The **BALANCED** Project

Baseline Survey (2011) for Population, Health and Environment Scale-up Project in the Philippines

Richard B. Pollnac & Cherie A. Wagner

March 2012

Cover (upper) Photo Caption: Coming Ashore in the Visayas
Cover Photo Credit: Kira Decanay

Cover (lower) Photo Caption: Sari-sari store, Humay-Humay, (Ubay)
Cover Photo Credit: Cherie Wagner

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INTRODUCTION

The United States Agency for International Development/Philippines (USAID/Philippines) provided funding to the USAID Washington-funded BALANCED (*Building Actors and Leaders for Advancing Community Excellence in Development)* Project to support results-oriented population, health and environment (PHE) field activities in biodiversity-rich bioregions of the Philippines over the period from December 2010 – August 2013. The Coastal Resources Center (CRC) at the University of Rhode Island (URI), with PATH Foundation Philippines Inc. (PFPI), and Conservation International (CI)/Philippines, are the implementing agents for the BALANCED-Philippines Project.

BALANCED-Philippines is integrating a PHE strategy to advance integrated family planning (FP) and coastal resource management (CRM) activities in two key bioregions within the country where demographic factors threaten the diversity and productivity of marine ecosystems and the sustainability of conservation gains—the Danajon Bank (DB) and Verde Island Passage (VIP).

The goal of the BALANCED-Philippines Project is to build the leadership and implementation capacities of national and local governments and stakeholders to respond in an integrated manner to interrelated population, health and marine environmental issues. The BALANCED-Philippines goal will be achieved through five intermediate results (IRs):

IR1 - Improved access to family planning/reproductive health services in key bioregions (Office of Health/OH)

IR2 - Increased community awareness and support of family planning and conservation as a means to improve health, food security and natural resources (OH)

IR3 - Increased policy makers' commitment to family planning/reproductive health (FP/RH) services, CRM and integrated policies (OH & Office of Energy and Environment/OEE)

IR4 - Improved governance capacities of provincial and municipal local government units (LGUs) in the VIP and Danajon Bank marine ecosystems (OEE)

IR5. - Increased incentives for coastal and marine conservation among coastal fisher households (OEE)

With support from USAID/Philippines, family planning activities are being implemented in VIP sites where ongoing coastal/fisheries management activities have yet to be integrated with family planning/reproductive health (***herein called "new" sites***) and VIP and Danajon Bank bioregions to improve and maintain PHE initiatives that were implemented by PFPI under previous PHE projects ***(herein referred to as "maintenance" sites)***. CRM activities will be strengthened in select BALANCED-Philippines sites. In order to assess progress toward meeting BALANCED-Philippines Project goals and objectives, a baseline behavior survey was conducted in select project sites in 2011.

The purpose of this report is to summarize the findings from the baseline survey for future evaluation of a sample of communities included in the scale-up of PHE activities in the Philippines. The baseline sample includes communities involved in Phase I projects (maintenance sites) as well as communities in the proposed expansion area. This report is based on interviews conducted with village residents.

ANALYSIS

Sample:

Data is derived from 20 randomly selected villages, which were involved in the earlier project ("maintenance" communities) and 20 non-maintenance ("new") villages within 12 and nine municipalities, respectively, in the central Philippines (Regions IV-A, IV-B, and VII). Distribution of samples by municipality can be found in Table 1. Data for the sample was collected from July through October 2011. A random sample of 20 males and 20 females was interviewed in each village.

Table 1. Distribution of sample by municipality			
Municipality	**New Site**	**Maintenance Site**	**Total**
BOHOL			
1 Tubigon	0	82	82
2 Clarin	0	40	40
3 Inabanga	0	81	81
4 Buenavista	0	81	81
5 Getafe	0	80	80
6 Talibon	0	80	80
7 Bien Unido	0	81	81
8 Ubay	0	80	80
9 CP Garcia	0	80	80
BATANGAS			
10 San Juan	120	0	120
11 Lobo	120	0	120
12 Mabini	40	0	40
13 Batangas City	0	40	40
14 Tingloy	80	0	80
15 Nasugbo	120	0	120
16 Calatagan	120	0	120
OCCIDENTAL MINDORO			
17 Lubang	80	0	80
18 Looc	40	0	40
19 Paluan	80	0	80
ORIENTAL MINDORO			
20 San Teodoro	0	40	40
21 Baco	0	40	40
Total	**800**	**805**	**1,605**

Table 2. Distribution of selected demographic variables				
Variable	**Maintenance Site**	**N**	**Mean**	**Standard Deviation**
Age	New Site	800	42.277	12.467
	Maintenance Site	805	43.674	13.499
Years in Barangay	New Site	800	34.390	17.260
	Maintenance Site	805	34.800	17.885
Education	New Site	800	7.281	3.810
	Maintenance Site	805	8.408	35.137
Household Size	New Site	800	5.129	2.213
	Maintenance Site	805	5.242	2.385

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Sample Characteristics:

Table 2 includes selected demographic characteristics for the maintenance and new sites. None of the differences are statistically significant (all p>0.01)[1].

Red=Maintenance Sites; Green=New Sites ; Numbers identify locations of municipalities in Table 1

Figure 1. Location of municipalities in the sample

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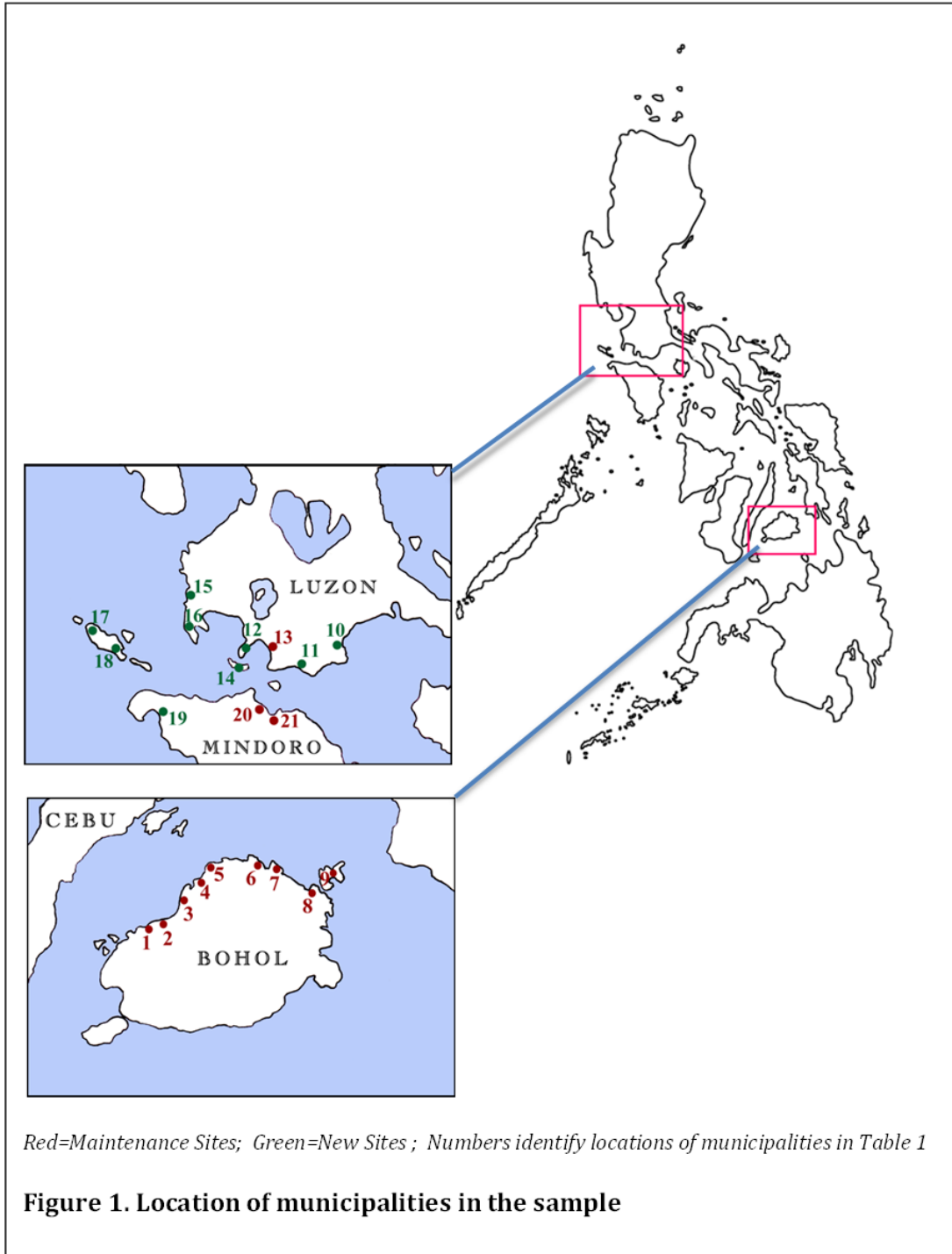
[1] With a sample over 1000 setting alpha at 0.01 is more appropriate than 0.05. With alpha=0.05 extremely small, practically insignificant differences would achieve statistical significance (Ziliak and McCloskey 2008).

Percent distribution of marital status in the sample can be found in Table 3. There is no difference between the maintenance and new sites (χ^2=5.047, df = 3, p=0.168).

Table 3. % distribution of marital status				
	New Site	**Maintenance**	**Total**	**N**
Single	8.312	6.948	7.625	122.000
Married	78.212	77.916	78.063	1,249.000
Partnered	7.809	6.948	7.375	118.000
Divorced/Separated/Widowed	5.668	8.189	6.938	111.000
Total	**100.000**	**100.000**	**100.000**	
N	**794.000**	**806.000**		**1,600.000**

Occupations:

Like most rural communities in developing regions, there is a great deal of occupational multiplicity. A total of 301 sources of livelihood were reported by villagers (see Appendix I), with some households reporting up to six sources (Table 4). Table 4 indicates that 27% of respondents came from households with one livelihood source, 39% from households with two, and 26% from households with three. New sites had a mean of 2.2 sources of livelihood and maintenance sites had a mean of 2.1. None of these differences are statistically significant.

Table 4. Number of sources of livelihood				
Number	**New Site**	**Maintenance**	**Total**	**N**
0	0.376	0.124	0.249	4
1	23.559	29.616	26.604	427
2	39.724	37.423	38.567	619
3	26.316	25.527	25.919	416
4	8.772	5.700	7.227	116
5	0.752	1.363	1.059	17
6	0.501	0.248	0.374	6
Total	**100.000**	**100.000**	**100.000**	
N	**798.000**	**807.000**		**1,605**

Distribution of relative high frequency (>3% for total sample) occupations ranked as either first or second in importance for household livelihood sources can be found in Table 5. Tables such as Table 5 have a special interpretation. For example, the Table shows that among the 798 respondents from the new sites, 36.5% indicated fishing as their first or second most important occupation. In the maintenance site villages, 38.5% ranked fishing as first or second. As would be expected in rural, coastal communities in the Philippines, highest frequency primary (first or second in importance) sources of household livelihood in order of relative importance are fishing, farming, barangay employee, fish vendor and laborer. With regard to inter-site type, statistically significant differences, new sites tend to have more farmers, animal-raisers, fish vendors, tricycle drivers and laborers, while the

Table 5. Distribution of relatively high frequency		
Occupation	**Site Type**	**%**
Fishing	New	36.5
	Maintenance	38.5
Farming*	New	22.2
	Maintenance	11.9
Sari-sari Store*	New	02.9
	Maintenance	06.3
Raising Animals*	New	07.5
	Maintenance	02.5
Vending	New	05.0
	Maintenance	02.6
Tricycle Driver*	New	05.9
	Maintenance	03.0
Fish Vendor*	New	08.9
	Maintenance	04.7
Remittance	New	02.4
	Maintenance	02.9
Barangay Employee	New	07.5
	Maintenance	06.2
Carpenter	New	04.3
	Maintenance	02.9
Laborer*	New	08.3
	Maintenance	04.2
Seaweed Farming*	New	00.0
	Maintenance	08.9
New Site N=798, Maint. Site N=807 *=p<0.01 (Chi-Sq. Test)		

maintenance sites are more likely to have more sari-sari store owners and seaweed farm operators.

Material Style of Life:
Material style of life (MSL) is used as a substitute for income since collection of reliable income data is extremely difficult, if not impossible, among small-scale producers who practice multiple occupations. Reliable income data is also difficult to obtain from small-scale fishermen due to extreme day-to-day variations in harvest. The MSL scale is derived from an analysis of 33 household attributes. Appendix II includes distributions of all 33 attributes across new and maintenance sites.

Although the Tables containing the 33 individual attributes in Appendix II are informative, a more efficient way to examine MSL is to create scales through the use of principal component analysis (PCA). As a first step in the analysis, the 33 items were analyzed using PCA. The scree test was used to select the number of components to be rotated (varimax). Items with low component loadings (<0.40 on all components) were removed from the data set and the PCA was run again using the same procedures. This was continued until all items had at least a loading of 0.40 on most components. This procedure resulted in four components comprising 25 items (Table 6). Items associated with each component are shaded in Table 6.

Table 6. Principal component analysis of MSL items				
	Low Structure	High	Medium Items	High Structure
Nipa Roof	-0.764	-0.148	-0.092	-0.054
Tin Roof	0.745	-0.062	0.236	0.027
Bamboo Wall	-0.649	-0.142	-0.153	-0.037
Bamboo Floor	-0.517	-0.069	-0.118	-0.404
Computer	0.025	0.684	0.159	0.015
Tile Floor	0.022	0.657	0.059	0.148
Tile Roof	0.000	0.540	-0.163	0.081
Modern Stove	0.101	0.538	0.338	0.187
Generator	0.052	0.535	0.044	-0.133
Electricity	0.260	-0.056	0.648	-0.024
TV	0.229	0.129	0.640	0.114
Indoor Toilet	0.246	0.036	0.595	-0.014
Cell Phone	0.033	-0.030	0.586	0.031
Cupboard	0.055	0.254	0.533	0.125
Living room Set	0.114	0.399	0.422	0.238
Display Cabinet	0.032	0.240	0.492	0.179
Refrigerator	0.191	0.468	0.400	0.155
Chairs	0.091	-0.104	0.449	0.060
Radio	0.008	0.156	0.494	-0.019
Water Piped	0.232	0.253	0.342	0.054
Wood Wall	0.180	0.011	0.008	-0.702
Cement Wall	0.431	0.036	0.288	0.580
Wood Window	-0.190	-0.269	0.050	-0.575
Glass Window	0.300	0.279	0.302	0.486
Cement Floor	0.430	-0.202	0.339	0.470
% variance	10.675	10.523	14.073	8.065

Most items having their highest loadings (high negative) on component 1 are structural items associated with traditional houses—houses commonly inhabited by the poor. Some of the other structural items loading highly (high positive) are associated with more modern houses. Two of these items have higher loadings on component 4. Component 1 is therefore identified as a *Low Structure* component. The negative loadings complicate matters since a high negative score associated with the component would be a "high" score on the component, so the signs on the scores will be reflected (e.g., negative turned to positive and vice versa) to ease interpretation of further analyses. The items loading most highly on component 2 definitely indicate a highly modern structure and household items in the Philippine village context. Component 2 will be simply labeled as *High*. Items loading highest on component 3 are all household items—no structural items. Piped water in the home manifests its highest

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loading on this component, but it did not reach the 0.40 loading level. Nevertheless, it was kept in the analysis because of its importance as an indicator. Items on component 3 tend to be found in the relatively more wealthy (more like "middle class") households in rural villages. This component will be called *Medium Items*. Finally, items loading most highly on component 4 are structural items. Items associated with less developed structures have negative loadings and those associated with more modern houses have positive loadings. A high score on this component indicates a relatively modern house structure in the Philippine village context, so it will be labeled as *High Structure*.

Factor scores for each individual in the sample were calculated as a measure of MSL. These factor scores are based on a sum of the items weighted in accordance with the component scores and standardized with a mean of 0.0 and a standard deviation of 1.0. Hence, where items are shared (relatively high scores on more than one component), they will contribute proportionally to their different components. Since rotation was orthogonal (varimax), the factor scores manifest 0.00 correlations with each other and provide useful measures of different dimensions of MSL. Comparison of these MSL scores across new and maintenance sites can be found in Table 7. Table 7 indicates that less modern houses (in terms of structure) are more likely to be found in the maintenance sites. Also, the maintenance sites tend to score lower on the High and Medium Items MSL components. The analysis in Table 7 indicates a somewhat lower standard of living in the maintenance sites.

Table 7. MSL scores across maintenance and new sites			
Variable	Site Type	Mean	Standard Deviation
Low Structure*	New	-0.203	0.925
	Maintenance	0.199	1.030
High*	New	0.167	1.178
	Maintenance	-0.164	0.753
Medium Items*	New	0.093	0.982
	Maintenance	-0.091	1.009
High Structure	New	0.058	1.050
	Maintenance	-0.057	0.946
*=p<0.01 New Site N=769 Mint. Site N=786 (N reduced due to missing data on individual items)			

Perceived Changes in Income and Resources:

Most households in the coastal villages covered in this report depend on the productivity of the marine environment for their livelihoods. Many of the fishing households also farm and vice versa. Earnings from fishing (or the product itself) can be used to obtain farm products and vice versa. Hence, the health of the marine environment contributes to the overall well-being of the community and its members practicing other occupations, which provide services and products to the primary producers (fishers and farmers).

The method used to measure the indicators of change in income and status of the marine resources takes advantage of the human ability to make graded ordinal judgments concerning both subjective and objective phenomena. Human behavior is based on graded ordinal judgments, not simply a dichotomous judgment of present or absent. This level of measurement allows one to make more refined judgments concerning perceived changes, and permits the use of more powerful statistical techniques to determine differences between communities. The technique chosen for use in this study is a visual, self-anchoring, ladder-like scale that allows for making finer ordinal judgments, places less demand on informant memory, and can be administered more rapidly (Pollnac and Crawford 2000).

Using this technique, the respondent is shown a ladder-like diagram with 15 steps. The respondent is told that the first step represents the worst possible situation. For example, with respect to income, the respondent is told that the first step is "You have no income whatsoever and do not have enough money to buy food or shelter." The highest step is described as "You are rich. You have enough money to buy whatever you want or need." The respondent is then asked their situation five years ago and where they are today. With respect to condition of the resource, the respondent is told that the first step is "There are little or no fish in the sea. One can go out fishing for days and catch nothing." The highest step is described as "There are so many fish in the sea that a fisherman can go out fishing for a very short time and fill his boat with the fish he wants." The respondent is then asked the condition of the resource five years ago and where it is today. The perceived change is the difference between today and five years ago. These types of measures have been found to be valuable in determining perceived changes. In this report, we will refer to these scales as "self-anchoring ladder scales." Results of the analysis of perceived changes in new and maintenance sites can be found in Table 8.

Table 8 indicates that while the new sites perceived a very slight positive change in income, respondents from the maintenance sites perceived a decrease in income (only approximately a 1/4th scale step). With regard to the fishery resource, individuals in the new sites

Table 8. Perceived changes in past five years regarding income and condition of the marine resources				
Variable	Site Type	N	Mean	Standard Deviation
Income Change*	New	798.000	0.018	1.819
	Maintenance	807.000	-0.284	1.873
Resource Change**	New	795.000	-0.338	2.456
	Maintenance	806.000	-1.458	2.833
*p<0.01 **p<0.001 based on t-test				

perceived a small decrease (approximately a 1/3rd scale step) while the maintenance site inhabitants reported a negative change of about one and one-half scale step. Both of these differences are statistically significant.

Water Sources and Waste Disposal:

Water source – Locations of piped water in new and maintenance sites can be found in Table 9. Table 9 indicates that new sites are more likely to have piped water in the house and less likely to have it in a public space. Respondents reported up to three sources of water. These sources can be found in Table 10. Inferential statistics are not calculated for the differences indicated in

Table 9. % distribution of piped water locations				
	New Site	Maintenance Site	Total	N
None	0.126	10.087	5.131	82.000
Public	44.654	52.055	48.373	773.000
Yard	19.748	19.303	19.524	312.000
In House	35.472	18.555	26.971	431.000
Total	100.000	100.000	100.000	
N	795.000	803.000		1,598.000
χ^2=124.2, df=3, p<0.001				

Table 10 due to the fact that the very small cell frequencies would result in untrustworthy probabilities based on a chi-square test.

As a means of coping with this problem, all low frequency sources with regard to the first water source mentioned were converted to "other" and another tabular analysis was performed. The results of this analysis are in Table 11. Table 11 clearly demonstrates that

maintenance sites are more likely to use a protected well or rainwater catchment (cistern) and less likely to use a developed spring source than the new sites.

Table 10. Distribution of water sources mentioned				
First water source mentioned				
	New Site%	**Maintenance Site%**	**Total**	**N**
Protected Well	65.903	74.172	69.955	1,078
Unprotected Well	0.254	1.325	0.779	12
Developed Spring	32.952	5.695	19.598	302
Undeveloped Spring	0.254	0.795	0.519	8
River/Stream	0.254	0.000	0.130	2
Dam	0.254	0.265	0.260	4
Rainwater Catchment	0.000	15.364	7.528	116
Tanker truck/Peddler	0.000	1.457	0.714	11
Bottled Water	0.127	0.927	0.519	8
Total	**100.000**	**100.000**	**100.000**	
N	**786.000**	**755.000**		**1,541**
Second water source mentioned				
	New Site%	**Maintenance Site%**	**Total**	**N**
Protected Well	4.082	0.000	1.434	4
Unprotected Well	1.020	0.552	0.717	2
Developed Spring	13.265	1.105	5.376	15
Undeveloped Spring	1.020	0.552	0.717	2
River/Stream	1.020	0.000	0.358	1
Rainwater Catchment	1.020	15.470	10.394	29
Tanker truck/Peddler	0.000	8.840	5.735	16
Bottled Water	78.571	73.481	75.269	210
Total	**100.000**	**100.000**	**100.000**	
N	**98.000**	**181.000**		**279.000**
Third water source mentioned				
	Maintenance Site	**Total**	**N**	
Tanker truck/Peddler	12.500	12.500	1	
Bottled Water	87.500	87.500	7	
Total	**100.000**	**100.000**		
N	**8.000**		**8.000**	

Table 11. % distribution of high frequency water sources mentioned first by respondents				
	New Site	**Maintenance Site**	**Total**	**N**
Protected Well	65.903	74.172	69.955	1,078
Developed Spring	32.952	5.695	19.598	302
Rainwater Catchment	0.000	15.364	7.528	116
Other	1.145	4.768	2.920	45
Total	**100.0**	**100.0**	**100.000**	
N	**786**	**755**		**1,541**
χ^2=287.8, df=3, p<0.001				

Toilet facilities – Table 12 indicates percent distribution of toilet facilities across maintenance and new sites. Once again, very small cell frequencies inhibited use of inferential statistics, so low frequency facilities were grouped as "other" and the tabular analysis was repeated. Results of this analysis are in Table 13.

Table 12. % distribution of toilet facilities				
	New Site	Maintenance Site	Total	N
No response	0.752	0.372	0.561	9
Private Flush Toilet	74.311	58.488	66.355	1,065
Shared Flush Toilet	18.797	12.268	15.514	249
Closed Pit	0.877	1.239	1.059	17
Open Pit	1.504	0.867	1.184	19
Drop/Overhang	0.251	1.487	0.872	14
No Facility/Bush/Field	2.882	17.224	10.093	162
Sea	0.125	5.452	2.804	45
Anywhere	0.125	0.620	0.374	6
Relative/neighbor House	0.000	0.743	0.374	6
Bury in Lined Pit (Sack)	0.000	0.124	0.062	1
Mangrove Area	0.125	1.115	0.623	10
Forest	0.251	0.000	0.125	2
Total	**100.0**	**100.0**	**100.0**	
N	**798.0**	**807.0**		**1,605**

Table 13 indicates that the maintenance sites have a lower percentage of private flush toilets and a higher percentage of use of bush, field, sea or other types of facilities.

Table 13. % distribution of frequently reported toilet facilities				
	New Site	Maintenance Site	Total	N
Private Flush Toilet	74.874	58.706	66.729	1,065
Shared Flush Toilet	18.939	12.313	15.602	249
None/bush/field	2.904	17.289	10.150	162
Sea	0.126	5.473	2.820	45
Other	3.157	6.219	4.699	75
Total	**100.00**	**100.0**	**100.0**	
N	**792**	**804**		**1,596**
$\chi^2 = 156.6$, df = 4, p<0.001				

Waste disposal – Table 14 presents percent distribution of non-human waste disposal techniques. Categories in Table 14 are not mutually exclusive—respondents report using more than one garbage disposal technique. With regard to inter-site type statistically significant differences, maintenance sites are more likely to compost garbage, put it in a communal garbage pit or dump it in another location. New sites are more likely to use non-segregated municipal garbage disposal or feed it to animals.

Reproductive Health:

Distribution of responses to reproductive health questions D1a through D13a (see Appendix III) are in Tables 15 and 16. Table 15 indicates that the preferred number of children, number of pregnancies and number of births are greater in the maintenance site villages. Nevertheless, a greater percentage of respondents (females or male partners) from the maintenance villages who reported pregnancy in the past year, planned for that pregnancy (Alpha p<0.05 in this case due to smaller sample size).

Table 16 indicates that a slightly smaller proportion of respondents at the new sites report ever having sex. Finally, a larger proportion of respondents at the maintenance sites report current use of contraceptives.

Table 14. % distribution of waste disposal methods		
Variable	**Site**	**%**
Garbage Burned	New	62.7
	Maintenance	57.5
Garbage Composted*	New	47.4
	Maintenance	58.1
Communal Garbage Pit*	New	11.0
	Maintenance	17.7
Municipal Garbage Segregated	New	14.4
	Maintenance	17.1
Municipal Garbage Non-Segregated*	New	19.4
	Maintenance	05.1
Garbage Fed to Animals*	New	04.9
	Maintenance	02.2
Dump Garbage* (other)	New	05.5
	Maintenance	10.5
New site N=798, Maint. Site N=807 *=p<0.01 Chi-Sq. tests		

Percent distribution of birth control methods reported is found in Tables 17 through 19. Table 17 indicates that of the methods currently used, pills are the most frequent, followed by condoms and intrauterine device (IUD). The rest manifest relatively low percentages of use. With regard to this table, inferential statistics would be unreliable due to low cell frequencies; hence low frequency methods (withdrawal, ligation and injection) were removed

Table 15. Distribution of responses to reproductive health questions A				
Variable	**Site**	**N**	**Value^A**	**Standard Deviation**
Been Pregnant	New	796	90.7	
	Maintenance	807	91.7	
Plan Pregnancy	New	722	72.7	
	Maintenance	739	72.4	
Preferred Number of Children**	New	794	3.372	1.835
	Maintenance	790	3.992	2.385
Number of Pregnancies**	New	399	3.962	2.547
	Maintenance	403	4.635	3.028
Number of Births**	New	400	3.660	2.409
	Maintenance	403	4.208	2.771
Pregnant in last year	New	795	07.5	
	Maintenance	806	10.7	
Plan Last Pregnancy*	New	62	51.6	
	Maintenance	87	69.0	
^{A}% or mean, as appropriate **p<0.01 *p<0.05				

from the tabular analysis and we find that the differences between the new and maintenance site villages are statistically significant (χ^2=22.6, df = 3, p<0.001).

Table 16. Distribution of responses to reproductive health questions B				
Variable	**Site**	**N**	**Value**[A]	**Standard Deviation**
Breast feed last child	New	372	88.7	
	Maintenance	376	92.8	
Duration of Breastfeeding	New	371	15.662	11.008
	Maintenance	376	16.662	13.075
Ever Have Sex**	New	797	95.6	
	Maintenance	804	98.0	
Age of First Sex	New	748	20.813	5.625
	Maintenance	778	20.839	4.675
Currently Use Contraceptive**	New	761	19.8	
	Maintenance	786	25.4	
Use Contraceptive 1st time	New	762	13.6	
	Maintenance	790	11.1	
Use Contraceptive Last Time	New	761	47.3	
	Maintenance	790	42.8	
Knows STD	New	797	40.7	
	Maintenance	807	35.3	
Used STD Preventative Last Time	New	760	03.0	
	Maintenance	791	03.0	
[A]% or mean, as appropriate **p<0.01				

Table 17. % distribution of current birth control methods reported				
	New Site	**Maintenance**	**Total**	**N**
Condom	19.286	21.393	20.528	70
Rhythm	2.857	7.463	5.572	19
Pills	65.714	46.269	54.252	185
IUD	3.571	17.413	11.730	40
Withdrawal	2.143	2.488	2.346	8
Ligation	0.000	2.488	1.466	5
Injection (DEPO)	6.429	2.488	4.106	14
Total	**100.0**	**100.0**	**100.0**	
N	**140**	**201**		**341**

Table 18 indicates that the withdrawal method and condoms were most frequently mentioned as being used during the first sexual experience. These methods, in terms of frequency, were closely followed by the use of pills and the rhythm methods. Low frequency methods (injection, IUD and energy drink) were removed to allow use of inferential statistics, and the recalculation of the tabular

Table 18. Distribution (%) of birth control method used during first experience with sex				
	New Site	**Maintenance**	**Total**	**N**
Rhythm	10.000	20.690	14.973	28
Pills	19.000	21.839	20.321	38
Condom	28.000	28.736	28.342	53
Withdrawal	35.000	22.989	29.412	55
Injection	7.000	4.598	5.882	11
IUD	0.000	1.149	0.535	1
Cobra Energy Drink	1.000	0.000	0.535	1
Total	**100**	**100**	**100**	
N	**100**	**87**		**187**

analysis indicates that differences between the maintenance and new sites are not statistically significant (χ^2=5.99, df = 3, p=0.112).

During the last sexual encounter, pills were the most common method of birth control mentioned as being used (Table 19). Next in terms of frequency were the rhythm and withdrawal methods. Ligation, IUD and condom, in order of decreasing frequency, were the next reported methods. To facilitate use of inferential statistics, extremely low frequency methods (vasectomy and continuous breast feeding) were removed and the tabular analysis was recalculated. The differences between new and maintenance sites are statistically significant (χ^2=39.8, df = 6, p<0.001).

Table 19. Distribution (%) of birth control method used during last sexual experience				
	New Site	Maintenance	Total	N
IUD	4.571	13.947	9.170	63
Ligation	12.571	10.979	11.790	81
Pills	36.857	32.344	34.643	238
Rhythm	13.143	21.068	17.031	117
Withdrawal	22.286	11.276	16.885	116
Condom	5.714	7.715	6.696	46
Injection (DEPO)	3.714	1.780	2.766	19
Vasectomy	0.286	0.890	0.582	4
Continuous Breastfeeding	0.857	0.000	0.437	3
Total	100.0	100.0	100.0	
N	350	337		687

Table 20 indicates sources reported as being used to obtain contraceptives. The public sector (reproductive health units/RHU and Barangay Health Station/BHS) are the largest source for both types of sites. Low frequency cells for community-based distributors (CBDs) and Pop Shops inhibited use of inferential statistics, so they were eliminated from the analysis and the results recalculated. It should be noted, however, that the RHUs often franchise the

Table 20. Distribution (%) of reported sources for contraceptives				
	New Site	Maintenance	Total	N
RHU	24.101	25.430	24.780	141
BHS	28.777	44.674	36.907	210
Pharmacy	47.122	24.742	35.677	203
CBD	0.000	2.405	1.230	7
Pop Shop	0.000	2.749	1.406	8
Total	100.0	100.0	100.0	
N	278	291		569

Pop Shops. The recalculated results indicate that there are statistically significant differences between the new and maintenance sites (χ^2=29.4, df = 2, p<0.001). Maintenance sites tend to use BHS more and a pharmacy less.

Health Situation:
To evaluate overall health, respondents were asked if any of their household members had suffered from any of a list of eight illnesses (illnesses are the 1st seven listed in Table 21)[2] in the past 12 months. They were also requested to report any other illnesses that occurred in the household over the past 12 months—they reported 88 additional types of illness (see Appendix IV), with some respondents reporting up to six. Relative frequencies of the illnesses were examined, and those manifesting an occurrence of about 3% were added to the list in Table 21 for analysis.

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[2] Only 1 person reported sexually transmitted disease (STD) so it is not included in the analysis

Table 21 indicates that in comparison to the new sites, the maintenance sites manifest a higher percentage of household occurrences of severe diarrhea, skin disease and fever. Respondents in the new sites report higher levels of malaria and high blood pressure.

PFPI Behavioral Monitoring Survey:

This section of the report analyzes results from the application of a section of a Behavioral Monitoring Survey (BMS) used by PFPI (Appendix V). The survey was modified to reflect values in accordance with goals of PHE projects. The original PFPI BMS coding applied values from 1 to 5 for the categories "strongly agree" to "strongly disagree," respectively. For example, for the statement "*Everyone should have the right to choose how many children they want and when to have them,*" "strongly agree" would be coded as 1 and "strongly disagree" as 5. Since agreement with this statement is a goal of PHE projects, "strongly agree" is coded as 5 and "strongly disagree" as 1 in this baseline assessment. Similarly, for the statement *"Teens should NOT have access to contraceptives even if they are already having sex,"* "strongly agree" is coded as 1 and "strongly disagree" as 5 reflecting the goals of PHE efforts. In the analysis presented here, values for the responses to the distinct categories used by PFPI are summed to create a total scale score for each of the categories listed in Table 22.

Table 21. Distribution of diseases		
Variable	**Site**	**%**
Severe Diarrhea*	New	23.3
	Maintenance	29.8
Pneumonia	New	09.4
	Maintenance	11.4
Skin Disease*	New	17.3
	Maintenance	25.9
Dengue Fever	New	04.3
	Maintenance	03.8
Malaria*	New	01.9
	Maintenance	00.4
Tuberculosis	New	03.1
	Maintenance	03.5
Jaundice	New	01.9
	Maintenance	03.1
Fever*	New	47.5
	Maintenance	61.8
Cold/Flu/Cough	New	42.9
	Maintenance	47.8
High Blood Pressure*	New	06.1
	Maintenance	03.1
Stomach Ache	New	01.8
	Maintenance	02.4
Asthma	New	03.9
	Maintenance	04.0
*p<0.01 x^2 test. New Site N = 798; Maintenance Site N= 807		

Results of analyses of these scales are in Table 22. All of the scales have a midpoint of 12 except the Environment and Empowerment Scale, which has a midpoint of 15; hence, all means are

Table 22. Analysis of BMS scale scores					
Variable	**Site**	**N**	**Mean**	**Standard Deviation**	**t-value**
Reproductive Health	New	795	14.611	2.179	6.712*
	Maintenance	805	13.810	2.577	
Food & Income Security	New	794	12.287	2.572	4.616*
	Maintenance	807	11.667	2.800	
Environment & Empowerment	New	796	19.033	2.816	5.473*
	Maintenance	807	18.253	2.888	
Poverty-Environment Linkages	New	795	15.384	2.609	2.528
	Maintenance	804	15.741	3.030	
*=p<0.001					

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above the midpoint except the score for the maintenance site villages on the Food and Income Security Scale, which is only slightly below. All of the statistically significant differences (alpha=0.01)[3] indicate slightly lower scale scores for the maintenance sites.

Coastal Resources Management Behaviors and Perceptions:

The final section of this report focuses on coastal resources management issues. Questions posed to community members can be found in Appendix VI. Additionally, some of the open-ended questions stimulated quite extensive responses. All these responses were coded into the data set and are made available in Appendix VI along with the questions. For example, respondents were asked if they ever asked local government officials to take actions to improve the coastal and marine environment. They provided 86 distinct responses that are included in Appendix VI. Respondents were also asked if they would support development of a marine protected area (MPA). If they already had one in the community, they were asked if they would support increasing the size of the existing MPA. Fully 103 distinct responses concerning reasons why resulted from this question, and these are also included in Appendix VI. Finally, they were asked what they did to prevent erosion, resulting in the 57 response categories included in Appendix VI.

Table 23 provides information concerning attributes of selected gear types. The analysis indicates that there are no differences in net mesh size between the maintenance and new sites, but there is a greater percentage of boat ownership in the maintenance sites. Presence or absence of

Table 23. Selected fishing gear attributes				
Variable	Site	N	Mean or %	Standard Deviation
Mesh Size Net1	New	118.000	8.017	2.942
	Maintenance	165.000	7.667	3.406
Mesh Size Net2	New	18.000	6.444	4.789
	Maintenance	11.000	11.455	7.244
Mesh Size Net3	New	5.000	5.800	7.155
	Maintenance	4.000	9.375	1.887
Own Boat*	New	798.000	21.7	
	Maintenance	807.000	43.7	
*p<0.01 χ^2 Test T-test used for mesh, all p>0.01				

violations of selected categories of coastal resource management regulations are analyzed in Table 24. In all cases that are statistically significant, maintenance site inhabitants report a greater percentage of violations than the new sites. In most cases, the differences are relatively large. This might indicate more sensitivity to the importance of violations in the maintenance sites—a hypothesis that appears to be supported by differences in community member knowledge and beliefs as indicated in the analysis presented in Table 25.

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[3] Although alpha was set at 0.01, the probabilities less than 0.01 in Table 22 are all less than 0.001 so the lower value was used in the Table.

Table 24. % distribution of reported CRM violations			
Variable	**Site**	**N**	**%**
Use Cyanide Here*	New	798	15.9
	Maintenance	807	34.7
Use Dynamite Here*	New	798	14.9
	Maintenance	805	40.0
Commercial in Municipal Sea*	New	798	16.3
	Maintenance	807	27.5
Ponds without permit*	New	797	03.1
	Maintenance	793	08.2
Cut Mangrove Here*	New	795	04.0
	Maintenance	806	26.4
Use of too small mesh*	New	798	02.0
	Maintenance	807	10.8
Owner Registered Boat	New	173	52.0
	Maintenance	3510	47.3
*p<0.01 χ² Test			

Table 25. % distribution of CRM beliefs and behaviors			
Variable	**Site**	**N**	**%**
Support Limits on Number of Fishers	New	793	57.6
	Maintenance	800	52.4
Support Restrictions on Fishing Activity*	New	797	56.1
	Maintenance	805	30.3
Report Violations*	New	798	06.6
	Maintenance	807	14.1
Participate in Bantay Dagat*	New	795	12.5
	Maintenance	807	17.6
Active Bantay Dagat Member	New	798	10.7
	Maintenance	806	12.8
Tell Kin to Register to Fish*	New	798	67.4
	Maintenance	800	85.0
Check Outside Fisher Permits*	New	797	09.2
	Maintenance	807	19.3
If No Permit Report Outsider*	New	797	21.0
	Maintenance	805	29.7
Know Citizen Lawsuit	New	798	84.7
	Maintenance	806	85.4
Need to Review Penalties for Illegal Fishing*	New	798	15.8
	Maintenance	807	23.2
Need to Clean up Beaches	New	798	02.9
	Maintenance	807	02.2
Need to Stop Illegal Fishing*	New	798	08.1
	Maintenance	807	13.1
*p<0.01 χ² Test			

Most statistically significant differences found in Table 25 indicate that maintenance site community members report knowledge, beliefs and behaviors that support coastal zone management. For example, they are more likely to report violations, participate in bantay dagat (guards of the sea), tell relatives that want to fish in local government unit (LGU) waters to register, check outside fishers for permits, and if they do not have one, report them. They were also more likely to suggest the need to review penalties for illegal fishing and expressed the need to stop illegal fishing. The only response that is in a negative direction is that they are less likely to support existing regulations restricting fishing activity.

Turning to the analysis presented in Table 26, we find that respondents from maintenance sites are more likely to support MPAs and participate in beach clean-ups. They are, however more likely to cut mangrove trees than those from the new sites, and those who cut mangrove trees are almost equally divided (51% versus 49%) between those who report cutting only part of the tree or the whole tree, respectively. Most of the respondents at both types of villages report that they pick up plastic garbage.

Table 26. % distribution of CRM behaviors			
Variable	**Site**	**N**	**%**
Cut Mangroves*	New	798	00.3
	Maintenance	807	08.9
Support MPA*	New	793	87.6
	Maintenance	797	94.5
Participate in Beach Clean-up*	New	798	74.1
	Maintenance	805	62.4
Pick-up Plastic	New	797	91.1
	Maintenace	806	89.8
*p<0.01 χ² Test			

Respondents from households who did even a minimal amount of some type of farming were asked what they did to prevent erosion. The responses covered 57 types of behaviors (see Appendix VI). Behaviors mentioned by at least 3% of respondents were coded and analyzed across new and maintenance sites (Table 27). The analysis in Table 27 indicates that respondents from maintenance sites are more likely to mention planting mangroves or fruit trees while those from the new sites tend to mention planting trees in general.

Questions related to benefits of MPAs were posed in two parts of the interview. The first question asked if the respondent were aware if there is a fish, mangrove or sea grass sanctuary/reserve in their area. Maintenance site respondents were more likely to say "yes" than those interviewed in the new sites (66 versus 21% respectively, χ^2 =330.7. df = 2, p<0.001). If they were aware of a protected area or reserve, they were asked about benefits to the community. They indicated 72 perceived benefits (see Appendix VI). High frequency benefits were coded into the categories used in Table 28, which indicates statistically significant differences between the new and maintenance sites. Respondents from the maintenance sites are less likely to state that they do not know and more likely to indicate that MPAs protect or increase fish and provide livelihood and increase income.

Table 27. % distribution of erosion prevention behaviors			
Variable	Site	N	%
Plant Rice	New	503	03.2
	Maintenance	583	03.6
Plant Trees*	New	503	59.6
	Maintenance	583	40.7
Plant Mangroves*	New	503	01.8
	Maintenance	583	26.8
Plant Coconut Trees	New	503	03.2
	Maintenance	583	04.1
Plant Vegetables & Plants	New	503	32.2
	Maintenance	583	32.8
Plant Fruit Trees*	New	503	05.4
	Maintenance	583	15.6
*p<0.01 χ^2 Test			

Finally, respondents were also asked if they would support development of an MPA. If they already had one in the community, they were asked if they would support increasing the size of the existing MPA. Higher frequency categories (>2.5%) of the 103 responses resulting from this question (Appendix VI) were re-coded into the 17 categories analyzed in Table 29. Only four categories manifested statistically significant (alpha=0.01) differences between the new and maintenance sites. New site respondents tend to say they would not support a reserve, but are also more likely to report that it benefits the community. Maintenance site villagers were more likely to respond that a reserve protects fish and provides fish for the future.

Table 28. % distribution of marine protected area benefits				
	New Site	Maintenance Site	Total	N
Don't Know	26.506	9.793	13.773	96
Protects/Increases Fish	28.916	47.834	43.329	302
Provide Livelihood/ Increase Income	3.614	6.026	5.452	38
Protects Fish Breeding Grounds	4.217	5.461	5.165	36
No Community Benefits	6.024	7.910	7.461	52
Other	30.723	22.976	24.821	173
Total	100.0	100.0	100.0	
N	166.0	531.0		697
χ^2 = 41.48, df=5, p<0.001				

Table 29. % distribution of reasons for supporting a marine reserve/sanctuary			
Variable	**Site**	**N**	**%**
Protects Sea	New	798	09.3
	Maintenance	807	05.9
Don't Know	New	798	05.1
	Maintenance	807	04.0
Benefits Community*	New	798	08.4
	Maintenance	807	04.8
More Breeding Grounds	New	798	01.6
	Maintenance	807	03.3
Protects Fish*	New	798	18.8
	Maintenance	807	37.2
Improves Income	New	798	13.2
	Maintenance	807	15.0
Fish for the Future*	New	798	02.9
	Maintenance	807	05.7
Protects Marine Life	New	798	08.6
	Maintenance	807	05.8
Decreases Illegal Fishing	New	798	05.5
	Maintenance	807	03.6
Protects Breeding Area	New	798	03.1
	Maintenance	807	03.6
Protects Shoreline	New	798	02.4
	Maintenance	807	01.2
Protects Corals	New	798	03.1
	Maintenance	807	02.2
Prevents Disasters	New	798	08.4
	Maintenance	807	10.3
Limits Fishing	New	798	01.4
	Maintenance	807	02.5
Protects Environment	New	798	03.1
	Maintenance	807	02.5
Develops Village	New	798	02.6
	Maintenance	807	03.7
Would not support, no Benefits*	New	798	06.4
	Maintenance	807	01.2
*p<0.01 χ^2 Test			

CONCLUSIONS AND RECOMMENDATIONS

In general, the baseline indicates that the maintenance sites have less occupational diversity and a somewhat lower standard of living than the new sites. This is supported by the finding that the maintenance sites perceive greater negative changes in both income and status of the fishery resource. People closer to the margins in terms of available jobs, income and resources are less likely to have available time and resources for participation in project activities, especially if the benefits are not clear or too far in the future to be meaningful. Hence, they are less likely to participate in project activities, a factor most strongly related to achievement of project goals as found in a previous examination of a PHE project in the Visayas (Pollnac and Dacanay 2011). It, therefore, appears that more efforts to stimulate participation will need to be used in the maintenance sites.

There are mixed results with regard to water sources and trash disposal. For example, while maintenance sites are more likely to use a protected well or rainwater catchments (cisterns), they are less likely to use a developed spring source than the new sites. Further, maintenance sites have a lower percentage of private flush toilets and a higher percentage of use of bush, field, sea or other types of toilet facilities. These differences indicate different needs in the two areas which are consistent with observed differences in development—the MSL scales (Table 7) indicate that less modern houses (in terms of structure) are more likely to be found in the maintenance sites, and that they also tend to score lower on the High and Medium Items MSL components. These different needs should be reflected in project plans.

In terms of health, maintenance sites manifest a higher percentage of household occurrences of severe diarrhea, skin disease and fever, while respondents in the new sites report higher levels of malaria and high blood pressure. Disease saps energy and retards developmental growth. The higher incidence of severe diarrhea in the maintenance sites (consistent with differences in resources, income, human waste disposal and general development levels) is especially worrisome, especially if it results in malnutrition among children, which can impact their developing brains. Clearly, greater emphasis on health needs to be directed at communities experiencing higher incidences of illness, which reduce their ability to both participate and learn from project activities.

Turning to the reproductive health data, J. Castro and L. D'Agnes (2011, personal communication) report that the incidence and duration of breast feeding is higher than average in both the maintenance and new sites. Efforts should be made to support this desired activity. The results also indicate that preferred number of children, number of pregnancies and number of births are greater in the maintenance site villages. Nevertheless, a greater percentage of respondents (females or male partners) from the maintenance villages who reported pregnancy in the past year, planned for that pregnancy. The data clearly shows that contraceptives are being used—maintenance sites tend to report slightly more use of condoms and IUD, while the new sites tend to report more use of pills. This suggests a desire for additional children in the maintenance sites despite the fact that a larger proportion of respondents at the maintenance sites report current use of

contraceptives. If reduced population growth is a project objective, it is important to obtain more information to determine the complexities of these relationships.

With regard to resource management, maintenance site inhabitants report a greater percentage of violations than the new sites. In most cases, the differences are relatively large. This might indicate more sensitivity to the importance of violations in the maintenance sites—a hypothesis that appears to be supported by differences in community member knowledge and beliefs as indicated in the analysis presented in Table 25, where we find that maintenance community members report knowledge, beliefs and behaviors that support coastal zone management. This is further reflected in the finding that respondents from maintenance sites are more likely to support and be aware of MPAs and participate in beach clean-ups. They are, however, more likely to cut mangrove trees than those from the new sites. Further, they are less likely to support existing regulations restricting fishing activity. These last two findings are probably related to lower levels of income and resources in the maintenance sites and consistent with their views that protected areas protect or increase fish and provide livelihood and increase income. This suggests that rationales for resource protection should focus on increasing human, not natural, well-being.

Finally, all of the statistically significant differences on BMS scales indicate slightly lower scale scores for the maintenance sites. This is important due to the fact that the BMS scales reflect most of the goals of integrated PHE initiatives. The fact that the maintenance sites, which have been the targets of previous integrated PHE projects manifest slightly lower scores on these scales, is consistent with the findings of Pollnac and Dacanay (2011). Their finding that project participation was the strongest predictor of expected outcomes at the individual level indicates a need to focus on increasing participation levels in the current project if we want the project's efforts to impact more than a small percentage of villagers.

Many researchers and field practitioners have been developing methods for increasing the amount and quality of public participation in project activities. Five aspects of participation have been identified as essential: 1) opportunity for input by local inhabitants; 2) local inhabitant influence over decisions; 3) adequate information exchange between project personnel and local inhabitants; 4) transparent decision making by project personnel; and 5) local inhabitant perceptions of fairness of decisions (Chess and Purcell 1999, Creighton 2005, Dalton 2006, Glass 1979, NRC 2008, Renn et al. 1995, Rogers 1996, Rowe and Frewer 2000, Rowe et al. 2008, Webler and Tuler 2002). Finally, Pollnac and Dacanay (2011) also report that aspects of community context (population size and density, percent Catholic and level of project integration) and individual characteristics (education, marital status and number of children) were good predictors of participation in maintenance sites in the Visayas.

With the above specifics in mind, we make the following general recommendations:
- Identify individual and community differences in target populations. Adapt strategies and activities to different categories of the villages and population, acknowledging that some communities may need additional project resources to achieve similar results and

that some types of individuals may also require specialized or more intensive interventions to attain similar results.

- Stimulate more project participation, with special efforts in larger, less densely populated communities (Pollnac and Dacanay 2011).

- Encourage implementing municipalities (LGUs) to increase transparency and use more participatory processes.

- Use well-known procedures for appropriate communication of project activities and impacts to stimulate diffusion to a larger population (cf. Rogers 1996).

- Strive to implement the project with a more integrated approach (e.g., ensure that equal capacity and emphasis are applied to the different components—i.e., population, health, and environment—of the integrated project).

- Encourage careful, detailed documentation of training at both the municipal and village levels. This documentation should include detailed descriptions of activities (who, what, when, and where) at both municipal and village levels in terms of content and numbers and characteristics (cf. Crawford, et al. 2006, Rogers 1996) of both trainers and trainees.

- Collect follow-up data identical to the baseline at a later date. The data should be analyzed in a similar manner to provide information concerning PHE project impacts. Data should be collected at a mid-point in the project for adaptive management purposes and then again at least two years after project termination to provide a post-project evaluation. At both these time periods, results should be examined comparing observed changes in at least two groups: the new sites and the maintenance sites. Ideally, a control group should be evaluated at the mid-project and post-project evaluation stages. The control group should consist of a random sample of non-maintenance, non-new site coastal villages from the same geographic areas. Introduction of control sites will provide the strongest test of project impact (cf. Pollnac and Crawford 2002).

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APPENDIX I: LIST OF REPORTED OCCUPATIONS[4]

1=FISHING, 2=FARMING, 3=FISHING & FARMING, 4=CRAB FARMING & FISH CRAFT, 5=DELIVER ICE & PALM WINE, 6=CATCHING CRABS, 7=SARI SARI STORE, 8=PENSION, 9=WORKS AT RESORT, 10=ANIMAL RAISING (HOGS, COWS), 11=VENDING, 12=BEACH LABORER (RUNS ERRANDS), 13=TRICYCLE DRIVING, 14=BARBER/HAIRDRESSER, 15=SELLING FOOD, 16=VENDING FISH, 17=FINANCIAL ASSISTANCE FROM RELATIVE/FAMILY MEMBER, 18=LAUNDRY, 19=BARANGAY EMPLOYEE, 20=DOMESTIC WORK, 21=SHOE REPAIR, 22=NIPA ROOF MAKING, 23=REFLEXOLOGY, 24=PAINTING, 25=RESORT EMPLOYEE, 26=PALM WINE MAKING, 27=COOK, 28=FARMING & CARPENTRY, 29=CARPENTRY, 30=FISHING & CARPENTRY & MASON LABORER & BABY SITTING, 31=DRIVING, 32=CONSTRUCTION & BARANGAY EMPLOYEE, 33=BAKER, 34=MANICURE SERVICES, 35=ANIMAL PROCESSING, 36=GARBAGE COLLECTION, 37=CARPENTRY ASSISTANT, 38=UTILITY WORKER, 39=GLEANING, 40=FIXING ELECTRIC FANS, 41=PRIEST'S SECRETARY, 42=FURNITURE DELIVERY, 43=BUYING & SELLING EGGS, 44=OFFICE WORK, 45=PASTOR & FISHING, 46=SEAMAN, 47=DRESS MAKING, 48=TEACHER, 49=CHEMICAL ENGINEER, 50=SOCIAL WORKER, 51=PRIEST, 52=COMPUTER ENGINEER, 53=TAXI DRIVING, 54=SARI SARI STORE & GOVERNMENT EMPLOYEE, 55=FACTORY WORKER, 56=LAUNDRY & COOKING, 57=SALES PERSON, 58=CARE GIVER FOR ELDERLY, 59=MOTORCYCLE DRIVING, 60=VENDING COPRA (DRIED COCONUT), 61=FISHING & CARPENTRY, 62=LOOMWEAVING, 63=STREET CLEANING, 64=FISHING & FISHPOND LABORER, 65=FISHPOND LABORER/BUILDING DIKES, 66=CARPENTRY, 67=LAUNDRY & GLEANING & NANNY, 68=VENDING FISH & BARANGAY EMPLOYEE, 69=NGO WORKER, 70=CONSTRUCTION WORKER, 71=CITY TRAFFIC ENFORCER, 72=FISHING & COOKING IN RESTAURANT, 73=PALM WINE MAKING, 74=LABORER, 75=FARMING & FOOD VENDING, 76=MAT MAKING (RAFIA), 77=BASKET MAKING, 78=FISHPOND CARETAKER, 79=MILITARY, 80=CHOPPING AND SELLING WOOD, 81=GATHERING/CHOPPING FIREWOOD, 82=CARETAKER OF SECOND HOME, 83=HARVESTING COCONUTS, 84=CHOPPING WOOD AND SELLING COPRA, 85=CARPENTRY & POLICE OFFICER, 86=MUNICIPAL EMPLOYEE, 87=NURSE & FISHING, 88=MOTORCYCLE DRIVER & COMPUTER PROGRAMMER, 89=FISHING & FISH VENDING, 90=HOTEL RECEPTIONIST, 91=CRAB PROCESSING, 92=PLUMBER, 93=PORTER, 94=PRODUCTION COMPANY, 95=CRAB BUYER, 96=FISHING NET ASSEMBLY, 97=BUY AND SELL ANIMAL, 98=LAUNDRY & SARI SARI STORE, 99=GRASS CUTTING, 100=SAND & GRAVEL FACTORY, 101=FIREWOOD DELIVERY & FISHING, 102=VENDING GOOSE EGGS & COCONUT SHELLS, 103=DRESS MAKING & ANIMAL GRAZING, 104=GLEANING & FISHING, 105=FINANCIAL ASSISTANCE FROM RELATIVE & MOTORCYCLE DRIVING, 106=SELLING BREAD & OFFICE WORK, 107=BANK TELLER, 108=GLEANING & SELLING SNACKS, 109=SELLING VEGETABLES, 110=MOTORCYCLE DRIVING & WOOD CHOPPING, 111=FISHING & GLEANING & BGY. EMPLOYEE, 112=NIPA & COCONUT HARVESTER , 113=SELLING FIREWOOD, 114=NURSE, 115=FISHING & NIPA ROOF MAKING & SELLING COCONUT SHELLS, 116=FARE COLLECTOR FOR PUMPBOAT COMPANY, 117=AVON DEALER, 118=CREATES PRODUCT FOR SARI SARI STORE, 119=MOTORCYCLE DRIVER & POLICE OFFICER & CARE GIVER FOR ELDERLY, 120= FARMING & SELLING COCONUT SHELL, 121=LAUNDRY & VENDING & FARMING, 122=MASSAGE & FISHING & CARPENTRY, 123=SEAWEED FARMING, 124=DAY CARE WORKER, 125=HARVESTING & SELLING WOOD & COCONUT, 126=SELLING SEAWEED, 127=WELDING & CARPENTRY & GLEANING, 128=HARVESTING BAMBOO AND MAKING INTO BROOMSTICK, 129=FARMING & HARVESTING BAMBOO AND MAKING INTO BROOMSTICK & GLEANING, 130=ELECTRICIAN, 131=MASSAGE, 132=BUY & SELL COGON GRASS, 133=SEAWEED FARMING & FISHING, 134=OWNS FISHPOND, 135=BUY & SELL RICE, 136=SEAWEED FARMING & FISH POND CARETAKER, 137= SEAWEED FARMING & GLEANING, 138=SEWING/TAILOR, 139= SHELLCRAFT MAKING, 140= SHELLCRAFT MAKING & FISHING, 141=FRUIT VENDING, 142=COCONUT VENDING, 143=CATTLE RAISING & BREAD MAKING & FRUIT TREE PLANTING, 144=DELIVERS WATER TO NEARBY ISLAND, 145=FISHING & LAUNDRY, 146=BARANGAY EMPLOYEE & LAMINATION, 147=SHELLCRAFT MAKING & SECURITY GUARD, 148=BARANGAY EMPLOYEE & GLEANING, 149=DRESS MAKING & GLEANING, 150=CONSTRUCTION & PAINTER & SHELLCRAFT MAKING, 151=GOVERNMENT EMPLOYEE, 152=SHELLCRAFT & FINANCIAL ASSISTANCE FROM RELATIVE, 153=WATER DELIVERY, 154=BREADMAKING & SEAWEED FARMING, 155=BABY SITTING 156=VENDING CRABS, 157=SEAWEED

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[4] Respondents were requested to report household sources of livelihood and then were requested to rank them in terms of importance. If more than one were given the same rank, they were combined for the rank. For example, fishing and farming were sometimes given equal weight.

FARMING & PROCESSING CRAB, 158=FISHING & SEAWEED FARMING & GLEANING, 159=SEAWEED FARMING & BARANGAY EMPLOYEE, 160=FISHING & BARANGAY EMPLOYEE, 161=FISHING & SEAWEED FARMING & DOMESTIC WORKER, 162=SEAWEED FARMING & FINANCIAL ASSISTANCE FROM RELATIVE, 163=SEAWEED FARMING & GLEANING, 164=PUMPBOAT DRIVER, 165=SMALL BUSINESS-FLOOR WAXING, 166=MAT WEAVING, 167=OWNS RICE FARM, 168=COCKPIT EMPLOYEE (COCKFIGHTING), 169=HOUSEBOY/GARDENER, 170=LABORER & FOOD VENDING, 171=SECURITY GUARD, 172=CASHIER, 173=CELLPHONE REPAIR, 174=RESTAURANT WORKER, 175=TRICYCLE DRIVER & TEACHER, 176=COOKING, 177=FISH CULTURE, 178=FARMING & TAILORING & LABOR, 179=MASON LABORER, 180=SEAWEED FARMING & FARMING & SALT VENDING, 181=BARANGAY EMPLOYEE & FISHPOND LABORER,182=FISHING & SARI SARI STORE, 183=SEAWEED & SEA CUCUMBER VENDING, 184=RICE MILL OPERATOR, 185=TILE MAKER, 186=FISHING & SEAWEED FARMING & CATCHING CRABS, 187=DELIVERY BOY & CANTEEN GIRL, 188=SEAWEED FARMING & SARI SARI STORE, 189=FISHING & VENDING SNACKS, 190=FISH VENDNG & FINANCIAL ASSISTANCE, 191=STORE EMPLOYEE, 192=LAUNDRY & GLEANING, 193=SEAWEED PROCESSING, 194=AUTO MECHANIC/MECHANIC, 195=METER READER, 196=DRIVER & BARANGAY EMPLOYEE, 197=BARANGAY EMPLOYEE & SOUND SYSTEM OWNER, 198= FARMING, BUILDING OF DIKES & CARPENTRY, 199=SARI SARI STORE, FARMING & PRIVATE EMPLOYEE, 200=FARMING & BUILDING OF DIKES, 201= FISHING & BANANA CUE VENDING, 202=GUEST RELATIO N OFFICER, 203=MOTOR BIKE DRIVING, MANICURE, BUILDING OF DIKES & PRIVATE DRIVER, 204= DOMESTIC WORK & BANANA CUE VENDING, 205= FARMING & CRAB VENDING, 206= COOKING & GLEANING, 207= FISH WARDEN & FARMING & FOOD VENDING, 208= POLICE OFFICER, 209 = WATER COMPANY EMPLOYEE, 210 = BARANGAY OFFICIAL AND FINANCIAL ASSISTANCE FROM RELATIVES, 211 = SMALL TOWN LOTTERY/GAMBLING, 212 = PRIVATE COMPANY EMPLOYEE, 213 = BUY AND SELL CHARCOAL, 214 = CHARCOAL MAKING, 215=VEGETABLE VENDING AND FARMING, 216 = BUSINESS MANAGEMENT (BAKERY), 217 = JEEPNEY CONDUCTOR, 218=SELLING OF CARS , 219 = SELLING PROCESSED GOODS, 220=FARMING AND DOMESTIC WORK, 221=CANNED GOOD AGENT, 222=SAVINGS, 223=CABLE DEALER, 224=SOFTWARE DEVELOPER, 225=TOURIST GUIDE, 226=CALL CENTER AGENT, 227=TATOO/HENNA MAKING, 228=PLUMBING, 229=LENDING/MONEY LENDING, 230=PAWNSHOP AND FABRIC BUSINESS, 231=MEDICAL AID, 232=DISPATCHER,233=OWNS OYSTER FARM,234=OWNS A CASSAVA FARM, 235= PLANTING ROOTCROPS/SELLING CASSAVA, 236=PAID TO GUARD STUDENTS, 237=TRICYCLE DRIVING AND LAUNDRY, 238=TALABA CULTURE AND CATCHING CRABS, 239=RTW AND COSMETIC DEALER, 240=DELIVERY BOY, 241=PUMPBOAT HELPER, 242=LAUNDRY, 243=REAL ESTATE AND TEACHING, 244=OFW, 246=JEEPNEY DISPATCHER, 247=JEEPNEY OPERATOR, 248=WELDING, 249=OWNS A FACTORY, 250=SHIP CREW, 251=EATERY BUSINESS, 252=POULTRY, 253=BUY AND SELL, 254=TRICYCLE OPERATOR, 255=BARANGAY COOPERATIVE, 256=EATERY AND OWNER OF IRON WORKS, 257=DIVER, 258=HAIR CUTTING/MANICURE/PEDICURE , 259= TRACER, 260=SELLS RECYCLABLES, 261= FISHING & BUY AND SELL WOOD, 262=FISHING & MAT WEAVING, 263= AVOCADO GARDENING, 264= MAKING OF HANDICRAFTS, 265= SMALL LOTTERY, 266= MACHINE OPERATOR, 267= MAINTENANCE WORKER, 268= TYPIST , 269= SOIL DIGGING, 270= MUSICIAN, 271= SUGARCANE HARVESTING, 272= CATCHING SHRIMP, 273= ACCOUNTING SUPERVISOR, 274= SHIRT PRINTING, 275=PAINTER, 276= BIRD'S CARETAKER, 277= UMBRELLA MAKING, 278= PHARMACIST, 279= SIGNAGE MAKER, 280= GENERAL MANAGER, 281= ICE CREAM SELLING & COCONUT HARVESTING, 282= HOUSE RENTING, 283= CARPENTRY & TRICYCLE DRIVING, 284= QUACK DOCTOR, 285=COMPUTER TECHNICIAN, 286=SALT WHOLESALER, 287=OWNS PASSENGER BOAT. 288=MIDWIFE, 289=SCRAP BUSINESS , 290=CEBUANA LHUILLIER, 291=SALT PRODUCTION, 292=MINING, 293=CAFGU, 294=COORDINATOR FOR MANGYANS; 295=COMPUTER SHOP, 296=RENTS OUT FISHING BOATS, 297=FIRE WOMAN, 298=COPRAS PRODUCTION, 299=PAWID/KAWAYAN, 300=OWNS BANANA FARM, 301=OWNS FRUIT AND COCONUT FARM

APPENDIX II: PERCENT DISTRIBUTION MATERIAL STYLE OF LIFE ATTRIBUTES

Variable	Maintenance Site	%
Bamboo Wall	New Site	25.2
	Maintain Site	47.8
Wood Wall	New Site	36.3
	Maintain Site	45.3
Cement Wall	New Site	57.3
	Maintain Site	47.2
Nipa Roof	New Site	24.2
	Maintain Site	47.0
Wood Roof	New Site	06.4
	Maintain Site	05.1
Tin Roof	New Site	76.4
	Maintain Site	67.3
Tile Roof	New Site	05.0
	Maintain Site	01.1
Cement Floor	New Site	57.3
	Maintain Site	43.0
Tile Floor	New Site	06.8
	Maintain Site	04.6
Wood Floor	New Site	13.7
	Maintain Site	11.8
Dirt Floor	New Site	13.2
	Maintain Site	18.8

Variable	Maintenance Site	%
Glass Window	New Site	33.7
	Maintain Site	23.9
Wood Window	New Site	48.1
	Maintain Site	59.3
Open Window	New Site	27.0
	Maintain Site	26.5
Water Piped	New Site	45.8
	Maintain Site	20.5
Indoor Toilet	New Site	69.5
	Maintain Site	58.3
Electricity	New Site	83.5
	Maintain Site	71.4
Radio	New Site	51.8
	Maintain Site	52.6
TV	New Site	63.7
	Maintain Site	50.6
Refrigerator	New Site	30.3
	Maintain Site	18.5
Benches	New Site	41.7
	Maintain Site	52.7
Chairs	New Site	78.5
	Maintain Site	78.9
Livingroom Set	New Site	32.6
	Maintain Site	22.9

Variable	Maintenance Site	%
Display Cabinet	New Site	48.2
	Maintain Site	31.4
Cupboard	New Site	41.2
	Maintain Site	32.8
Modern Stove	New Site	25.2
	Maintain Site	10.3
Cell Phone	New Site	65.7
	Maintain Site	58.8
Computer	New Site	09.7
	Maintain Site	03.9
Generator	New Site	05.8
	Maintain Site	01.2
Salvage House	New Site	02.5
	Maintain Site	02.0
Bamboo Floor	New Site	25.7
	Maintain Site	35.9
Tin Walls	New Site	02.0
	Maintain Site	01.0
Window Slats	New Site	02.8
	Maintain Site	04.6

Shaded cells indicate differences that are statistically significant ($p<0.01$ χ^2)
New site N=792 to 795; Maintenance site N=802-895 due to missing data.

APPENDIX III: REPRODUCTIVE HEALTH QUESTIONS

D1a	Have you ever been pregnant or gotten somebody pregnant? Yes [1] No [0]
D1b	Did you plan that pregnancy? Yes [1] No [0]
D2	How many children do you prefer __ __ *(If never been pregnant,* *skip to next section)*
D3	**(For FEMALE)** Number of pregnancies ever had __ __
D4	**(For FEMALE)** Number of children ever born __ __
D5a	Have you/your partner gotten pregnant in the last 12 months? Yes [1] No [0] *(If no, Skip to next section)*
D5b	Did you plan for that pregnancy? Yes [1] No [0]
D6a	**(For FEMALE)** Did you breastfeed? Yes [1] No [0]
D6b	Duration in breast feeding for last child in months_____
D7	Have you ever had sex? Yes [1] No [0] *(If No, Skip this section)*
D8	At what age did you have your first sexual intercourse? __ __
D9a	Are you currently using any contraceptive? Yes [1] No [0]
D9b	If YES, what contraceptive/s are you using?_____
D10a	Did you / your partner use any method/s to prevent pregnancy the **first** time you had sexual intercourse? Yes [1] No [0]
D10b	If YES, what did you/your partner use or do to prevent pregnancy the **first** time you had sex? _____
D11a	The **last** time you had sex, did you/your partner use anything to prevent pregnancy? Yes [1] No [0]
D11b	*If YES*, what did you/your partner use or do to prevent pregnancy the **last** time you had sex? _____
D12	Do you know anything about sexually transmitted diseases? Yes [1] No [0]
D13a	The last time you had sex, did you use anything to prevent sexual disease transmission? Yes [1] No [0]
D13b	If YES, what did you/your partner use or do to prevent sexual diseases? _____ _____

D14	Where did you get supplies/services?
	   1 – RHU
	   2 – BHS
	   3 – Drugstore / Pharmacy
	   4 – CBD
	   5 – Pop shop
	   96 – Other, *[specify]*:_____

APPENDIX IV: ADDITIONAL REPORTED ILLNESSES

1=FEVER, 2=COUGH/COLD/FLU, 3=VOMITTING, 4=HIGH BLOOD PRESSURE, 5=STOMACHACHE, 6=ARTHRITIS, 7=TOOTHACHE, 8=ULCER, 9=SEVERE BODY/MUSCLE PAINS, 10=HEADACHE, 11=MUSCLE PAIN, 12=KIDNEY DISEASE, 13=HYPERACTIVITY, 14=SORE EYES, 15=ASTHMA, 16=MEASLES, 17=DIABETES, 18=KIDNEY STONES, 19=EAR INFECTION, 20=APPENDICITIS, 21=BLURRED VISION/ASTIGMATISM, 22=ALLERGIES, 23=SEPSIS, 24=STOMACH PROBLEMS, 25=MILD STROKE, 26=BLURRED VISION, 27=IRREGULAR BOWEL MOVEMENTS, 28=HEART DISEASE, 29=RHEUMATISM, 30=MEMORY LOSS, 31=NUMBNESS, 32=BROKEN ARM & RIBS, 33=HEART PROBLEMS, 34=TYPHOID FEVER, 35=EYE DISEASES, 36=CHICKEN POX, ,37=TONSILITIS, 38=BRONCHITIS, 39=CRAMPS, 40=DIZZINESS, 41=SINUSITIS, 42=GOITER, 43=NOSE BLEEDS, 44=ILLNESS RELATED TO CHILD BEARING, 45=LUPUS, 46=LUNG PROBLEMS, 47=CYST IN BREAST, 48=NERVOUS BREAKDOWN, 49=KIDNEY PROBLEMS, 50="PASMO"— FEVER/SICKNESS, 51=EXTREME FATIGUE, 52=PARASITES IN INTESTINES, 53=HEPATITIS, 54=HEART ENLARGEMENT, 55=CONVULSION FROM HIGH FEVER, 56=DAMAGED LUNGS DUE TO COMPRESSOR USE, 57=BONE FRACTURE, 58=NECK FRACTURE, 59=STROKE, 60=BREAST INFECTION, 61=ABNORMAL ABDOMEN, 62=SKIN RASH, 63=MUMPS, 64=OVARIAN CYST, 65=INSOMNIA, 66=ANEMIC, 67=EPILEPSY, 68=UTI, 69=DIARRHEA,70=SORE THROAT,71=MENINGITIS , 72= LEUKEMIA, 73= INTESTINAL PROBLEMS, 74= BODY LUMPS, 75=CANCER, 76=DIFFICULTY BREATHING, 77=PIMPLES, 78=MYOMA, 79=HIGH CHOLESTEROL, 80=HIGH SUGAR, 81=BACK PROBLEMS

APPENDIX V: PATH FOUNDATION PHILIPPINES BMS SURVEY

REPRODUCTIVE HEALTH (HOUSEHOLD WELL-BEING)

Opinion Statement	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
Everyone should have the right to choose how many children they want and when to have them	5	4	3	2	1
Adolescents should have access to information on sexuality	5	4	3	2	1
Teens should NOT have access to contraceptives even if they are already having sex	1	2	3	4	5
Condom use can protect us from unwanted pregnancy **AND** sexual diseases	5	4	3	2	1

POVERTY- ENVIRONMENT LINKAGES

Opinion Statement	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
Barangays can face a crisis when there are too many people and not enough fish to go around	5	4	3	2	1
If couples do not practice family planning, there may not be enough natural resources to go around in the future	5	4	3	2	1
Garbage problems can get worse when there is overcrowding in *barangays*	5	4	3	2	1
Families with a large number of children are better off economically than families with only a few children	1	2	3	4	5

ENVIRONMENT AND EMPOWERMENT

Opinion Statement	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
Our community is helpless in protecting the environment	1	2	3	4	5
Water is becoming more scarce in this area	1	2	3	4	5
Only the government is responsible for conservation	1	2	3	4	5
Mangrove forests can provide protection against the effects of strong currents and big waves	5	4	3	2	1
If we throw our garbage on the beach, the ocean takes it away and causes no harm	1	2	3	4	5

FOOD AND INCOME SECURITY

Opinion Statement	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
There has been a decline in fish availability in this *barangay* over the past few years	1	2	3	4	5
We are not be able to afford to send all our children to school	1	2	3	4	5
Sometimes there is not enough food to go around and the family goes hungry	1	2	3	4	5
Aside from the sea, we have other sources to turn to for income	5	4	3	2	1

APPENDIX VI: COASTAL RESOURCE MANAGEMENT QUESTIONS[5]

CRM-1	Would you support regulations limiting the number of fishermen allowed to fish in municipal waters? Yes [1] No [0]
CRM-2	Would you support regulations restricting fishing? Yes [1] Maybe [0.5] No [0]

CRM-3A	Have you ever heard of someone using illegal fishing methods or coastal activities in this community? If yes, which of the below?
	    cyanide Yes [1] No [0]
	    dynamite fishing Yes [1] No [0]
	    commercial fishing in municipal waters Yes [1] No [0]
	    fish pond development without a permit Yes [1] No [0]
	    cutting healthy mangrove areas Yes [1] No [0]
	    other? Yes [1] No [0] specify type_____

CRM-3B	Have you ever reported someone using illegal fishing methods or coastal activities in this community? Yes [1] No [0]
CRM-4a	Have you ever participated in *bantay dagat* patrols? Yes [1] No [0]
CRM-4b	Are you an active member of bantay dagat? Yes [1] No [0]
CRM-5	If you have a relative from another municipality who wants to fish here, would you tell him to register? Yes [1] No [0]
CRM-6 **(Fisher only)**	Do you check to see if municipal fishermen from other communities have a permit to fish in your waters? Yes [1] No [0] If the non-local fisherman did not have a permit, would you report him to the bantay dagat? Yes [1] No [0]
CRM-7	**Fisher only** If you are using a fishing net, what is the mesh size?___(how big)
CRM-8	Did you know that Philippine law allows a citizen to file a lawsuit against illegal fishermen? Yes [1] No [0]
CRM-9	Do you own a fishing boat? Yes [1] No [0] If yes, is your boat registered? Yes [1] No [0]
CRM-10	Have you ever asked your local government officials to take actions to improve the coastal and marine environment? Yes [1] No [0] If yes, what actions did you suggest? 1_____ 2_____ 3_____ 4_____ 5_____ 6_____
CRM-11	Do you cut mangroves Yes [1] No [0] **If yes,** do you take the whole tree or only part? Whole tree__ only part of the tree___
CRM-12	Would you support development of an MPA **(if none)** or more or larger MPAs **(if there is one)**? Yes [1] No [0] Why or why not? _____ _____
CRM-13	Have you participated in a coastal clean-up? Yes [1] No [0]
CRM-14	Do you pick-up and properly dispose of plastic garbage you see on the beach or in front of your house? Yes [1] No [0]
CRM-15	If farming, what do you do to prevent erosion, if anything? _____

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[5] Includes full lists of responses to selected open-ended questions.

COMPLETE LIST OF ACTIONS SUGGESTED TO LOCAL GOVERNMENT OFFICIALS TO IMPROVE COASTAL & MARINE ENVIRONMENT

1=STRENGTHEN/REVIEW PENALTIES FOR ILLEGAL FISHERS, 2=COASTAL CLEAN-UP, 3=PATROLLING FOR ILLEGAL FISHING, 4=STOP/MINIMIZE ILLEGAL FISHING, 5=LIVELIHOOD PROJECTS SO MORE MARINE LIFE, 6=CREATE SANCTUARY, 7=LIMIT FISHING IN SANCTUARY, 8=STRENGTHEN BANTAY DAGAT PATROL, 9=NO OUTSIDERS ALLOWED TO FISH, 10=FORBID HARVEST OF CORALS, 11=STRICT ENFORCEMENT OF COASTAL LAWS, 12=BUILD FISH CAGE, 13=PLANT MORE MANGROVES, 14=COOPERATION AMONG PEOPLE ON RULES OF SANCTUARY, 15=CANNOT REMEMBER, 16=NO USE OF FINE MESH NETS/NO CATCHING SMALL FISH, 17=PLANT SEAWEEDS, 18=DEVELOPMENT OF SEAWEED FARMING, 19=LIMIT FISHING AND CYCLE (FIRST FISH, THEN CRABS), 20=ADDITIONAL INCOME FOR FAMLIES, 21=PLANT TREES, 22=CLEAN ENVIRONMENT BY MAKING COMPOST PIT, 23=LIMIT MANGROVE CUTTING, 24=GIVE 3 CHANCES TO PEOPLE WHO GO IN SANCTUARY, 25=NOT TO ABUSE SANCTUARY, 26=ALLOW FISHING IN SANCTUARY, 27=PROTECT/GUARD MANGROVES, 28=PROTECT FISH & CORAL, 29=NO FISHING IN SANCTUARY, 30=DON'T TAKE SEA FOR GRANTED, 31=TELL COMMUNITY TO REPORT FISHERS USING SMALL MESH NETS, 32=REGISTRATION OF ALL FISHERS, 33=USE OF FISH CAGES, 34=MORE MONITORING OF THE SEA, 35=PROTECT COASTAL AREAS/ENVIRONMENT, 36= PROPER GARBAGE DISPOSAL/PROHIBIT DUMPING GARBAGE ALONG SEASHORE, 37=REQUIRE COMPOSTING OF EVERY HOUSEHOLD, 38=TAKE CARE OF THE SEA, 39=MAINTAIN CLEAN & GREEN ENVIRONMENT, 40=MAINTAIN PLANTED MANGROVES, 41=PROTECT SANCTUARY, 42=COOPERATION TO PROTECT MANGROVES & SEA, 43=PROHIBIT MANGROVE HARVESTING, 44=PROVIDE PRO-ENVIRONMENT PROJECTS, 45=CONVINCE COMMUNITY TO STOP DYNAMITE FISHING, 46=PLANT FLOWERING PLANTS, 47=CONSTANTLY GUARD THE SEA, 48=STOP FISHPOND OPERATION WITHOUT PERMIT, 49=PROVIDE ACTIVITIES TO PROTECT SANCTUARY & INCREASE FISH, 50=PROTECT MARINE LIFE, 51=STOP HABITAT DESTRUCTION WHILE FISHING, 52=IEC FOR ENVIRONMENTAL PROTECTION/CRM, 53=TRAINING ON FISHING RULES, 54=REPORT ILLEGAL FISHERS, 55=SANCTUARY MARKERS, 56=TRAINING FOR FISH WARDEN, 57=PROTECT NATURAL RESOURCES, 58=NO THROWING GARBAGE INTO SEA, 59= TAKE CARE OF THE SANCTUARY, 60=TRAINING FOR WOMEN, 61=FISH CAGE CONSTRUCTION AND MANAGEMENT, 62=MPA MANAGEMENT, 63=PROVISION OF FISHING MATERIALS, 64=STOP ILLEGAL ENTRY, 65=INSTALLATION OF VISIBLE DEMARCATION LINE IN THE BRGY SEA,66=CULTURING TALABA, 67=FISHPOND MANAGEMENT, 68=PRESERVATION OF MPAs, 69=MANGROVE MANAGEMENT, 70=STRENTHEN/REORGANIZE FISHERFOLK ORGANIZATION, 71=PROPER MANAGEMENT OF PO, 72=MAKING ORDINANCE REQUIRING PIGGERIES TO HAVE DEPOSITORIES, 73=USE NEW LOOK AND FISH NET ONLY IN FISHING, 74=PUTTING BENCHES AS WAITING AREAS INSTEAD OF TREES, 75=RESTRICTS POSSESSION OF AQUARIUM, 76=NO TO SPEEDBOAT IN THE MUNICIPAL WATERS, 77=FISHING PERMIT, 78= FISHING MADE PRIORITY TO LOCAL RESIDENTS (PROVIDE MORE BREEDING GROUNDS FOR FISH), 79= NO COMMERCIAL FISHING WITHIN MUNICIPALITY, 80= FINANCIAL ASSISTANCE/ SUBSIDY, 81= PROGRAM/ PROJECTS FOR ADDITIONAL FINGERLINGS, 82= CONSTRUCTION OF PUBLIC TOILET IN COASTAL AREAS, 83=PROVIDES ALTERNATIVE LIVELIHHODS FOR THE COMMUNITY, 84=PROHIBIT THE USE OF ELECTRICITY TO FISH, 85=PROHIBIT OIL EXPLORATION/EXTRACTION/PRODUCTION, 86='BOYA' INSTALLATION 87=LAND REFORM, 88= IRRIGATION SYSTEM, 89= FA FOR FISHING AND PLANTING

COMPLETE LIST OF ACTIONS TAKEN BY RESPONDENTS TO PREVENT EROSION

1=PLANT RICE, 2=PLANT TREES AND ORCHIDS AROUND HOMES, 3=PLANT TREES, 4=PLANT MANGROVES, 5=PLANT COCONUT TREES, 6=PLANT VEGETABLES AND PLANTS, 7=COMPOSTING, 8=AVOID CUTTING TREES/MANGROVES, 9=PUT FERTILZERS IN THE SOIL, 10=PLANT FRUIT TREES, 11=PLANT SEEDLINGS, 12=GATHER LEAVES FOR FERTILIZER, 13=FENCE PLANTS, 14=PLANT MANGROVES ALONG SEASHORE, 15=PIT GARDENING, 16=PLANT VEGETABLES IN POTS, 17=PLANT TREES ON SLOPES, 18=FENCE PLANT, 19=PUT FENCE ALONG SHORELINE, 20=CONTOUR FARMING, 21=PLANTING SEAWEEDS, 22=USE STONES AS FENCE, 23=PILE UP SOIL/STONE, 24=PLANT IN RAISED PLOTS, 25=PLANT TREES ALONG SHORELINE, 26=PUT SHELLS ALONG SHORELINE, 27=CLEAN MANGROVE AREA/SURROUNDINGS/COASTAL AREA, 28=PLANT FLOWERS/PLANTS, 29=PLANT BERMUDA GRASS, 30=CREATES DIKE, 31=STOP PEOPLE REMOVING SAND/SOIL IN COASTAL AREAS, 32=PLANT VARIETY OF TREES & PLANTS, 33=FLATTEN THE SOIL, 34=BURY TRASH ALONG SHORELINE, 35=PILE MORE SOIL ALONG SHORELINE, 36=GARDENING, 37=NOT USING COMMERCIAL CHEMICALS—FERTILIZERS/INSECTICIDES, 38=HAY STACKING, 39=KEEP SOIL & DISPOSE TRASH WHEN CLEANING, 40= CUTTING WEEDS, 41=STRENGTHEN ORDINANCE ON MANGROVE PLANTING AND MANAGEMENT AND PLANTING OF TREES, 42=WATER THE SOIL BEFORE PLANTING, 43=USE FERTILIZERS IN THE RICE FIELD, 44=CROP ROTATION, 45=SEGREGATE TRASH, 46= PROHIBIT KAINGIN SYSTEM, 47= PROVIDE CERTAIN AREA FOR IRRIGATION, 48= SEAWALL CONSTRUCTION, 49= RID GOLDEN "KUHOL" FROM PLANTS, 50= SEAWEED CONSTRUCTION, 51= BURRY BIODEGRADABLE WASTES, 52= INFORMATION AND EDUCATION CAMPAIGN, 53= AVOID BURRYING PLASTICS IN THE SOIL, 54=USE ORGANIC FERTILIZER, 55=CULTIVATION OF SOIL, 56=KILL PESTS THAT DETROY PLANTS, 57=MINIMIZE SOIL DIGGING

COMPLETE LIST OF PERCEIVED BENEFITS OF RESERVE/SANCTUARY

0=DON'T KNOW, 1=PROTECTS/INCREASES FISH, 2=LESS FISHING GROUND, 3=PROVIDE LIVELIHOODS/INCREASE INCOME, 4=PREVENTION OF TIDAL WAVES, 5=LESS ILLEGAL FISHING/PROHIBITS ILLEGAL FISHING ACTIVITIES, 6=MORE FISHING GROUNDS, 7=GENERATES MONEY FOR PEOPLE WHO FEED FISH, 8=FOR COLLECTING SEASHELLS & FISH, 9=FOR COMMUNITY'S DEVELOPMENT/BENEFIT, 10=PROTECTS CORAL REEFS, 11=PROTECTS/INCREASES MARINE LIFE, 12=PROTECTS THE SEA, 13=PROTECTS/INCREASES FISH BREEDINGF GROUNDS, 14=CATCH FISH EASILY, 15=LIMITS FISH CATCH/CONTROLS FISHING, 16=MANGROVES PROTECT FISH, 17=DIFFERENT KINDS OF FISH WILL BREED, 18=CREATES CONFLICT BECAUSE LIMITS FISHING, 19=FOR SUSTAINABILITY, 20=BENEFITS FOR MEMBERS ONLY, 21=GENERATES INCOME FOR MEMBERS, 22=INCREASES FISH GROWTH, 23=MORE SEAHORSES, 24=PROTECTS AGAINST SEA CALAMITIES/DIASTERS, 25=PRESERVES THE ENVIRONMENT, 26=MANGROVES CAN PROTECT AGAINST SEA CALAMITIES, 27=NO BENEFITS FOR COMMUNITY, 28=SUSTAINABLE FISHING, 29=REPLENISHES MANGROVES AND FISH, 30=NONE-NOT CLOSE ENOUGH TO BARANGAY TO PROVIDE FISH, 31=CANNOT SAY-CANNOT FISH THERE AND FAR FROM BARANGAY, 32=ONLY BENEFITS MANAGEMENT COMMITTEE, 33=ATTRACTS TOURISM, 34=DOES NOT KNOW WHAT SANCTUARY IS, 35=COMMUNITY HAS NOT BENEFITTED FROM IT, 36=NEARBY SANCTUARY NOT WELL MANAGED, 37=FISH & MARINE LIFE BREED IN MANGROVES, 38=NONE, 39=CAN PLANT SEAWEEDS IN SANCTUARY, 40=INCREASES SHELLS, 41=BENEFITS FUTURE GENERATIONS, 42=BENEFIT OF HUMANKIND, 43=COMMUNITY'S DEVELOPMENT THROUGH INCOME OF SANTUARY, 44=CANNOT TELL YET, 45=CATCH MORE FISH IN SANCTUARY, 46=INCREASES SEAWEED, 47=NO BENEFITS-CAN IMPRISON PEOPLE, 48=BANK OF THE COMMUNITY, 49=FISH SPREAD OUT IN SANCTUARY-PEOPLE CATCH MORE, 50=GOVERNMENT MAINTAINS SANCTUARY & PROTECTS PEOPLE, 51=BARANGAY CAN GAIN MONEY FROM ILLEGAL FISHING FINES, 52=FISH WILL NOT BE DISTURBED, 53=FISHERS WILL CATCH MORE FISH, 54=INCREASES MARINE LIFE FOR FOREIGNERS TO VIEW, 55=IMPROVES QUALITY OF FISH, 56=LESS MALNOURISHED CHILDREN BECAUSE ENOUGH FISH/FOOD, 57= INCREASE FISH & CATCH FISH IN THE SEA, 58=SOURCE OF MARINE SPECIES, 59=BEAUTIFICATION OF THE BARANGAY, 60=SOURCE OF FOOD, 61=SHELTER FOR FISHES, 62=BENEFITS BANTAY DAGAT, 63= MANGROVE AS FISH BREEDING GROUNDS, 64= MANGROVE LEAVES GIVE NUTRIENTS TO FISH, 65= MANGROVE PROTECTS FROM FLOOD, 66=STRENGTHENS 'BAKOD', 67=PROTECTION FROM THE SAND, 68=SAVES SHORE FROM EROSION, 68=SOLID WASTE MGMNT, 69=BEAUTIFIES ENVIRONMENT, 70=EDUCATES FISHERMEN, 71=ADDS INCOME TO LGU

COMPLETE LIST OF REASONS PROVIDED AS TO WHY RESPONDENT WOULD SUPPORT AN MPA

0=NONE, 1=COMMUNITY AGREEMENT, 2=PROTECTS THE SEA, 3=DON'T KNOW, 4=HELPS PRODUCTION OF FISH AND CRABS, 5=CLARIFY COASTAL MANAGEMENT PRACTICES, 6=GOOD FOR COMMUNITY, 7=HELP SAVE THE SEAS, 8=MORE FISH BREEDING GROUNDS, 9=FISHERS WILL BE PROTECTED, 10=PROTECT/INCREASE FISH, 11=BETTER LIVES OF PEOPLE/LIVELIHOODS, 12=BENEFITS/PROVIDES FISH FOR FUTURE GENERATIONS, 13=PROTECT/INCREASE/PRESERVE MARINE LIFE, 14=ELIMINATE/MINIMIZE ILLEGAL FISHING ACTIVITIES, 15=INCREASE INCOME, 16=PROTECT FISH/ MARINE LIFE BREEDING GROUNDS, 17=FISH WILL BE CHEAPER BECAUSE MORE FISH, 18=PROTECT ENVIRONMENT FROM FLOODING/SEA LEVEL RISE/SHORELINE OR SOIL EROSION, 19=OFFICIALS CORRUPT & FISHERMAN LOSE INCOME, 20=NO SUPPORT--FISH WILL BE CONCENTRATED THERE, 21=PREVENT STRONG WINDS AND CURRENTS, 22=PROTECTS CORAL REEFS, 23=PREVENT/PROTECTION FROM SEA CALAMITES/DISASTERS, 24=SEA WILL BE CLEAN, 25=HELPS IN PLANTING MANGROVES, 26=PRODUCTION OF SHELLS, 27=LIMITS FISHING/CONTROLS FISHING AREA, 28=OFFICIALS/ CITIZENS WILL BECOME ACTIVE IN PROTECTING ENVIRONMENT, 29= PROTECTS/INCREASES MANGROVES, 30=BANTAY DAGAT TO GUARD THE SEA, 31=PROTECTS ENVIRONMENT, 32=NO SUPPORT BECAUSE PREVIOUS MANAGEMENT NOT DONE WELL, 33=PREVENT FISH EXTINCTION, 34=NATURAL RESOURCES IMPORTANT, 35=GIVE PEACE & ORDER TO COMMUNITY, 36=FISHERS CAN CATCH ENOUGH FISH/AIDS FISHING, 37=REPLENISHES FISH, 38=TAKES AWAY LIVELIHOODS, 39=DEPENDS ON BENEFITS IT GIVES, 40=EASY WAY OF FISHING OUTSIDE OF SANCTUARY, 41=MANGROVES PROTECT AGAINST CURRENTS & STRONG WINDS, 42=IMPORTANT FOR FISH GROWTH, 43=INCREASE FISH AND CORALS, 44=INCREASES/RESTORES MARINE RESOURCES, 45=LIMITS GARBAGE DUMPING IN PROTECTED AREA, 46=REHABILITATE MANGROVE AREAS, 47=PROTECT FISHING AREA FOR MUNICIPALITY, 48=MANDATED BY MUNICIPALITY, 49=DOES NOT KNOW WHAT SANCTUARY IS OR BENEFITS, 50=HAVE NOT HEARD OF ANY BENEFITS, 51=BASED ON OBSERVATION—NO INCREASE IN FISH, 52=ATTRACT TOURISM, 53=LESS CRISIS, 54=SUSTAINABILITY OF FISHING, 55=INCREASE SEAWEEDS, 56=INCREASE FISH HABITAT, 57=SOURCE OF MARINE LIFE, 58=PROVIDES BEAUTY OF THE SEA, 59=FISH EAT SEAWEED, 59=PROTECTS THE ISLAND, 60=FOR PROGRESS/DEVELOPMENT OF BARANGAY, 61=FOR EVERYONE'S BENEFIT/CONSUMPTION, 62=MANGROVES PROTECT SMALL FISH, 63=PROTECTS/PRESERVE SMALL FISH, 64=SAVE COMMUNITY FROM HUNGER, 65=EVERYONE BENEFITS EVEN FUTURE GENERATIONS, 66=KEEP FISH HEALTHY, 67=FISHERFOLK WILL NOT ABUSE SEA, 68=PROVIDES FOOD, 69=BUSINESS FOR POLITICIANS & RICH PEOPLE, 70=WASTE OF TIME, 71=ONLY BARANGAY OFFICIALS /MEMBERS ARE ALLOWED & BENEFIT, 72=IMPROVES QUALITY OF FISH, 73=SEAWEED GOOD FOR WATER, 74= SUSTAIN OF SANCTUARY, 75= SEA PRESERVATION, 76= ABLE TO CATCH FISH IN THE SEA, 77= IMPROVES QUALITY & QUANTITY OF FISH, 78= SHELTER FOR THE FISH, 79=BOOST TOURISM/BEAUTIFY THE PLACE. 80= CREATES CONFLICT, 81=DEPENDS WHICH AREA MPA'S ARE PLACED, 82=LEADS TO FISH EXTINCTION, 83=BARANGAY OFFICIAL, 84=BARANGAY OFFICIALS' CONSENT, 85=DEVELOPMENT OF THE ENVIRONMENT, 86=WIDENS FISHING AREA, 87=CONSERVATION OF NATURAL RESOURCES, 88=EDUCATE PEOPLE ON CRM, 89=PRESERVATION OF MPAs, 90= MPA WOULD ENABLE TOO MUCH FISHING AND INTRUSION FROM OUTSIDERS, 91= MORE MANGROVES COULD ABATE GLOBAL WARMING, 92= MANGROVES PRESERVE AND PROTECT FISH SPECIES, 93= MANGROVES PROTECT FROM TIDAL WAVES, 94= PROPER SEGREGATION OF WASTE MATERIALS; 95=STRENGTHENS LAND FOUNDATION, 96=SUPPORT THE OFFICIALS, 97=AID IN CLIMATE CHANGE DUE TO PRESENCE OF MANGROVES IN AREA; 98=ADDITIONAL INCOME FOR MUNICIPALITY, 99=PREVENT DISEASES, 100=SANCTUARIES CAN BE USED FOR DEEP SEA FISHING, 101=SELL WOOD OF MANGROVES, 102=BETTER IF THE FISHES ARE FREE, 103=FISHING IS DISALLOWED IF PRIVATE

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