

Coastal use and management at Laolao Bay

A SEM-Pasifika study
of resource users at Laolao Bay on
Saipan, Commonwealth of the
Northern Mariana Islands

March 23 to March 29, 2009



This survey sought to understand the nature and driving forces behind damaging activities occurring in Laolao Bay to inform a social marketing campaign. A team of surveyors conducted a 7-day intercept survey and key informant interviews. The survey results suggest that respondents are aware of the environmental threats facing Laolao Bay, and that they understand the nature of those threats –namely erosion and runoff. Moreover, they appear to understand and support the need for effective management of the Bay's resources.

Conducted by the CNMI Coral Reef Initiative: Division of Environmental Quality (DEQ) Nonpoint Source Pollution Branch and Marine Monitoring Team and the Coastal Resources Management Office (CRMO)



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Cover photo: Laolao Bay Watershed, Saipan, CNMI. Photo credit: Division of Environmental Quality

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1. Background

1.1 Site Description

Laolao Bay Watershed, located on the island of Saipan, Commonwealth of the Northern Mariana Islands (CNMI), was selected as the site for a study using the SEM-Pasifika Guidelines – a set of socioeconomic monitoring guidelines developed for sites in the Pacific by the Community Conservation Network (CCN).

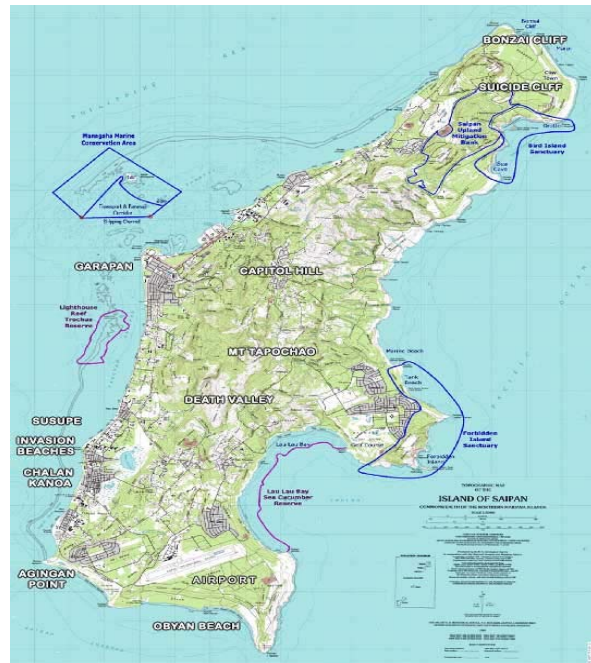
The 466-mile long Mariana Island archipelago, which includes 14 islands within the CNMI is located in the Western Pacific.

All watersheds in the islands are considered coastal watersheds. Under CNMI law, the natural resource agencies: Coastal Resource Management Office (CRMO), Division of Environmental Quality (DEQ) and Division of Fish and Wildlife (DFW) have regulatory jurisdiction.

Laolao Bay is located on the south eastern side of the island of Saipan. Three watersheds have direct influence on the waters of Laolao Bay; Laolao, Dan Dan, and Kagman. Laolao watershed is 926 acres, Kagman watershed is 3,666 acres, and Dan Dan watershed is 1,517 acres. These three watersheds cover a total of 6,109 acres (Source: DEQ GIS Specialist & USGS Shed GIS layer).

The Laolao Bay watershed, which drains into a bay containing a coral reef, contains steep upland areas already experiencing severe erosion. The Bay has one of the most popular dive sites on island, with considerable year-round traffic from local residents and tourists with dive operators. There are also a number of undeveloped private lots located near the shore and the dive site, which are currently serviced by a roadway that is frequently in poor condition. The roadway is held by both public and private landowners. Heavy rainfall associated with typhoons causes rutting in the roadway and erosion of the upland soil.

The watersheds that drain to Laolao Bay contain the villages of Kagman, DanDan, and a small community within Laolao. Many of the homes in these villages are not connected to a public sewer system and use onsite sewage disposal systems. Many of these homes were built on homestead properties provided to native islanders by the CNMI government.



1.2 Goals and Objectives

Goal of Survey: Understand nature and driving forces behind damaging activities occurring in Laolao Bay to inform a social marketing campaign. Social marketing is the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences in order to improve their personal welfare and that of their society.¹

Objectives:

1. Provide preliminary socioeconomic baseline for Laolay Bay users
2. Identify recreational uses for natural resources
3. Identify perceived threats and changes to natural resources
4. Explore public's understanding of environmental regulations governing Laolao Bay
5. Identify the perceived frequency of damaging activities
6. Explore perceived effectiveness of existing management

2. Methodology

2.1 Data collecting methods

The data collection process composed of key informant interviews and an intercept survey performed over a 7-day period (Monday, March 23 – Sunday, March 29, 2009) and targeting divers, fishermen and other recreational users.

2.2 Sampling Design

An intercept survey targeting resource users was conducted over a 7-day period from 8 a.m. to 1 p.m. and from 1:30 p.m. and 6:30 p.m. Interviewers intercepted as many willing respondents as possible within the time frame. Key informants were selected from the diving and fishing community. Key informants included an English-speaking dive operators group, a Japanese-speaking dive operator and a Chamorro fisherman.

¹ Andreasen, Alan. *Marketing Social Change: Changing Behavior to Promote Health, Social Development, and the Environment*. San Francisco: Jossey-Bass, 1995.

2.3 Indicators used in study

Based on the study objectives, the following indicators were selected from the SEM-Pasifika Guidelines:

Intercept survey

1. Number and profile of visitors
2. Age
3. Sex/gender
4. Education/Literacy
5. Ethnicity/clan
6. Language
7. Occupation
8. Perceived resource conditions
9. Perceived threats to coastal and marine resources
10. Perceived coastal management problems

Key informant interviews

1. Coastal and marine activities
2. Coastal and marine goods and services
3. Types and levels of use by outsiders
4. Attitudes toward coastal and marine resources
5. Knowledge of coastal and marine resources

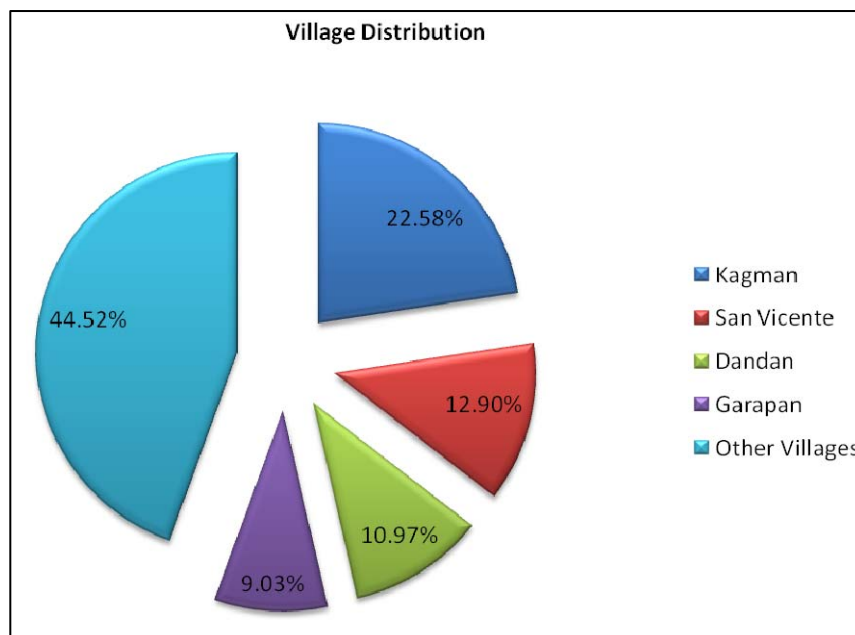
3. Results

3.1 Key findings of intercept survey

Village distribution

A total of 155 people were surveyed. Data showed that respondents' residences were distributed throughout the island, with the most for any one village (23%) living in Kagman Village – the village closest to Laolao Bay. However, nearly 80% were from other villages. This is important in the development of a social marketing campaign as it demonstrates the necessity of focusing education and outreach efforts not only in the surrounding villages, but islandwide.

Chart 1: Village residences of respondents



Ethnicities

Chamorros composed nearly half of those visitors surveyed at Laolao Bay. One likely reason for this distribution is that Laolao Bay is considered a traditional fishing ground among the indigenous communities. Some of those interviewed frequent the area three or more days per week. The top three represented ethnicities were: Chamorro 46%, Filipino 16% and Caucasian 15%. The high percentage of Chamorro visitors suggests that a significant portion of a social marketing campaign focused on Laolao Bay should concentrate on this group. In addition, as following graphs suggest, careful attention should be given to the knowledge, attitude and behavior of this group in relation to the area.

Table 2: Represented ethnicities

Represented Ethnicities	% of Respondents
Chamorro	46.45%
Filipino	16.13%
Caucasian	14.84%
Other Micronesian	10.32%
Japanese	8.39%
Carolinian	5.16%
Korean	2.58%
Other*	1.29%
Chinese	0.00%
Russian	0.00%

*Other includes Native American (1) and Hispanic (1)

Gender distribution and age distribution:

The majority of respondents surveyed were male: 28% were female and 72% were male. This suggests that activities taking place in the area are attracting mostly men, which should be considered in the development of the social marketing campaign.

The average age of respondents was 38 years old.

Table 3: Age Range of Respondents

Age range	% of Respondents
18-25 years	13.55%
26-35 years	28.39%
36-45 years	34.19%
46-55 years	18.06%
56-65 years	5.81%

Formal education:

All but one of the respondents answered the question regarding formal education. Nearly 50% of them reported completing high school. Roughly 30% attended or completed college, while a minority reported not completing high school. Thus, it is likely that the majority of people visiting Laolao Bay are literate and that messages developed and communicated through a variety of written forms have the potential to be effective.

Table 4: Education level

Education level	% of Respondents
No education	0.65%
Elementary (1-6)	1.29%
Junior High (7-8)	3.23%
High School (9-12)	49.68%
Some College	17.42%
College Degree (undergraduate)	16.13%
Graduate School	10.97%
No education	0.65%

66% of respondents were employed at the time of the survey while 30% were not. Resource managers should consider how restrictions on resource use (e.g. fishing) could place further burden on the 30% of Laolao Bay users who are unemployed, especially if those users depend on resources at the Bay for their livelihoods. Efforts to mitigate or minimize impacts to the fishing community could help strengthen cooperation from this stakeholder group.

While developing a social marketing campaign, it will be necessary to determine whether messages and communication tools will effectively reach both of these groups. For instance, posters at a store are likely to reach both the employed and un-employed visitors, while a community beach clean-up during the work week might not target employed visitors.

Table 5: Employment Status

No	30.32%
Yes	66.45%
No answer	3.32%

Value of natural resources at Laolao Bay

In an open-ended question regarding what types of activities attract visitors/users to Laolao Bay, the majority of those who responded said they came to Laolao because of its picnicking/barbecue facilities, swimming and snorkeling quality and fishing. Nearly half of respondents or 47% said they came to Laolao to fish. This indicates the fishing community is a significant stakeholder group which must be engaged in management, education and outreach efforts.

The data showed that those who were visiting the bay were also doing so quite frequently. About 40 percent of respondents said they visit the bay weekly, anywhere between one to 7 days in a week. This high percentage of regular visitors will be important to keep in mind when developing a social marketing campaign as this group is an important and necessary ally. This group will likely be in the area more often than managers can be and thus are potential advocates for the campaign. Their intimate relationship with the Bay should be incorporated in key messages developed for the social marketing campaign, as well as general education and outreach materials compiled by resource managers.

Table 6: Laolao Bay activities

Activity	% of Respondents
Picnic/BBQ	63.23%
Swimming/Snorkeling	59.35%
Fishing	47.10%
Diving	42.58%
Walking/Hiking/Running	34.19%
Camping	33.55%
Beach Clean-up	33.55%
Collecting Herbal Medicines	14.19%
Hunting	12.26%
Mountain Biking	5.16%
Other*	12.26%
*Other activities include: sightseeing, visiting beach, collecting coconuts, riding ATVs, working/monitoring, relaxing/hanging out, farming, collecting shells, and launching boat.	

Table 6: Frequency of visits

Frequency of visits	% of Respondents
1-5 times per year	29.68%
Between 6-10 times per year	12.26%
1-3 times per month	11.61%
1-3 time/week	23.23%
3+ times/week	22.58%
no answer	0.65%

Perceived condition of natural resources

User respondents were asked to respond: yes, no and not sure, when asked whether they thought there were “any problems or threats to the environment in Laolao Bay?” The vast majority felt Laolao Bay faced environmental threats, which suggests general but widespread acknowledgement of the environmental pressures existing at Laolao Bay

Perceived problems with coastal and marine resources

Surveyors posed an open-ended, follow-up question to respondents who said they believed there are environmental threats to Laolao Bay: “What are the top two threats to Laolao Bay? We would like to know what you think are the biggest problems for Laolao.” The top three threats named by respondents were: Erosion & Runoff, Littering and Poorly Maintained Road.

Table 7a and 7b: Environmental Threats to Laolao Bay?

<i>“Do you think there are any problems or threats to the environment in Laolao Bay?”</i>	
Response	% of Respondents
<i>Yes</i>	65.81%
<i>No</i>	20.65%
<i>Not Sure</i>	13.55%

Threat named	% of Respondents
Erosion & Runoff (too much soil going into the ocean)	31.61%
Littering	30.97%
Poorly Maintained Road	17.42%
Illegal Dumping	14.84%
Too Much Fishing	5.81%
Harmful Fishing Practices	5.16%
Irresponsible Diving	3.87%
Illegal Harvesting	2.58%
Driving on the Beach	1.94%
Jungle Burning	1.29%
Too Many Divers	0.65%
Crime/Traffic	6.45%
Other	5.16%
*Other threats include: too much vegetation (2), water quality (2), boats (1), lack of restrooms (2), too few pavilions (1)	

Perceived health of coastal and marine resources

Respondents were asked to rate the health of each category listed. The options were very healthy, somewhat healthy, somewhat unhealthy, very unhealthy and don't know. Responses varied widely as to the ecological health of Laolao Bay. The responses did not suggest a solid trend in the perceived health of ecological sites and species in the Bay. However, some notable results came from the survey.

A significant number of respondents said they did not know the health of turtle nesting sites (57%), the population of sea urchins and cucumbers (35%) and population of fish (23%). These results suggest lack of understanding needed to form an assessment of the health of watershed and coral reef ecosystems. This reinforces the need for educational signage at the site. Providing this education will help narrow the knowledge gap in order to build a foundation for ongoing education and outreach work. More than 20 percent of respondents said they believed the health of coral and water quality was somewhat unhealthy. These were the only two categories that more than 20 percent rated as unhealthy.

Table 8: Resource Health

Category	Very Healthy	Somewhat Healthy	Somewhat Unhealthy	Very Unhealthy	Don't Know
Number of Fish	26.45%	30.97%	15.48%	2.58%	22.58%
Water Quality (Clarity, visibility)	21.29%	44.52%	23.23%	5.16%	3.87%
Number of sea urchins and sea cucumbers	18.06%	22.58%	17.42%	5.81%	34.84%
Health of Coral	13.55%	19.35%	29.68%	14.19%	20.65%
Turtle Nesting Sites	12.90%	10.32%	10.97%	5.81%	57.42%
Forest/Grasslands	34.84%	32.90%	14.84%	3.23%	12.90%

Note: The shaded cells in Table 8 refer to the significant figures referenced in the explanation of Perceived health of coastal and marine resources. These results suggests lack of in-depth understanding needed to form an assessment of the health of watershed and coral reef ecosystems.

Proposed changes to Laolao Bay

Respondents were asked to answer with a “yes,” “no,” or “not sure” on the question of whether they would like to see a list of following changes to Laolao Bay. The weight of these results is debatable given that respondents are unlikely to disagree with a list of general improvements. However, this question was useful in gauging and illustrating support for various improvements that would be made under a grant application.

Table 9: Changes to Laolao Bay

Changes to Laolao Bay	No	Yes	Not sure
More garbage cans	7.74%	87.10%	2.58%
More garbage collections	3.87%	89.68%	3.87%
More pavilions	15.48%	73.55%	8.39%
Paving the road	14.19%	81.94%	2.58%
Improve drainage	6.45%	85.16%	5.81%
Barrier to prevent beach driving	9.03%	85.16%	4.52%
More parking spaces	16.13%	76.13%	5.16%
Pave the dive site parking lot	20.65%	68.39%	8.39%

Understanding of legal/illegal activities in Laolao Bay

Respondents were asked to share their knowledge of current legal activities in Laolao Bay. They were asked to respond with a “yes,” “no,” or “not sure” to a list of activities accompanied by the question, “Which of the following activities do you think are currently allowed (legal) in Laolao Bay?” In order to allow for a comparison of observations of activities in Laolao, respondents were also asked whether they had “seen/heard of these activities being conducted at Laolao Bay.” They were presented a list and asked to respond.

In some cases, respondents reported observing activities they knew were illegal. Examples included driving on the beach (83% correctly identified it as illegal/66% reported observing it) and trash dumping (92% correctly identified it as illegal/28% reported observing it).

This information demonstrates that a large portion of people visiting Laolao know the laws and regulations pertaining to the area. Thus, a social marketing campaign may be best spent not on educating people about these laws and regulations but instead promoting beneficial attitudes and behaviors towards these illegal (and legal) activities.

Tables 10a and 10b: Knowledge of Legal and Illegal Activities

Knowledge of Legal Activities				
	SCUBA Diving	Barbecuing	Fishing with Rod & Reel	Talakhaya (Throw Net) Fishing
Not Sure	5.16%	1.29%	5.16%	14.19%
Incorrect	1.29%	5.81%	10.32%	26.45%
Correct (% of respondents who knew this activity is legal)	92.26%	90.32%	83.32%	58.06%

Knowledge of Illegal Activities							
	SCUBA Spearfishing	Gillnet Fishing	Collecting Trochus	Collecting Sea Cucumbers	Driving on Beach	Burning	Trash Dumping
Not Sure	18.06%	16.13%	10.97%	13.55%	7.74%	5.16%	1.94%
Incorrect	10.97%	10.32%	8.39%	5.16%	8.39%	5.81%	4.52%
Correct (% of respondents who knew this activity is illegal)	69.68%	72.26%	79.35%	80%	82.58%	87.74%	92.26%

Table 11: Respondents’ observation of activities in Laolao Bay

Legal (permitted) Activities	
SCUBA diving	87.74%
Barbequing	85.16%
Fishing with rod & reel	76.13%
Talaya fishing (throw net)	69.68%
Illegal (not permitted) Activities	
Driving on the beach	65.81%
Divers/Snorkelers standing on or breaking live coral	39.35%
Trash dumping	27.74%
Burning	24.52%
Gill net fishing	20.65%
Collecting & harvesting trochus	17.42%
SCUBA spear fishing	16.77%
Collecting & harvesting sea cucumbers	11.61%

As illustrated in the graph above, respondents have seen or heard of a number of different illegal activities taking place in Laolao. This implies that illegal activities such as driving on the beach are happening and are being witnessed.

Perceived motivation for illegal activities in Laolao Bay

As part of an effort to inform a social marketing campaign for Laolao Bay, interviewers posed questions about the perceived reasons behind some of the illegal activities observed in the Bay. For both dumping/littering and driving on the beach, more than 60 percent of respondents said others engaged in the activities because they “don’t know it’s illegal” and “don’t know it can cause harm to the environment.”

As earlier indicated, most users of Laolao are aware of what activities are legal and illegal. Contrastingly, the majority of users (more than 80%) stated that others engaged in illegal activities “because they don’t know it is illegal.” The social marketing campaign may want to commit resources to clarifying this misconception using the survey’s findings on awareness.

Table 12a: Reasons for dumping/littering in Laolao Bay

	Strong Reason	Sort of a reason	Not a reason	Don't know
The transfer station is too far	32.90%	16.77%	34.19%	14.19%
There is no home trash pickup	29.68%	21.94%	32.26%	11.61%
It is easy to do- not likely to get caught	38.06%	21.94%	24.52%	12.26%
They don't know it's illegal	13.55%	14.19%	61.29%	6.45%
They don't know it can harm the environment & turtles	16.77%	18.06%	49.68%	11.61%
There aren't enough trash bins	39.35%	20.65%	29.68%	5.16%
Trash bins aren't emptied often enough	30.32%	24.52%	33.55%	6.45%
They don't care	70.32%	12.90%	9.68%	3.87%
People are lazy	77.42%	9.03%	7.74%	2.58%
Other reasons included: bigger trash cans needed, more enforcement needed, and people are stupid				

Table 12b: Reasons for Beach Driving

	Strong Reason	Somewhat of a reason	Not a reason	Don't know
There are no barricades	53.55%	12.90%	14.84%	5.81%
They think it's fun	35.48%	18.71%	21.94%	7.10%
Hard to carry supplies and BBQ equipment	40.00%	22.58%	20.00%	2.58%
Looking for seclusion	40.65%	19.35%	20.00%	5.81%
It is easy to do-not likely to get caught	36.13%	21.94%	20.65%	4.52%
They don't know its illegal	22.58%	18.71%	38.06%	5.81%
They don't know it can harm the environment & turtles	27.10%	18.06%	32.90%	7.10%
They don't care	58.71%	12.26%	11.61%	3.87%
People are lazy	61.29%	11.61%	9.68%	3.87%
Other includes: need more signage and outreach (7), lack of access to fishing and camping (2), and people are crazy (1)				

Perceived efficacy of management of coastal and marine resources

Respondents were asked, "How effective do you think the government's management of Laolao Bay is?" They were asked to use a given scale to rate a list of management areas: road maintenance, controlling illegal burning, controlling litter or dumping, beach use and fishing.

More than half of respondents felt the management of road maintenance, illegal burning and litter or dumping was ineffective. This finding, coupled with the support for changes illustrated in table 9, suggests an understanding for possible solutions or mitigation efforts that could help improve the environment at Laolao Bay.

Table 13: Management of Laolao Bay

Management of:	Effective	Somewhat Effective	Ineffective	Don't Know	No answer
Fishing	21.29%	20.00%	30.32%	23.87%	3.87%
Beach Use	21.94%	30.32%	30.32%	13.55%	3.87%
Controlling Litter or dumping	14.84%	16.13%	57.42%	7.74%	3.87%
Controlling Illegal burning	16.77%	10.97%	56.77%	11.61%	3.87%
Road Maintenance	9.03%	12.26%	60.00%	5.16%	13.55%*

Key informant interviews

Key informant interviews were conducted with fishermen and dive operators to gather information about Laolao Bay, including changes to the area observed over time. The dive operators interviewed had more than 10 years of experience leading tours and lessons at the site.

Dive operators reported seeing between 4 and 200 visitors each day. They also observed an increase of divers over the years. One dive operator reported seeing an increasing number of larger groups, not necessarily an even increase in distribution over days. The crowds sometimes exceeded the capacity of existing parking, an informant noted.

One dive operator said he observed a particularly poor health period for corals during 2000 and 2001. From that period on, the operator said community planting efforts took place, and the Division of Public Works decreased the amount of grass cutting, which improved water quality.

Another dive operator said the main change he observed at the bay is that no fish exist where once fishermen caught up to 300 pounds of fish in 3 to 4 dives. He attributed this change to the use of houka, scuba spearfishing and rambo fishing (plywood fins, homemade goggles).

The dive group reported a lack of enforcement for those who drive on the beach. They also noted observing a lack of protocol among foreign dive operators. Specifically, they said dive operators did not give proper briefings and dive education, including buoyancy control.

Proposed solutions from the individual dive operator and dive group interviewed were: beach cleanups, increasing enforcement and fines, barricading the beach, conducting economic valuation studies to demonstrate value of fish in water versus “fish in net,” and improving dive facilities. Informants interviewed did not seem to support the idea of establishing a volunteer watch group. Some said the government was responsible for enforcement, others said foreign tourists would not likely participate in such a program.

Conclusions and Recommendations

Laolao Bay attracts a variety and multitude of resources users, ranging from short-term visitors to long-time residents. Hundreds of divers come to the area each week to swim in the protected bay. Residents who use the area do so regularly and frequently for fishing and recreation. Together they offer a wealth of first-hand knowledge of the changes seen at Laolao over time. The survey results suggest that respondents are aware of the environmental threats facing Laolao Bay, and that they understand the nature of those threats –namely erosion and runoff. Moreover, they appear to understand and support the need for effective management of the Bay’s resources.

Recommendations:

- Based on the recreational uses recorded for Laolao Bay, develop outreach campaign educating people about responsible uses – dos and don’ts – for popular forms of recreation.
- Using the information gathered from this survey and others, develop a social marketing campaign that focuses on Laolao but emphasizes behaviors that are beneficial island-wide.
- Continue to involve, as much as possible, the users of the area in any education and outreach efforts. In particular, the group that visits the area at least once a week is a potential key partner in any effort taking place in Laolao.
- Improve and repair existing parking facilities for dive operators; improve access to dive area to minimize damage to coral reefs
- Provide workshop/training to law enforcement officers about environmental laws affecting Laolao Bay. Although officers frequented the area, many reported a lack of awareness about the environmental laws. Some said they would issue citations if they knew which activities were prohibited.
- Build barricades to prevent people from driving on the beach, while simultaneously providing education about turtle nesting sites.

Lessons Learned

The survey data may have benefited from the assistance of Korean and Japanese interviewers and/or translators. Interviewers were limited to the English, Chamorro and Carolinian. Many dive groups who visited the Bay were Korean or Japanese-speaking tourists. For the most part, interviewers could not obtain feedback from these groups.

Remote interview sites within Laolao Bay made communication difficult between survey groups. One team member would drive between sites along the main road. Two-way radios could have helped improve communication and improve the efficiency of data collection.

While survey teams encountered few problems in approaching visitors, the survey's overall objectives may have benefited from a more refined protocol for soliciting feedback.

Team members reported receiving requests for general information about Laolao Bay (e.g. biology, threats, plans) from visitors. However, they did not have any educational materials to give. If deemed appropriate, and without affecting data collection, perhaps outreach materials could be given to the public following surveys.

More time to survey and collect a larger sample size would have been useful.

Communication strategy

Priority target audiences	Characteristics	Key learning/messages	Communication support	Timeline
<i>Government Agencies</i> ...	<i>- communicate through written reporting and meetings</i>	<ul style="list-style-type: none"> • <i>Community is largely aware of the regulations pertaining to the area and support these regulations</i> 	<i>Report</i>	<i>Feb. 2010 to March 2010</i>
<i>Key government leaders</i>	<i>-communicate through written reports and meetings</i>	<ul style="list-style-type: none"> • <i>Community supports improved management of Laolao Bay</i> • <i>Education and outreach efforts can help close knowledge gaps</i> 	<i>Report</i>	<i>March 2010 to April 2010</i>
<i>Kagman community</i>	<i>- communicate through meeting</i>	<ul style="list-style-type: none"> • <i>Community is largely aware of the regulations pertaining to the area and support these regulations</i> • <i>Community's continued support is necessary to make Laolao a healthier and safer place to enjoy.</i> 	<i>Community meeting</i>	<i>Completed In conjunction with ARRA presentation</i>
<i>General public/media</i>	<i>-communicate through written communications and visuals</i>	<ul style="list-style-type: none"> • <i>Community supports improved management of Laolao Bay</i> • <i>Community supports improved management of Laolao Bay</i> 	<i>Press release Newspaper articles</i>	<i>April 2010 to May 2010</i>

References

Appendices

- appendix 1: survey instrument (include HH, FG, KI)
- *appendix 2: basic descriptive statistics for all survey questions*
- appendix 3: survey costs
- appendix 4: survey team

APPENDIX 1:

Key Informant Interviews

Key informant interview with [REDACTED]
Wednesday March 18, 2009

John conducting interview; Christy Loper taking notes; Kathleen Herrmann observing.

Starting 5:11 pm
(editorial or explanatory notes in parentheses)

How many divers: check MVA. Average maybe almost 100/day

How many tourists vs. local. Mostly tourists. Locals only come on weekend.

~85% tourist during week

~70% tourist on weekend

Why Lau Lau? Always good conditions. Biggest bay. Always calm. Good for beginners. But also good for experienced divers.

Lau Lau has “a shallow end and a deeper end. “ Deeper side has nice coral too (more diverse coral)

how often do you see damaging activities?

(no immediate answer)

(suggested by John:) When someone takes a picture and they grab coral, sometimes it breaks 18-20 years ago Lau Lau was a very nice place, even coral was very nice. After construction for LL bay country club the coral is not so nice. Dirt coming in.

“The coral is already broken; we can’t break it any more.”

(After Lau Lau Bay Country Club construction caused siltation), 100 divers tried to fan off the coral. It didn’t work. Now the deeper side only has cabbage coral but no more in shallow.

(Yes there were problems with breaking the coral upon entry)- that’s why we set up the rope, fixed entry and exit to decrease coral breakages

We need more good briefings to customers. Instructors are not so good; they have accidents too (. instructors need to think about environment not money

Marine debris

Every dive see garbage like cans

More than 100 divers; every diver should take 1 can then it would be cleaned up. (good idea)

(Kathleen mentions: Idea of laminated card)

Of course we talk to the customer during briefing (not don’t touch coral but don’t break coral)

Have brochures for Japanese. Should hand out? From CRM

Changes

Has diving gotten more crowded? Yes, more divers. Sometimes too many divers, no parking spaces

Other construction of juvenile prison. Very bad time for coral 2000-2001. We wanted protection and planted coconut trees. Less erosion after construction. Vis is a little better.

Dpw did good job of less cutting. Too much grass cutting more goes into ocean.

If any other place has bad conditions then everyone goes to lau lau***

How many dive operators: Go to CRM, check diving permits. Maybe 45 dive operators

Tasi watch: dive operators- concerned with making money
Japanese people- not popular to volunteer
US people very close to volunteer mind
Maybe some people who stay here would want to volunteer but not sure
1 time/month beach clean up- operators

Key informant interview with dive group:

[REDACTED]

***Location: Coffee Care Restaurant, Saipan
March 18, 2009
12:00 pm***

***Interviewer: Kathleen Herrmann
Taking notes: Christy Loper***

***Action item: Kathleen will email CAP to Doug

How many divers?

Depends on weather; check with G4 security
Maybe 4-200/day

As busy or busier than Grotto b/c shallow, easily accessible, and good place to train new divers

Damaging activities: see them every time we dive. Eg driving on beach is not enforce. Some dive operators do not give proper briefings (blames Japanese dive operators). Eg do not teach divers to clip regs and don't teach buoyancy control. Instructors set bad examples. This needs to be addressed.

Also see seine nets used before guards come on duty.

Locals are upset b/c non-indigenous people take fish regardless of size or species.

(random list of things the dive group wants)

Need more enforcement and fines. Need barricade to beach. Need better egress and ingress. Need more economic valuation studies to demonstrate value of fish in water higher than fish in net. Want to maintain more natural dive facility. With bench and freshwater rinse.

Marine debris: see more fishing line at Grotto; more nets at Lau Lau

Also see rebar, etc. from contract workers using construction implements to fish with.

How many dive operators? 50—60. Over 50% are 1 person operations; others have 2-3 or 7-8 staff.

20% of all Japanese tourists dive while visiting (Saipan or CNMI?)

400,000 visitors per year

200,000 are from Japan

=40,000 Japanese divers per year in Saipan/CNMI (?????)

Changes

Doug, coming to LL for 30 years:

Main change is no fish now. Used to see people catch 300 lbs of fish in 3-4 dives.

In mid-80s, houka, scuba spearfishing, Rambo fishing (plywood fins, homemade goggles) wiped out all the fish in 4 years.

Now- look in coolers. Still see lobsters w/ spear holes.

Used to see schools of 50-200 parrotfish in the 5-10 lb range. Also, unicornfish, skipjack, “lobsters used to be everywhere.”

Mike, coming to LL for 7 years:

Main change is divers. Generally bigger stress days (not necessarily more divers every day but getting more days with really large numbers)

Harry, coming for 13 years:

More divers with cameras who should not have cameras.

More sediment.

More local divers (positive) they have better training. Some are hardcore and come every weekend but fewer now w/economy

Interest in Tasi Watch? Good idea?

Why is DFW not taking on this role? Need more frequent patrols so we don't have to rely on volunteers. But also problems with courts not enforcing laws.

Why doesn't security guard stop people from driving on beach? B/c people have threatened to kill him. There is not fear b/c there is no punishment.

Environmental awareness has been growing over past three years...

But still need more enforcement and mandatory sentencing (eg minimum sentences).

Laolao Bay Intercept Survey
March 22, 2009

Name of Surveyor: _____ Location: _____

Date: _____ Start Time: _____ End Time: _____

Introduction: Hafa Adai- My name is _____. The Division of Environmental Quality (DEQ) is conducting a survey to find out what activities are going on in Laolao Bay and what people think and feel about Laolao Bay. This information will be provided to our natural resource agencies to help build environmental programs in Laolao. We expect that this will take approximately 20 minutes of your time. There is no right or wrong answers and you don't have to answer any questions you are not comfortable with. Would you be willing to participate? We are happy to provide you with a copy of the results.

If no: Say-, OK, Thank you for your time.

If yes: Continue

First, I'm going to ask some questions about you.

- 1) *DO NOT ASK OUT LOUD: Circle sex: Male Female*
- 2) What village do you live in?
- 3) What is your ethnicity? *Do not read out choices. Check all that apply.*
 - a. Chamorro
 - b. Carolinian
 - c. Other Micronesian (Palauan, Chuukese, etc.)
 - d. Japanese
 - e. Caucasian
 - f. Korean
 - g. Chinese
 - h. Russian
 - i. Filipino

- j. Other: _____
- 4) What language are you most comfortable speaking? Tell me one or two languages. *Do not read out choices.*
- a. Chamorro
 - b. Carolinian
 - c. Other Micronesian
 - d. Japanese
 - e. English
 - f. Korean
 - g. Chinese
 - h. Russian
 - i. Tagalog
 - j. Other: _____
- 5) What is your highest level of formal education completed?
- a. Elementary (1-6)
 - b. Junior High (7-8)
 - c. High School (9-12)
 - d. Some College
 - e. College Degree (undergraduate)
 - f. Graduate School
- 6) What is your occupation?

- 7) Are you currently employed? Yes No
- 8) May I ask how old you are? _____
- 9) What activities do you participate in Laolao? I'll read a list of activities; please say yes or no for each one. *Check only the activities they participate in.*
- ___ fishing
 - ___ diving
 - ___ picnic/BBQ
 - ___ swimming/snorkeling
 - ___ walking/hiking/running
 - ___ camping
 - ___ hunting
 - ___ mountain biking
 - ___ collecting herbal medicines
 - ___ beach cleanup
 - ___ other (please describe): _____

- 10) In the last year, including today, how often (or how many times) have you visited Laolao?
___ 1-5 times
___ Between 6-10 times
___ 1-3 times per month
___ 1-3 time/week
___ 3+ times/week
- 11) About how many years have you been coming to Laolao?
-

- 12) What is the one main reason you like to come to Laolao?
DO NOT READ LIST, BUT USE LIST TO TAKE NOTES
- a. Secluded and peaceful
 - b. Less crowded with tourists
 - c. Beautiful scenery
 - d. Good fishing grounds
 - e. Good place to BBQ
 - f. Good for kids
 - g. Beauty and diversity of marine life
 - h. Good place for snorkeling & diving
 - i. Accessibility for diving
 - j. Alternative dive site when other sites too rough
 - k. Other: Please explain: _____
-
-

- 13) Do you think there are any problems or threats to the environment in Laolao Bay?

Circle one: Yes No Not sure

If they answer Yes, go to #14. Otherwise skip to #15.

- 14) What are the top two threats to Laolao Bay? We would like to know what you think are the biggest problems for Laolao... *DO NOT PROMPT FOR ANSWERS!!!!!!*
- a. Erosion & runoff (too much soil going into ocean)
 - b. Littering
 - c. Illegal dumping
 - d. Jungle burning
 - e. Driving on the beach
 - f. Too much fishing
 - g. Harmful fishing practices
 - h. Illegal harvesting
 - i. Too many divers

- j. Irresponsible diving
 - k. Poorly maintained road
 - l. Other: _____
-

15) What do you think of the health or current status of the following categories (areas) of the Laolao environment? I will read a list and ask you to rate the health of each.

Category	Very Healthy	Somewhat Healthy	Somewhat Unhealthy	Very Unhealthy	Don't Know
Number of Fish					
Water Quality (Clarity, visibility)					
Number of sea urchins and sea cucumbers					
Health of Coral					
Turtle Nesting Sites					
Forest/Grasslands					

16) Which of the following changes would you like to see at Laolao Bay? I will read a list of changes, please say Yes or No or Not sure to each one. You can say Yes to as many as you want.

More garbage cans	Yes	No	Not sure
More garbage collections	Yes	No	Not sure
More pavilions	Yes	No	Not sure
Paving the road	Yes	No	Not sure
Improve drainage	Yes	No	Not sure
Barrier to prevent beach driving	Yes	No	Not sure
More parking spaces	Yes	No	Not sure
Pave the dive site parking lot	Yes	No	Not sure

17) Which of the following activities DO YOU THINK are currently allowed (legal) in Laolao Bay? I'll read a list of activities, please say Yes or No or Not sure for each one:

SCUBA diving	Yes	No	Not sure
SCUBA spear fishing	Yes	No	Not sure
Talaya (throw net) fishing	Yes	No	Not sure
Gill net fishing	Yes	No	Not sure
Collecting & harvesting sea cucumbers	Yes	No	Not sure

Collecting & harvesting trochus	Yes	No	Not sure
Barbequing	Yes	No	Not sure
Trash dumping	Yes	No	Not sure
Burning	Yes	No	Not sure
Driving on the beach	Yes	No	Not sure
Fishing with rod & reel	Yes	No	Not sure

- 18) In the past year, have you seen or heard of anyone doing any of these activities? I'll read a list of activities, please say Yes or No for each one:

SCUBA diving	Yes	No
SCUBA spear fishing	Yes	No
Talaya fishing (throw net)	Yes	No
Gill net fishing	Yes	No
Collecting & harvesting sea cucumbers	Yes	No
Collecting & harvesting trochus	Yes	No
Barbequing	Yes	No
Trash dumping	Yes	No
Burning	Yes	No
Driving on the beach	Yes	No
Fishing with rod & reel	Yes	No
Divers/Snorkelers standing on or breaking live coral	Yes	No

- 19) What do you think the reasons are for the trash (dumping & littering) in Laolao? I am going to read you a list of possible reasons and I would like you to rate each one as a strong reason, somewhat of a reason, not a reason, or you don't know.

	Strong Reason	Sort of a reason	Not a reason	Don't know
The transfer station is too far				
There is no home trash pickup				
It is easy to do- not likely to get caught				
They don't know its illegal				
They don't know it can harm the environment & turtles				
There aren't enough trash bins				
Trash bins aren't emptied often enough				
They don't care				
People are lazy				
Other:				

- 20) What do you think the reasons are for people driving on the beach? I am going to read you a list of possible reasons and I would like you to rate each one as a strong reason, somewhat of a reason, not a reason, or you don't know.

	Strong Reason	Somewhat of a reason	Not a reason	Don't know
There are no barricades				
They think it's fun				
Hard to carry supplies and BBQ equipment				
Looking for seclusion				
It is easy to do-not likely to get caught				
They don't know its illegal				
They don't know it can harm the environment & turtles				
They don't care				
People are lazy				
Other:				

- 21) How effective do you think the government's management of Laolao Bay is? I will read a list of management areas and ask you to rate the health of each.

Management of:	Effective	Somewhat Effective	Ineffective	Don't Know
Fishing				
Beach Use				
Controlling Litter or dumping				
Controlling Illegal burning				
Road Maintenance				

- 22) Where do you get information about the environment? *Read the list and then ask for their top two choices:*
- a. Newspaper
 - b. Radio
 - c. TV
 - d. Brochure
 - e. Informational Signs
 - f. Community Members
 - g. Community Meeting
 - h. Work

i. Other: _____

23) Do you have any management suggestions for Laolao?

Instructions: Tear off sheet and Remind the person you interview that this is not connected to the survey.

Separate Contact Info Sheet:

Would you be interested in receiving the results of this survey?

If so, what is the best way to receive this information?

- 1) Email
- 2) Mail
- 3) Webpage
- 4) Newspaper Article
- 5) Community Meeting

Would you be willing to provide your contact info?

Name:

Phone:

Email:

APPENDIX 2: Basic descriptive statistics for all survey questions

Chart 1: Village residences of respondents

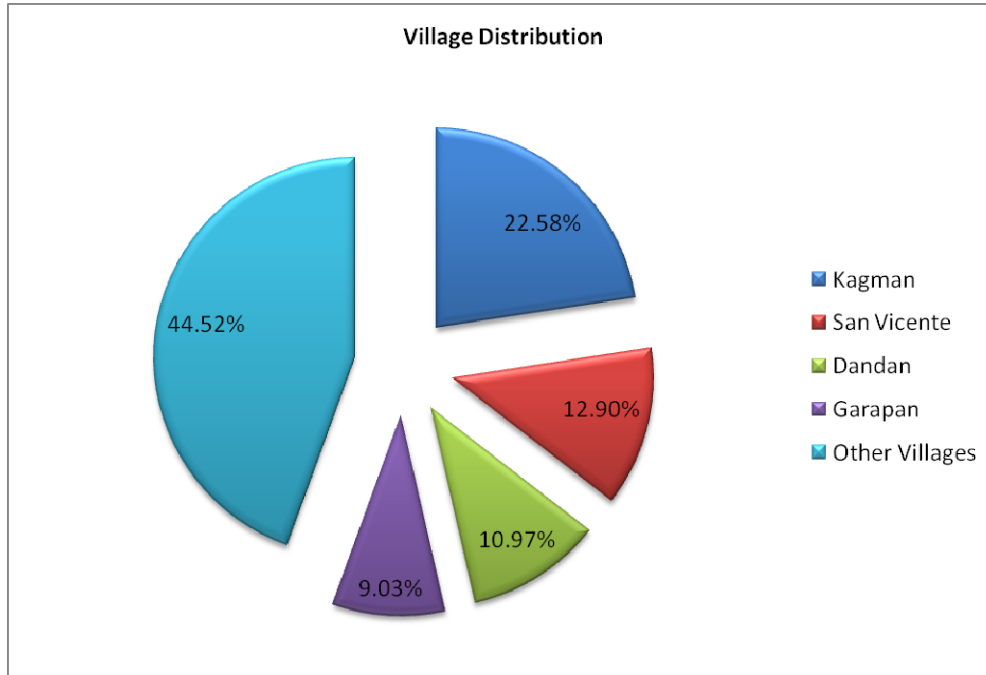


Table 2: Represented ethnicities

Represented Ethnicities	% of Respondents
Chamorro	46.45%
Filipino	16.13%
Caucasian	14.84%
Other Micronesia	10.32%
Japanese	8.39%
Carolinian	5.16%
Korean	2.58%
Other*	1.29%
Chinese	0.00%
Russian	0.00%
*Other includes Native American (1) and Hispanic (1)	

Table 3: Age Range of Respondents

Age range	% of Respondents
18-25 years	13.55%
26-35 years	28.39%
36-45 years	34.19%
46-55 years	18.06%
56-65 years	5.81%

Table 4: Education level

Education level	% of Respondents
No education	0.65%
Elementary (1-6)	1.29%
Junior High (7-8)	3.23%
High School (9-12)	49.68%
Some College	17.42%
College Degree (undergraduate)	16.13%
Graduate School	10.97%
No education	0.65%

Table 5: Employment Status

No	30.32%
Yes	66.45%
No answer	3.32%

Table 6: Laolao Bay activities

Activity	% of Respondents
Picnic/BBQ	63.23%
Swimming/Snorkeling	59.35%
Fishing	47.10%
Diving	42.58%
Walking/Hiking/Running	34.19%
Camping	33.55%
Beach Clean-up	33.55%
Collecting Herbal Medicines	14.19%
Hunting	12.26%
Mountain Biking	5.16%
Other*	12.26%
*Other activities include: sightseeing, visiting beach, collecting coconuts, riding ATVs, working/monitoring, relaxing/hanging out, farming, collecting shells, and launching boat.	

Table 6: Frequency of visits

Frequency of visits	% of Respondents
1-5 times per year	29.68%
Between 6-10 times per year	12.26%
1-3 times per month	11.61%
1-3 time/week	23.23%
3+ times/week	22.58%
no answer	0.65%

Table 7a and 7b: Environmental Threats to Laolao Bay?

<i>“Do you think there are any problems or threats to the environment in Laolao Bay?”</i>	
Response	% of Respondents
<i>Yes</i>	65.81%
<i>No</i>	20.65%
<i>Not Sure</i>	13.55%

Threat named	% of Respondents
Erosion & Runoff (too much soil going into the ocean)	31.61%
Littering	30.97%
Poorly Maintained Road	17.42%
Illegal Dumping	14.84%
Too Much Fishing	5.81%
Harmful Fishing Practices	5.16%
Irresponsible Diving	3.87%
Illegal Harvesting	2.58%
Driving on the Beach	1.94%
Jungle Burning	1.29%
Too Many Divers	0.65%
Crime/Traffic	6.45%
Other	5.16%
*Other threats include: too much vegetation (2), water quality (2), boats (1), lack of restrooms (2), too few pavilions (1)	

Table 8: Resource Health

Category	Very Healthy	Somewhat Healthy	Somewhat Unhealthy	Very Unhealthy	Don't Know
Number of Fish	26.45%	30.97%	15.48%	2.58%	22.58%
Water Quality (Clarity, visibility)	21.29%	44.52%	23.23%	5.16%	3.87%
Number of sea urchins and sea cucumbers	18.06%	22.58%	17.42%	5.81%	34.84%
Health of Coral	13.55%	19.35%	29.68%	14.19%	20.65%
Turtle Nesting Sites	12.90%	10.32%	10.97%	5.81%	57.42%
Forest/Grasslands	34.84%	32.90%	14.84%	3.23%	12.90%

Table 9: Changes to Laolao Bay

Changes to Laolao Bay	No	Yes	Not sure
More garbage cans	7.74%	87.10%	2.58%
More garbage collections	3.87%	89.68%	3.87%
More pavilions	15.48%	73.55%	8.39%
Paving the road	14.19%	81.94%	2.58%
Improve drainage	6.45%	85.16%	5.81%
Barrier to prevent beach driving	9.03%	85.16%	4.52%
More parking spaces	16.13%	76.13%	5.16%
Pave the dive site parking lot	20.65%	68.39%	8.39%

Tables 10a and 10b: Knowledge of Legal and Illegal Activities

Knowledge of Legal Activities				
	SCUBA Diving	Barbecuing	Fishing with Rod & Reel	Talakhaya (Throw Net) Fishing
Not Sure	5.16%	1.29%	5.16%	14.19%
Incorrect	1.29%	5.81%	10.32%	26.45%
Correct	92.26%	90.32%	83.32%	58.06%

Knowledge of Illegal Activities							
	SCUBA Spearfishing	Gillnet Fishing	Collecting Trochus	Collecting Sea Cucumbers	Driving on Beach	Burning	Trash Dumping

Not Sure	18.06%	16.13%	10.97%	13.55%	7.74%	5.16%	1.94%
Incorrect	10.97%	10.32%	8.39%	5.16%	8.39%	5.81%	4.52%
Correct	69.68%	72.26%	79.35%	80%	82.58%	87.74%	92.26%

Table 11: Respondents' observation of activities in Laolao Bay

Legal (permitted) Activities	
SCUBA diving	87.74%
Barbequing	85.16%
Fishing with rod & reel	76.13%
Talaya fishing (throw net)	69.68%
Illegal (not permitted) Activities	
Driving on the beach	65.81%
Divers/Snorkelers standing on or breaking live coral	39.35%
Trash dumping	27.74%
Burning	24.52%
Gill net fishing	20.65%
Collecting & harvesting trochus	17.42%
SCUBA spear fishing	16.77%
Collecting & harvesting sea cucumbers	11.61%

Table 12a: Reasons for dumping/littering in Laolao Bay

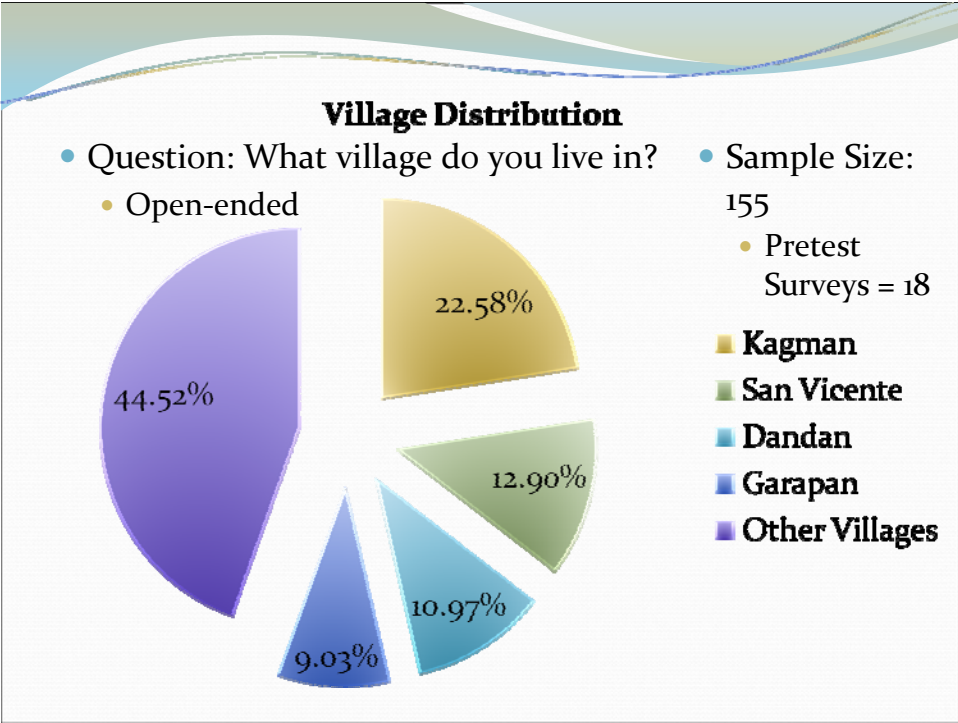
	Strong Reason	Sort of a reason	Not a reason	Don't know
The transfer station is too far	32.90%	16.77%	34.19%	14.19%
There is no home trash pickup	29.68%	21.94%	32.26%	11.61%
It is easy to do- not likely to get caught	38.06%	21.94%	24.52%	12.26%
They don't know it's illegal	13.55%	14.19%	61.29%	6.45%
They don't know it can harm the environment & turtles	16.77%	18.06%	49.68%	11.61%
There aren't enough trash bins	39.35%	20.65%	29.68%	5.16%
Trash bins aren't emptied often enough	30.32%	24.52%	33.55%	6.45%
They don't care	70.32%	12.90%	9.68%	3.87%
People are lazy	77.42%	9.03%	7.74%	2.58%
Other reasons included: bigger trash cans needed, more enforcement needed, and people are stupid				

Table 12b: Reasons for Beach Driving

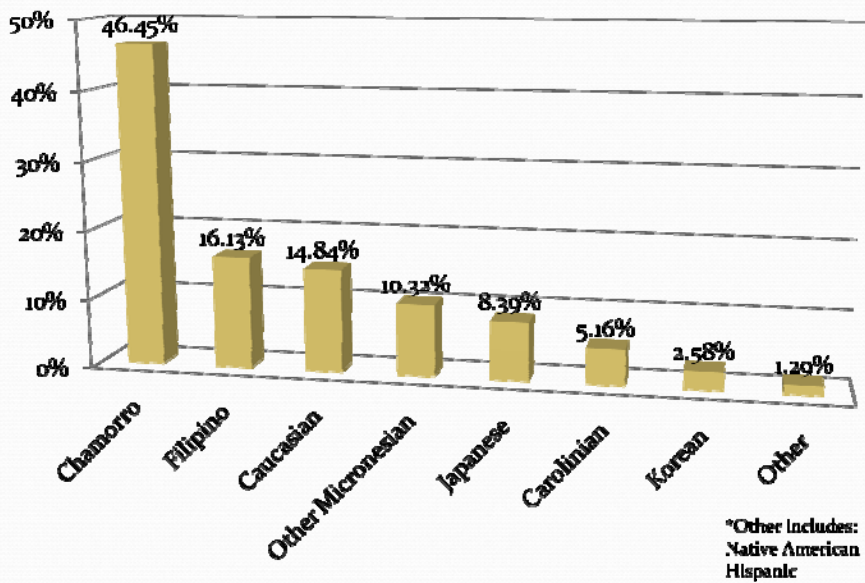
	Strong Reason	Somewhat of a reason	Not a reason	Don't know
There are no barricades	53.55%	12.90%	14.84%	5.81%
They think it's fun	35.48%	18.71%	21.94%	7.10%
Hard to carry supplies and BBQ equipment	40.00%	22.58%	20.00%	2.58%
Looking for seclusion	40.65%	19.35%	20.00%	5.81%
It is easy to do-not likely to get caught	36.13%	21.94%	20.65%	4.52%
They don't know its illegal	22.58%	18.71%	38.06%	5.81%
They don't know it can harm the environment & turtles	27.10%	18.06%	32.90%	7.10%
They don't care	58.71%	12.26%	11.61%	3.87%
People are lazy	61.29%	11.61%	9.68%	3.87%
Other includes: need more signage and outreach (7), lack of access to fishing and camping (2), and people are crazy (1)				

Table 13: Management of Laolao Bay

Management of:	Effective	Somewhat Effective	Ineffective	Don't Know	No answer
Fishing	21.29%	20.00%	30.32%	23.87%	3.87%
Beach Use	21.94%	30.32%	30.32%	13.55%	3.87%
Controlling Litter or dumping	14.84%	16.13%	57.42%	7.74%	3.87%
Controlling Illegal burning	16.77%	10.97%	56.77%	11.61%	3.87%
Road Maintenance	9.03%	12.26%	60.00%	5.16%	13.55%*



Represented Ethnicities

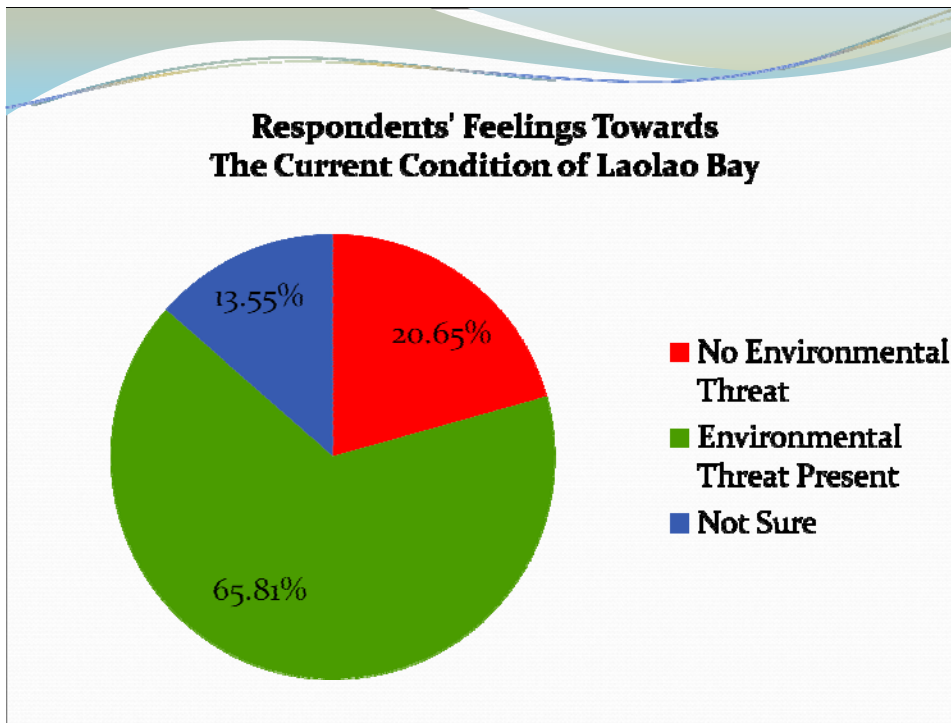


Activity	% of Respondents
Picnic/BBQ	63.23%
Swimming/Snorkeling	59.35%
Fishing	47.10%
Diving	42.58%
Walking/Hiking/Running	34.19%
Camping	33.55%
Beach Clean-up	33.55%
Collecting Herbal Medicines	14.19%
Hunting	12.26%
Mountain Biking	5.16%
Other*	12.26%

*Other activities include: sightseeing, visiting beach, collecting coconuts, riding ATVs, working/monitoring, relaxing/hanging out, farming, collecting shells, and launching boat.

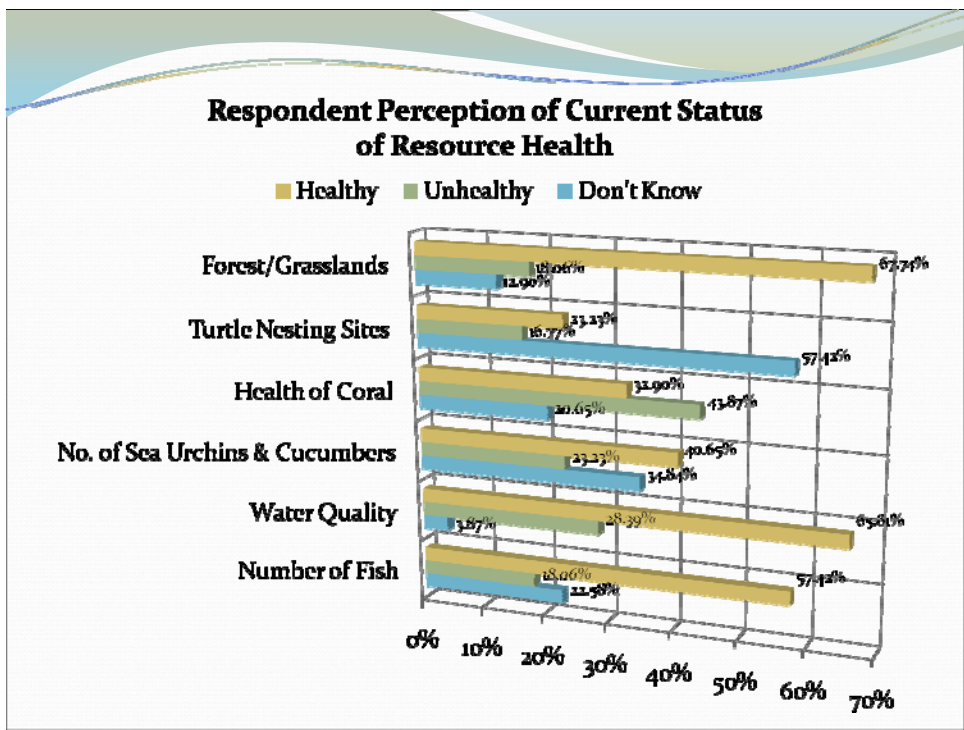
Reason	% of Respondents
Good Fishing Grounds	25.81%
Secluded & Peaceful	20.65%
Beautiful Scenery	18.71%
Good Place for Snorkeling & Diving	16.13%
Beauty & Diversity of Marine Life	12.90%
Good for Kids	8.39%
Good Place to BBQ	5.16%
Accessibility for Diving	5.16%
Less Crowded with Tourtists	3.23%
Alternative dive site when other sites are too rough	3.23%
Other	12.26%

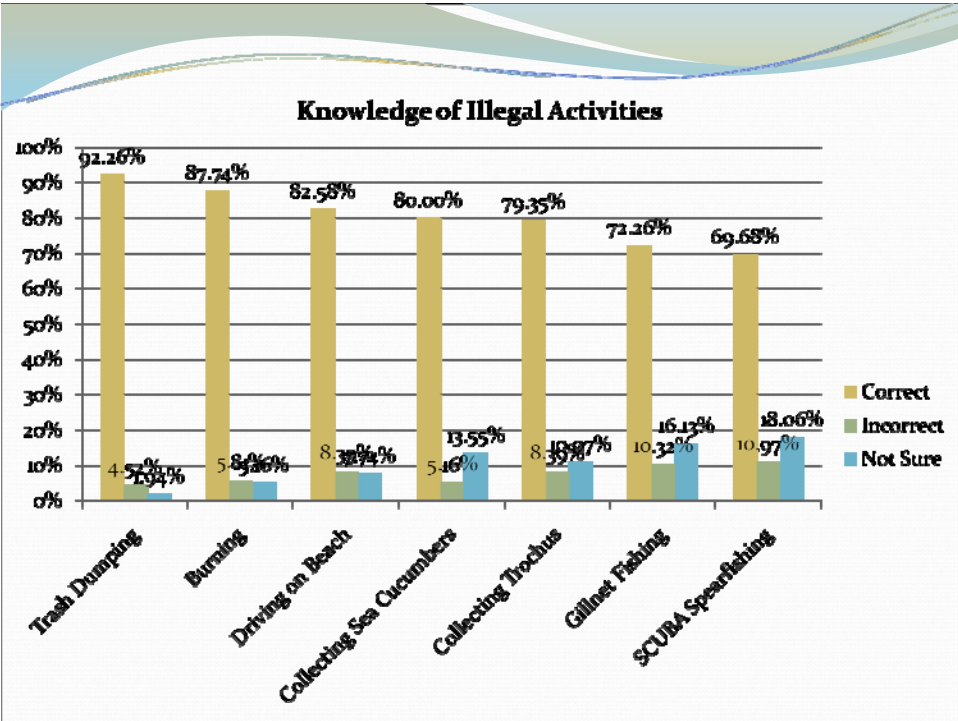
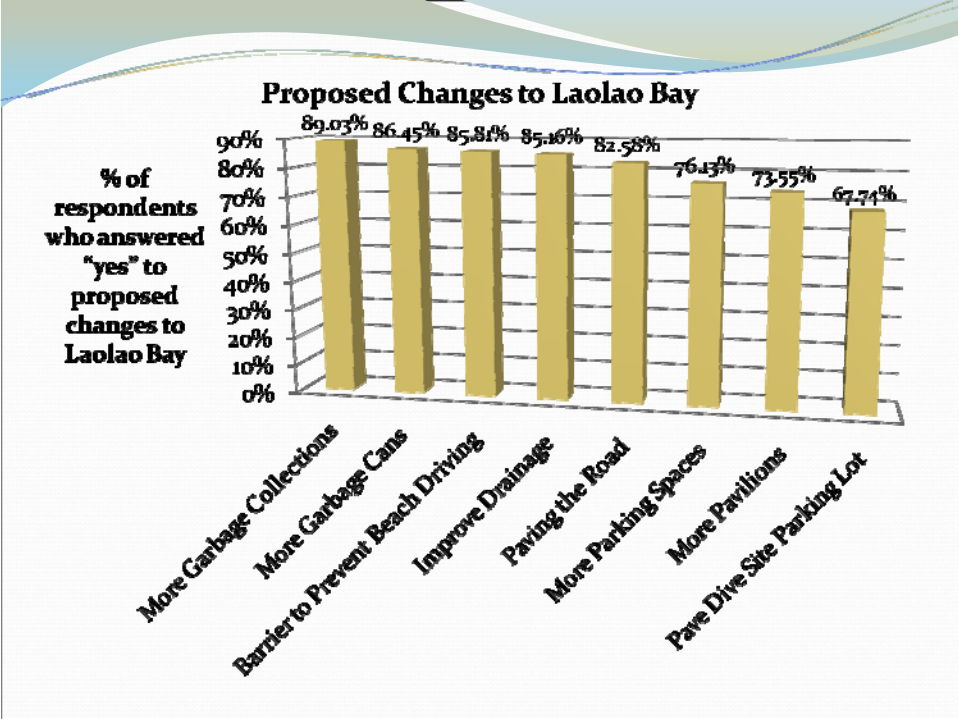
*Other reasons include: work, coconuts, camping, fresh/shade, no dogs, weekend getaway, shells, close to home, & feeding fish.

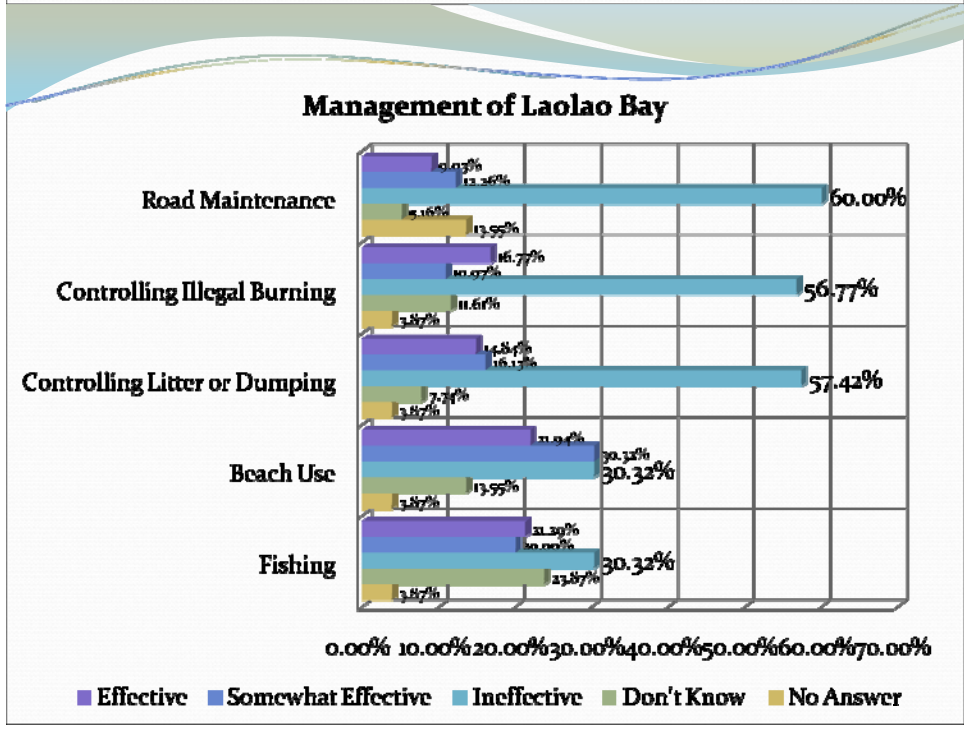
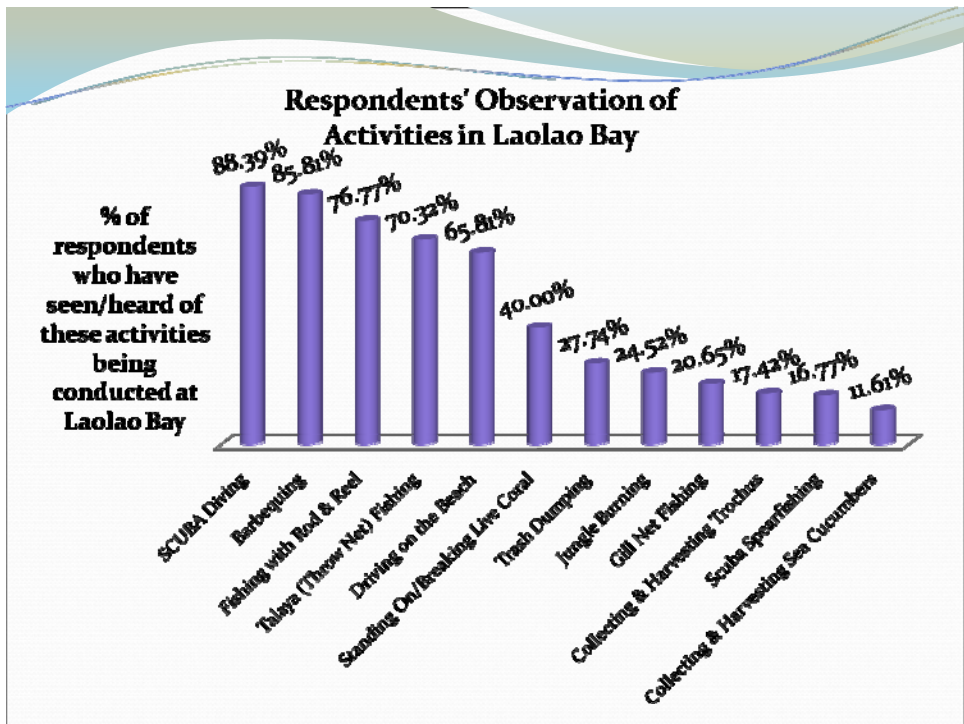


Threat	% of Respondents
Erosion & Runoff (too much soil going into the ocean)	31.61%
Littering	30.97%
Poorly Maintained Road	17.42%
Illegal Dumping	14.84%
Too Much Fishing	5.81%
Harmful Fishing Practices	5.16%
Irresponsible Diving	3.87%
Illegal Harvesting	2.58%
Driving on the Beach	1.94%
Jungle Burning	1.29%
Too Many Divers	0.65%
Crime/Traffic	6.45%
Other	5.16%

*Other threats include: too much vegetation (2), water quality (2), boats (1), lack of restrooms (2), too few pavilions (1)







Management Suggestion	# of Respondents
Clean up/more trash cans & collection	46
Fix road/make safer	45
More enforcement	28
More amenities (benches, showers, bbq pits, pala palas)	27
More education & signs	18
More restrooms	11
Better Management	9
Stop beach driving	6
More security	5
More parking	5
Fix drainage	5
Improve Water Quality	3
Improve information for Divers	2

LAOLAO BAY SURVEY RESULTS



What is socioeconomic?

The study of the relationship between human behavior and economics.

Purpose of Survey:

To understand what activities visitors and residents are engaging in when visiting Laolao Bay, including their feelings and attitudes towards the area.

Respondents AT-A-GLANCE

155 people were surveyed, of those:

- 46.45 % were Chamorro
- 16.13% were Filipino
- 14.84% were Caucasian
- 10.32% were Other Micronesian
- 8.39% were Japanese
- 5.16% were Carolinian
- 2.58% were Korean
- And 1.29% were Other

Average age of participant: 38 years old

Funding for this survey was provided by The National Oceanic and Atmospheric Administration through the CNMI Coral Reef Initiative using the SEM-Pasifika Socioeconomic Monitoring Guidelines for Coastal Managers in Pacific Island Countries.

Team Leader: Kathleen Herrmann

NOAA Advisor: Christy Loper

Team: Yubert Alepuyo, Janice Castro, Lisa Eller, John Iguel, Carlos Ketebengang, Brooke Nevitt, Olivia Tebuteb

HIGHLIGHTS FROM THE SURVEY:

Why Laolao Bay?

The top three reasons people said they visit the bay:

- Good Fishing Grounds (25.81%)
- Secluded & Peaceful (20.6%)
- Beautiful Scenery (18.71%)

Threats to Laolao Bay

65.81% of respondents believed Laolao Bay faces environmental threats.

The top three threats named by respondents were:

- Erosion & Runoff (31.61%)
(too much soil going into the ocean)
- Littering (30.97 %)
- Poorly Maintained Road (17.42%)

Changes to Laolao Bay

- More than 85% of respondents would like to see more garbage cans and garbage collection.
- More than 80% of respondents would like to see the road paved, drainages built and barriers constructed to prevent beach driving.
- More than 70% of respondents would like to see more parking spaces and more pavilions.

Observations of activities at Laolao Bay

- While 82% of respondents know driving on the beach is illegal, 65.81% of respondents said they have seen or heard of people driving on the beach.
- 11 to 20% of respondents said they have seen or heard of people engaging in restricted fishing practices such as scuba spearfishing, gill net fishing and collecting and harvesting trochus and sea cucumbers.

Updated: October 21, 2009

APPENDIX 3: Survey Cost & Budget

Budget Item	Cost
Community Meeting Catering	\$1,350.00
Homeowner Focus Group	
Refreshments	\$150.00
Survey team BBQ Food & Refreshments	\$150.00
Final Report Printing	\$500.00
Survey Team Gift Cards (7 @ \$50 each)	\$350.00
Total	\$2,500.00

Actual Costs Spent to Date:

1st Installment from SPREP	1250.00
Kagman Community Meeting	-653.05
Survey team BBQ & Refreshments	-153.27
Survey team BBQ & Refreshments	-28.82
Survey team BBQ & Refreshments	-26.70
Survey team BBQ & Refreshments	-40.00
Remaining from 1st Installment	348.16

APPENDIX 4: Survey Team

Team Leader: Kathleen Herrmann

Field Team Leader: John Iguel

Team 1: Yubert Alepuyo/Olivia Tebuteb

Team 2: Carlos Ketebengang /Janice Castro

Team 3: John Iguel /Lisa Eller

APPENDIX 5: Survey Results Handout

