for Coral Reef Information



- **52% of respondents** indicated that the **jurisdictional government** was a top source for information concerning coral reefs or reef related topics.
- **77% of respondents** indicated that the **federal government** was a top source for information concerning coral reefs or reef related topics.
- **Respondents overwhelmingly report trust in government** as an information source.

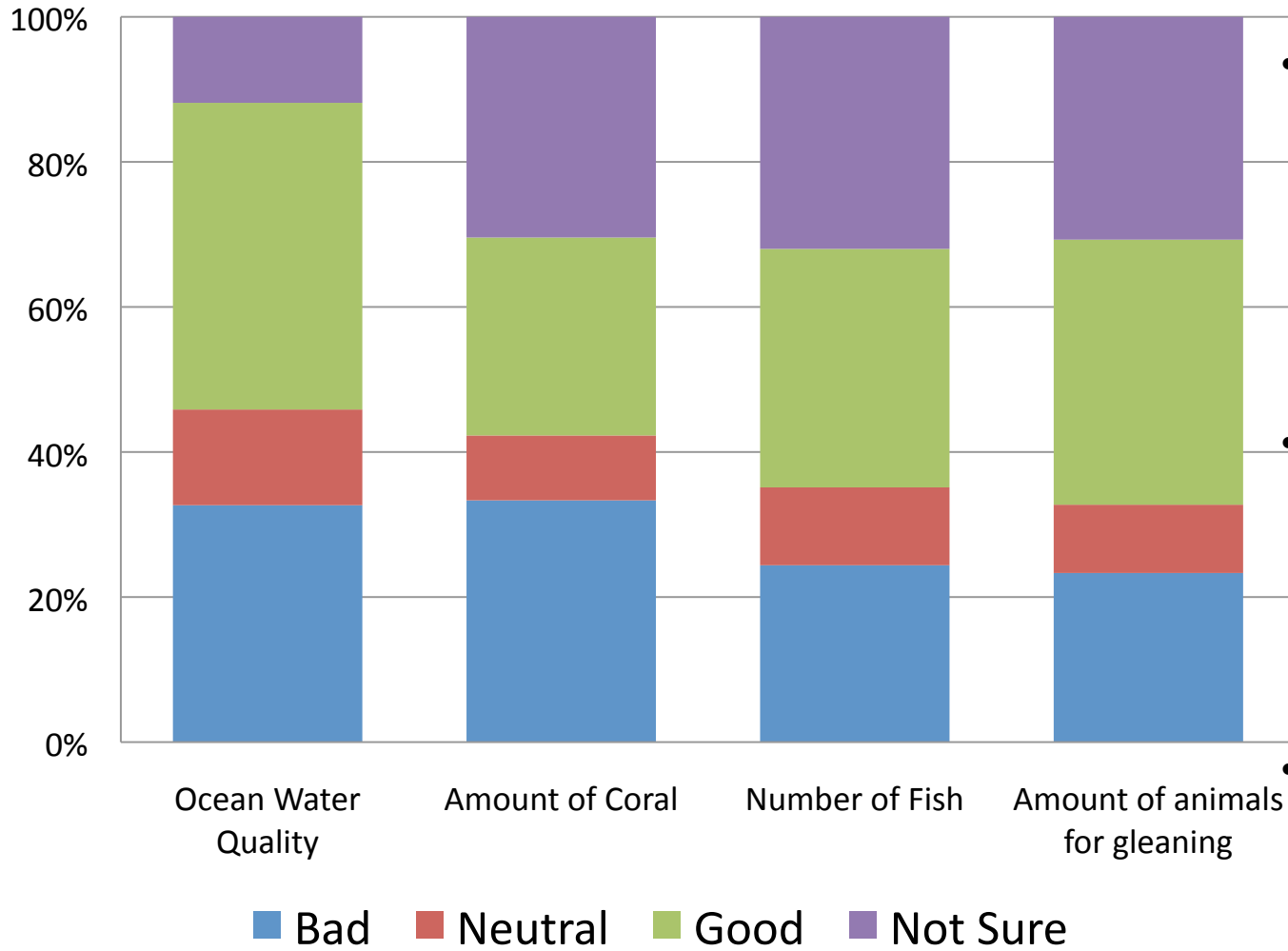


# South Florida: Trust in Government for Coral Reef Information



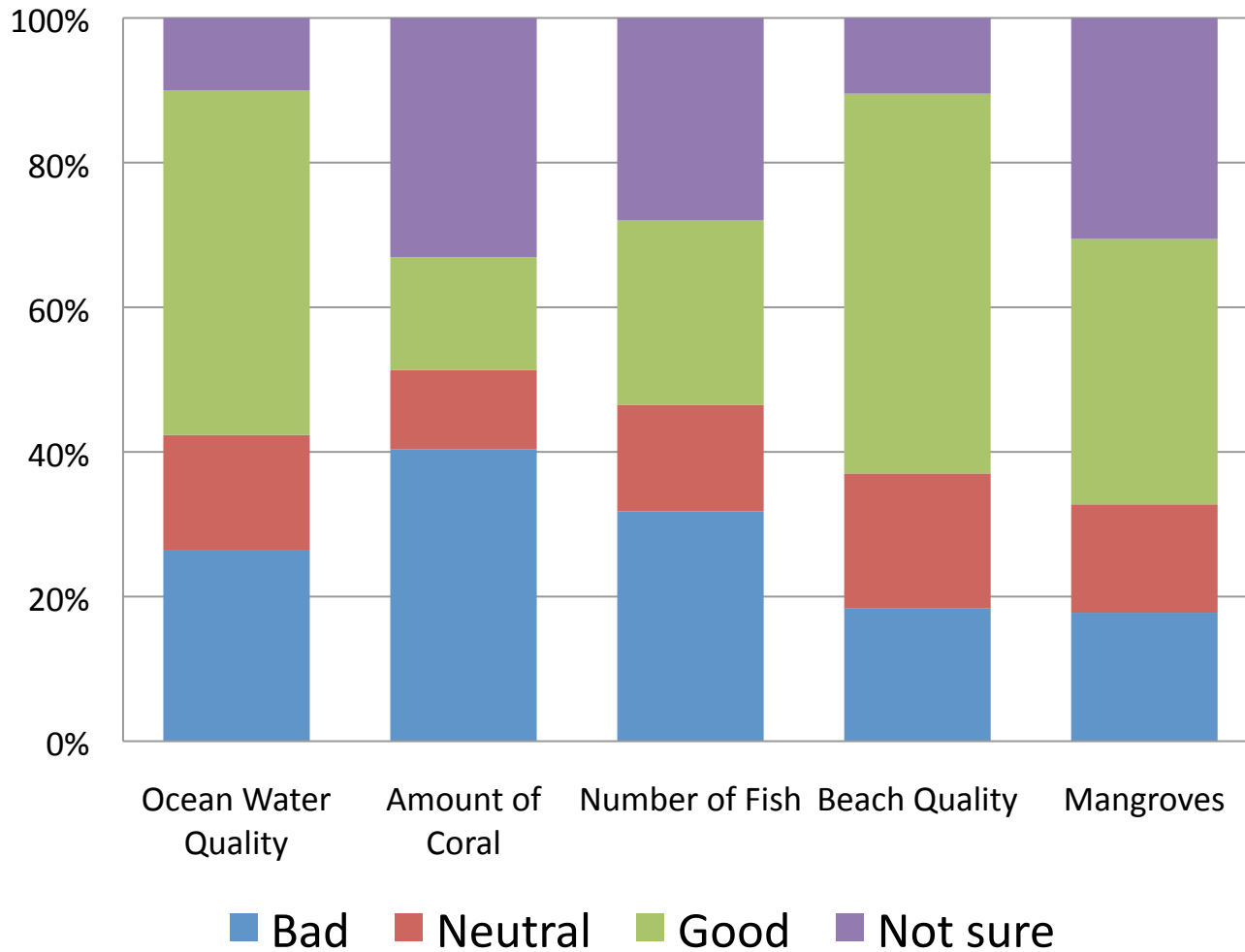
- **4.7% of respondents** indicated that the **state and county government** was a top source for information concerning coral reefs or reef related topics.
- **7.2% of respondents** indicated that the **federal government** was a top source for information concerning coral reefs or reef related topics.
- However, **most respondents report trust in government** as an information source.

# American Samoa: Perceptions of Current Resource Conditions



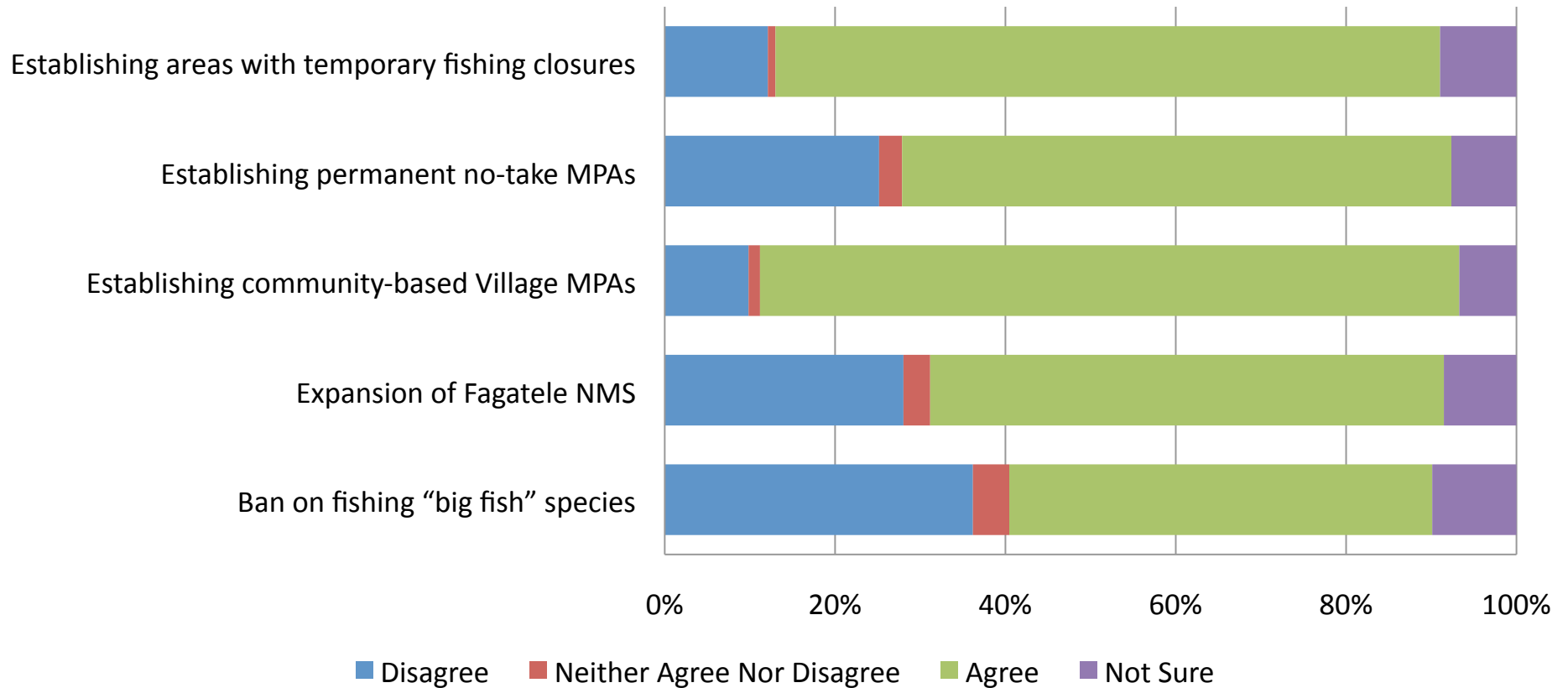
- More respondents have positive perceptions about ocean water quality and amount of animals for gleaning.
- Respondents are almost evenly split on perceptions about amount of coral.
- There is high uncertainty about all conditions except ocean water quality.

# South Florida: Perceptions of Current Resource Conditions



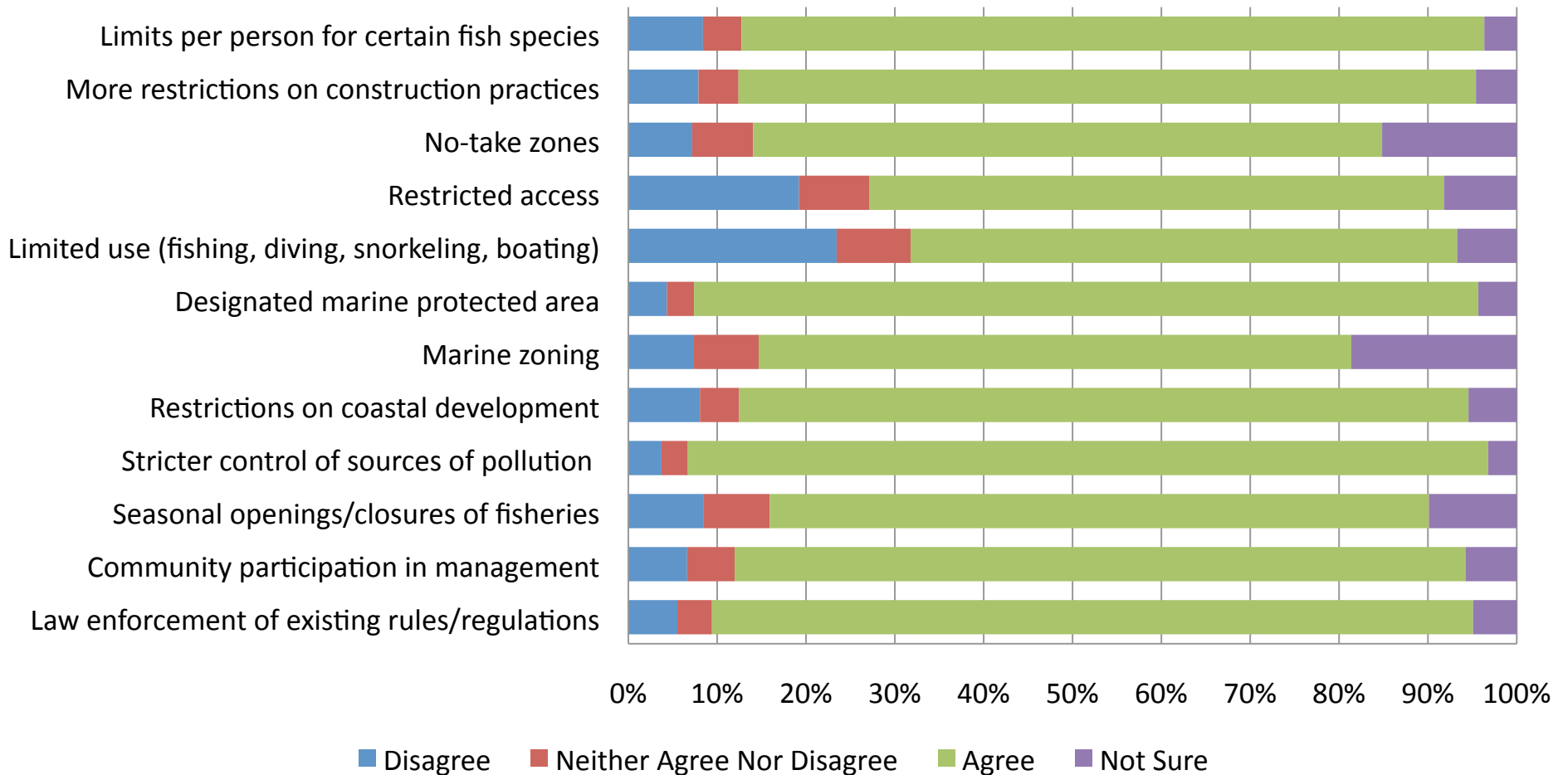
- More respondents have positive perceptions about beach and ocean water quality.
- More respondents have negative perceptions about amount of coral.
- Respondents have higher uncertainty about amount of coral and mangroves conditions.

## American Samoa: Support for Management Strategies



- Establishing community-based village MPAs was received most positively by respondents (82%).
- Banning "big fish" fishing was received least positively by respondents (49%) and had the most respondents to answer "not sure".

# South Florida: Support for Management Strategies



- Respondents agreed the most with “Stricter control of sources of pollution to preserve water quality” (90%) and the least with “Limited use (fishing, diving, snorkeling, boating)” (62%).
- The management option with the highest proportion of “not sure” responses was “marine zoning” (19%).

# American Samoa: Does participation in extractive activities correlate with different attitudes towards management strategies?

Marine Protected Area (MPA) Preferences	Respondent does not fish or gather		Respondent does fish or gather		Statistical test for difference	
	n	Mean	n	Mean	t	p value
MPAs protect coral reefs	111	4.26	154	4.21	0.61	0.54
MPAs increase the number of fish	108	4.30	154	4.22	0.90	0.37
Fishermen's livelihoods have been negatively impacted from the establishment of MPAs in American Samoa	96	2.81	141	2.81	0.02	0.98
I would support adding new MPAs in American Samoa if there is evidence that the ones we have are improving American Samoa's marine resources	107	4.31	155	4.17	1.52	0.13
I generally support the establishment of MPAs	106	4.32	153	4.12	2.16**	0.03

\*=significant at 10% level, \*\*=significant at 5% level, \*\*\*=significant at 1% level

- Higher values indicate a more agreement.
- Fishers generally do not differ from non-fishers in terms of their perceptions and support for MPAs.

# Florida: Does length of residence in South Florida correlate with different perceptions of resource condition?

Resource	Lived in Florida for 10 years or less		Lived in Florida for more than 10 years		Statistical test for difference	
	Weighted n	Mean	Weighted n	Mean	t	p
<b><i>Current Conditions</i></b>						
Ocean water quality	131	3.53	978	3.24	2.64***	0.01
Amount of coral	98	2.58	725	2.50	0.59	0.56
Number of fish	100	3.19	797	2.79	3.07***	<0.01
Beach quality	137	3.58	954	3.41	1.70*	0.09
Mangroves	88	3.10	752	3.29	-1.33	0.19
<b><i>Change in conditions over last 10 years</i></b>						
Ocean water quality	116	2.89	981	2.52	3.27***	<0.01
Amount of coral	79	2.29	774	2.09	1.63	0.11
Number of fish	92	2.53	842	2.21	2.77***	<0.01
Beach quality	118	3.00	959	2.67	2.91***	<0.01
Mangroves	93	2.6	760	2.64	-0.31	0.76

\*=significant at 10% level, \*\*=significant at 5% level, \*\*\*=significant at 1% level

- Higher values indicate a more positive perception.
- Respondents who have lived in Florida for 10 years or less had a more positive perception concerning the condition of marine resources. Particularly, ocean water quality, number of fish, and beach quality.

## Next Steps

- ❖ Survey results will soon be ready for report out meetings in Hawaii and Puerto Rico
- ❖ Survey preparations are underway for Guam and CNMI
- ❖ Ongoing analysis of survey and secondary data







# Thank you



For more information, please contact:

Peter Edwards, NOAA/CRCP, at [Peter.Edwards@noaa.gov](mailto:Peter.Edwards@noaa.gov)

Maria Dillard, NOAA/NCCOS, at [Maria.Dillard@noaa.gov](mailto:Maria.Dillard@noaa.gov)

Arielle Levine, NOAA/CRCP, at [Arielle.Levine@noaa.gov](mailto:Arielle.Levine@noaa.gov)

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