LOCALLY-MANAGED MARINE AREA NETWORK

LEARNING FRAMEWORK DATABASE USER GUIDE

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LMMA and the Learning Framework

What is the LMMA Network?

The Locally-Managed Marine Area (LMMA) Network is a cooperative program of sites and practitioners in countries of the South Pacific and Southeast Asia. The LMMA Network is collectively trying to determine the conditions under which a LMMA is successful and why. Each site team uses a LMMA strategy in an attempt to reach their goal; this will often be a *learning process*, requiring an *adaptive approach*. The site collects data on their *measures of success* (target or response variables) and on factors that may affect success. The data are maintained and analyzed, then summarized in reports *on lessons learned* to the Country and Network levels. For more information about LMMA activities, visit www.LMMAnetwork.org.

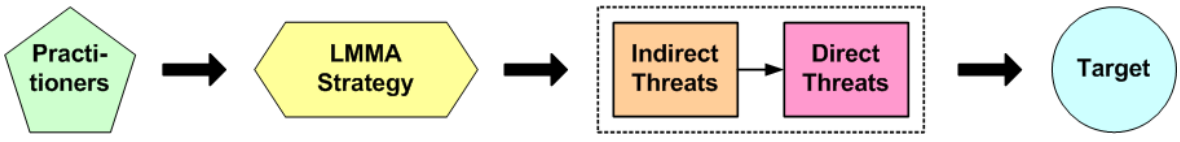
What is the Learning Framework?

The LMMA Network seeks to make the learning process more efficient. If a number of sites can share their findings with one another, then learning about strategies and the conditions under which they are effective will proceed more rapidly. To make learning more effective, teams need a common language that they can use to communicate with each other. In particular, they must communicate on strategies to be used, questions to be asked and types of data to be collected to get answers to the questions. The *Learning Framework* (LF) is a document that formally details the results of the Network agreement on how to go about answering these questions. The initial LF was developed in 2000 and the latest version (2.1) was released in June 2004. The LF includes a *social contract* that describes how the group will work together under mutual obligations and expectations. *A Network Coordination Team* (NCT) consists of country representatives that coordinate the work.

How is the Learning Framework Organized?

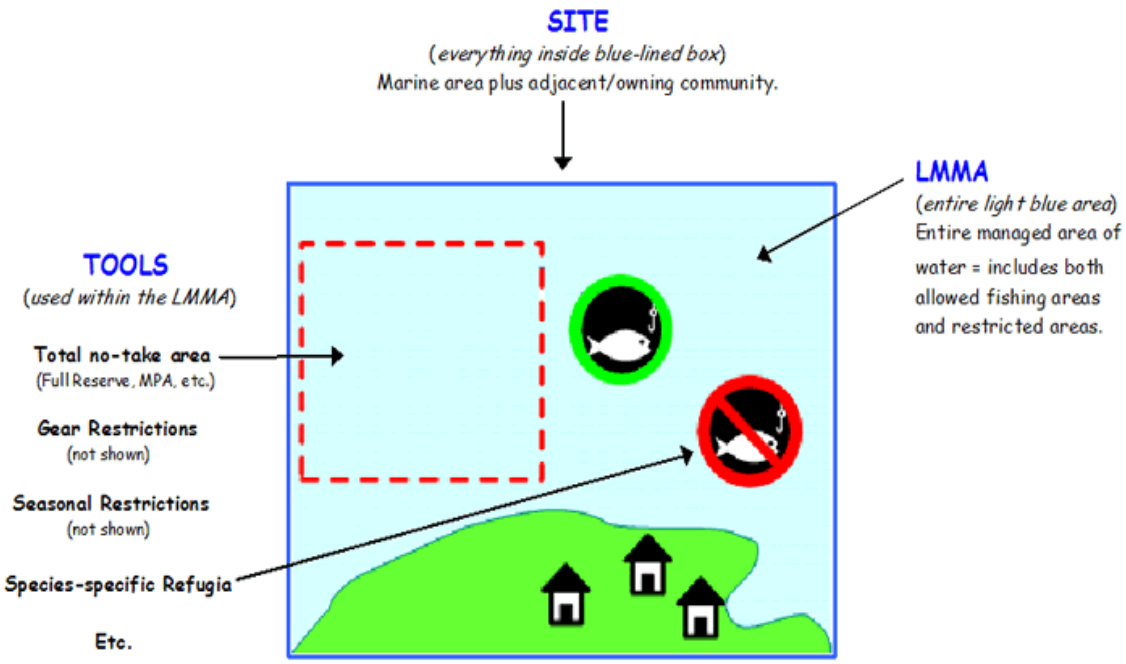
General Model

The general model is a conceptual diagram that shows the conditions and assumptions that affect an LMMA strategy and the measures of success:



The arrows indicate the direction of influence. *Practitioners* are individuals and organizations with the skills and capacity to implement the strategies. *LMMA strategy* is an action taken to address the threats and achieve the target. *Indirect threats* are factors that underlie or lead to direct threats. *Direct threats* are factors that immediately affect the target. The *target* is the response that the LMMA is trying to affect; it is also used as the *measure of success*. In the language of science, the target is the Y or dependent variable. For LMMA work, the general target is marine environmental health which is recognized as being more or less related to human well-being. Practitioners, LMMA strategies, indirect threats and direct threats are the X or independent variables. All of the variables are called *factors* in the Learning Framework and there are 37 of

them.



Sites

A *site* is the basic unit of the LMMA Network for data analysis. A site is the area where an LMMA is physically located; it is comprised of the marine area that is under management (LMMA) and the communities that own and manage the marine area. Adjacent or nearby communities that use the resources of the marine area but have no management or ownership rights are also part of the site.***Projects***

A *project* is an undertaking by a team of practitioners to implement or enhance an LMMA strategy at two or more sites using a planned, coordinated effort; the sites need not be adjacent. The goal of a project (and site) is to measure its success and understand the reasons for the outcome, then share the results as lessons learned. Some countries organize their sites into projects, but others do not. Some countries, a project is referred to as a group of sites facilitated and implemented by an organization such as WWF Fiji (e.g. WWF-Fiji projects) or a group of sites categorized into geographic dimension (e.g Hinatuan Bay project)

LMMAs and Communities

A *LMMA* is a defined and delineated marine area where special management rules (LMMA strategy) are applied and evaluated with local stakeholder influence and/or input. It is not the same as a reserve or protected area, but is the entire area under management even if there are no restrictions. Nearby *communities* are not parts of the LMMA but are parts of the site as defined above. Communities are a part of the site if they use, own or manage the LMMA.

LMMA Strategies and Tools

A *LMMA strategy* results in the use of *LMMA tools* that are applied to parts or all of the LMMA. A strategy represents the basic intent and assumptions underlying the tools. These assumptions are *safe haven* (sanctuary for biodiversity), *seeding* (source of eggs, larvae and/or juveniles), *spill-over* (movement of mature individuals from the sanctuary into the harvest area) and *successional yield* (spatial rotation of sanctuaries to achieve alternative fallow and harvest periods in a particular area, especially for sedentary species). LMMA tools include *full reserve* (sanctuary or no-take zones), *species-specific harvest refugia* (no-take zone for only one or a few species), *and effort, gear or behavioral restrictions* (limitations on harvest methods). One tool or a combination of tools may be used in an LMMA. Other, non-LMMA, tools may also be used. *The combination of tools and harvest methods represent the LMMA strategy including the underlying intent or assumptions.*

Stations

Station is not a formal LMMA term but has been added to the database terminology to identify specific points or areas in the LMMA where one or more samples are taken. Stations are usually assigned an identifier (letter and/or numbers) and a locator (GPS, landmark, buoy, etc.) in case the station must be re-visited for further sampling.

Learning Framework Data Collection

After a site or project has been planned and designed, data must be collected over the planned timeframe to evaluate the success of the LMMA strategy and the reasons for the

outcome. There are two basic locations in which data can be collected, the LMMA itself and the communities that use or manage the LMMA. Data in the LMMA represent the *biological component* of the database and require observations of plants, animals and their habitats. Data in the communities represent the *socio-economic component* of the database and require surveys of people, both as individuals and groups.

Data on practitioners, LMMA strategies, direct and indirect threats, and some target factors are collected during socio-economic surveys. Only data on LMMA tools (as proxies for LMMA strategies) and some target factors are collected during biological surveys. Appendix A displays the 37 factors and the data forms that are used to gather data on these factors. Data on some factors are collected using only one form, but data on other factors may be gathered on two or more forms. There are one-page, two-page and four-page forms. One-page and two-page forms are formatted for A4 paper in "portrait" or "landscape" page orientation. Four-page forms are formatted for A3 paper in both portrait and landscape orientation, two pages on each side, then folded into a "booklet". The booklet also serves as a file folder and is used to hold additional notes (comments and stories). The four-page forms may also be copied on A4 paper. Do NOT use a pen to record data on forms; instead, use a #2 pencil and always erase when correcting or revising.

The Packard Foundation provides donor support to the LMMA Network and has requested that information be gathered on certain indicators of interest to that organization. These indicators appear in Appendix B with guidance on how this information should be reported. LMMA practitioners should familiarize themselves with the indicators and include them in survey procedures.

Common Indicators

Although meta-analysis provides a basis for comparison of different measures of success among sites, it is useful to have a few "common indicators" of success for all LMMA sites. These indicators can serve as a common "language" that further ties the Network together and a means of quality assurance for the assumption that meta-analysis is working as intended. Out of the 37 recommended factors, only four indicators have been designated by the LMMA Network for this purpose and to be recommended for use at all sites. These are: *sea cucumber* (T1, density, all species), *surgeonfish* (T1, density, all species), *live hard coral* (T2, percent cover, all species), and *LMMA benefits* (T5, rating, household). T1 indicators (sea cucumbers and surgeon fish) were chosen based on the fact that almost all the existing sites have identified these two species as two important marine resources (food and cash) and

are already collecting some data on it. These T1 indicators are recommended for consideration when identifying community biological indicators for new and existing sites.

In keeping with the LMMA bottom-up philosophy, *the use of one or more of these indicators is optional, not mandatory.* Also, if species-level data are being collected at a site these can be combined to get one of the T1 factors. For example, if surveys include counts of sea cucumbers by species, these can be added together to report the indicator for all sea cucumbers.

Sites or countries that are using other forms to collect data (e.g., REEFCHECK or SOCMON) do not need to change forms for field use, but will want to re-record data onto the LF forms for ease of input into the Learning Framework database; this should not be difficult but may require that data be consolidated or separated during the transfer process. Each of the forms are described below and are shown as appendices in this User Guide.

Biological Data Form

There is only one form for biological data. It is not a field form; data from the field must be re-recorded onto this form. This four-page data form is displayed as Appendix C and is used to gather data on Species Health (T1), count or size data on species or groups of species (e.g., families) of fish and invertebrates; Habitat Health (T2), habitat data based on either mapping of habitat types or transects for substrate type; and Ecosystem Health (T3), as measured by species richness (e.g., number of fish species counted) or abundance of a major taxon (e.g., number of all fish counted regardless of species). Data on LMMA Tools (S1) or Other Tools (S2) being used where the sampling takes place are also recorded. Page 1 provides a place to describe the sampling conditions and methods at one station; this page should be used as a reference during fieldwork to assure that sampling conditions and methods are thoroughly described. Under Biological Sampling Conditions, “Habitat Type” is the major habitat type being sampled, not to be confused with the substrate (benthic habitat) type recorded along line transects. Five of the nine major habitat types listed on the biological data form (back reef, reef flat, reef crest, lagoon, fore reef) are shown in the diagram below:

The other habitat types are mangrove, estuary, mud flat, seagrass, patch reef, channel and land-based habitat.

Page 2 provides a place to record data on count data for fish and/or invertebrates; Page 3 for size measurement data on fish and/or invertebrates; and Page 4 for habitat data based on either mapping of habitat types or transects for substrate type. As previously mentioned, other data forms may be used in place of pages 2, 3 and 4.

Socio-economic Data Forms

There are seven forms for socio-economic data because these data are more complicated, for LMMA purposes, than biological data. For example, data on practitioners, LMMA strategies, direct and indirect threats, and some of the target factors, can be gathered only during socio-economic surveys, not biological surveys. However, there are only five types of surveys, meaning that two of these surveys use two forms instead of one.

Focus Group Survey

A *focus group* consists of people who provide information on general or specific themes or topics. A general focus group, representing all stakeholders and other interest groups, is a good way to start a socio-economic survey because it provides information and direction for other surveys during the same visit to a community. The aim of a focus group is to document *consensus* through group interaction, but to note minority opinions when they occur. To accomplish this, a discussion leader and a recorder should facilitate a focus group session; both should have the same ethnic background and language preference as the focus group.

The focus group survey form is shown as Appendix D and is a 4-page form. This form is used to gather data on target Factors T3 (Ecosystem Health) and T4 (Threat

Reduction Assessment), some of the direct and indirect threats, and all of the LMMA Strategy factors.

Threat Reduction Assessment

This 1-page form (Appendix E) is used during the general focus group session (or other participatory/planning sessions) if data are needed on *threat reduction* (T4), an opinion method based on the knowledge and perceptions of the group. The first TRA serves as a baseline and produces a TRA index of 0 (zero) because the threats must be reduced over time (so, "% threat reduced" on the form is zero for all threats). Threats can also increase overtime. Second and subsequent TRA indexes may be more than 0 if threats, or at least some of them, are thought to have been reduced since the last TRA. Complete reduction of all threats results in a TRA index of 100. During second and subsequent TRAs, focus groups may be given the list of threats from the most recent TRA, but should not be given rankings and results of the TRA. "Retroactive" TRAs are first TRAs in which participants are asked, in effect, to conduct two TRAs, one for the present situation and another as a baseline for some time in the past. The validity of this approach clearly depends on the objectivity of the participants; results should be used with caution.

Key Informant Survey

Key informants are knowledgeable individuals in the community who may also represent a group of stakeholders. The key informant survey is a good follow-up to the focus group survey because members of the general focus group can be used as key informants; others who were not in a focus group may also be used. Key informants should be interviewed privately by one interviewer to get their *independent opinions* because they are asked to provide information about factors in which opinions will likely vary. Measuring this variation is essential to gauge the extent to which opinions vary. Key informants must be assured that their opinions will be kept confidential.

Two or more interviewers may work independently if there are many key informants but the information from all key informants will be analyzed together as one data set. The key informant survey form (Appendix F) is 4 pages and covers data on some direct and indirect threats plus all practitioner factors.

Household Survey

The household survey is vital to the overall socio-economic survey of a community because it provides direct information about families such as demographics, economics and resource use. Only one or two interviewers should visit a household at a time convenient to the family and when a reliable family representative is present. If two interviewers are

present, one should conduct the interview and the other record data and stories. If only one interviewer is present, he/she must be deliberate and take time to record data carefully. The family representative should be advised that the interview will be lengthy (probably 1-2 hours) and that he/she should answer questions only for the household, not for the community. If two or more families live in a house, they should be interviewed as a single household. Interviewers can clarify questions for respondents but should not "coach" them to get certain answers. A minimum of ten households should be interviewed during a survey; in large communities, at least 10 percent, and as much as 30 percent, of all households should be surveyed. *It is very important to select households randomly for the survey.*

The household survey form (Appendix G) is four pages long. Page 1 is for household identification and composition; page 2 covers out-migrating members and economics; page 3 covers household dependence on land and marine resources, including what is sold at market; and page 4 is for description of household fishing gears, aspects of environmental awareness and interviewer observations about family wealth (especially if the family representative prefers not to provide information about family economics. Do not assign observer ratings of wealth until all selected households have been surveyed; then, assign ratings to each household relative to the community average standard of wealth. *Environmental awareness must be rated by comparing the list of environmental issued given during the household survey with the list of threats (e.g., TRA) compiled during focus group or other planning sessions. For example, if a household listed most of the environmental issues compiled during a focus or planning session, the environmental awareness of that household would be rated high (4 or 5).* Additional comments and stories should be recorded during and/or soon after the interview.

Household Tally Sheet

As the name implies, the household tally form (Appendix H) is used to combine data from all household surveys to a single form; the tally form then provides the basis for data entry into the database. This form is also 4 pages long and the tally form booklet should serve as a file folder for all household survey forms that were combined to the tally form. No calculations are made on the tally form; these are done after the data are entered from the tally form. Tallying should be done by two persons, one reading from the household survey forms, the other recording on the tally form.

Page 1 provides entries for the household size (number of people in each household) and the number of people by gender and age category for all households combined. Page 2 is used to record the number of people in all surveyed households by education and human

diversity (occupation, ethnicity, religion, and language). Education is categorized by number of years of formal education including primary, secondary, university and vocational training. Occupation is listed by broad categories such as construction, business and transportation; these are selected by the site project or country. Specific occupations such as welder, accountant and bus driver should be tallied into the appropriate broad categories. Ethnicity can describe as broad categories such as race or cultures if the community is highly diverse, or specific categories such as clan if the community is composed of one culture; the main point is to use categories that are meaningful for LMMA use. Religion categories can also be broad (e.g., Christian and Muslim) or narrow (e.g., Catholic and Protestant), depending on the diversity in the community and any effect on the LMMA. Language is categorized by that preferred as spoken tongue. Page 2 also provides a summary of marriage and migration by gender by tallying the number of people who are married, recent move-ins (within past 2 years) and recent move-outs (within past 2 years). Page 3 provides a table to tally income, wealth, dependence on marine resources, awareness of environmental issues and LMMA perceptions by household. Based on the household interviews, the interviewer assigns ratings for each of these attributes to each household. Page 4 lists the steps taken to transfer information on the tally sheet to the LFDB database worksheet (worksheet description is on page 11).

Catch Survey

A catch survey is not done with households, key informants or focus groups; it is a separate survey of the catch of fishing boats returning from the LMMA. The 1-page catch survey form (Appendix I) is used to census (complete count) or sample (partial count) the catch. At a minimum, species or groups of species are counted or weighed in the catch and an estimate is made of the percentage of the catch that this count or weight represents. In addition, individual fish of each species or group can be measured for length (centimeters) or weight (grams) and recorded.

In collecting fish catch data, focus only on target fish species and gear type (i.e. hook and line, net, spear). Calculations of catch per unit effort (CPUE) should be done across the same fishing gear type. The frequency of data collection is at least twice a year and when comparing, please be sure to be consistent and compare data taken from like seasons. To increase the likelihood of getting more catch data from more respondents, it is recommended that these surveys be done during times of high fishing activity (i.e. new moon phase and other high-fishing periods in your site). Effort can be measured in units of time (e.g., hours) or in multiples of time (e.g., boat-hours). For example, if 5 boats fished for 24 hours each,

120 boat-hours would result. If these 5 boats caught 240 kg, the CPUE would be 2 kg/boat-hour. Estimated total catch and total CPUE can be calculated at the bottom of the form.

Observer-Secondary Data Survey

Some data are collected independently of the community socio-economic survey. Collectively, these are called "observer-secondary data" because the data are collected from other sources such as government files or LMMA site/project records. *Data for most of the Packard indicators are recorded on this form.* The observer will always want to work with the site/project managers in gathering these data. The observer-secondary form (Appendix J) consists of 2 pages and will usually require additional notes attached to the form.

Learning Framework Database

Excel and Access Versions of the LFDB

The Learning Framework Database (LFDB) is designed for both Excel and Access application. Excel is a spreadsheet application and has the advantages of statistics and graphics features for analysis and display of data. Access is a database application and has the advantages of easy data input and automatic report output. *IMPORTANT: Excel should be used for raw data and may also be used for summary data. Access is used only for summary data. LFDB users are encouraged to use Excel for raw data and Access for summary data with the option of also using Excel for summary data if that is desired.*

Users of the LFDB will need to understand Excel and be familiar with its use. Operations such as Copy, Cut, Paste, Sort and Fill are essential for the effective use of Excel. This User Guide cannot (and should not) serve as an Excel training manual. New Excel users are encouraged to get a good start by working with someone knowledgeable; there is no substitute for hands-on learning.

The LFDB is set up as an Excel workbook. A workbook is one Excel file and can consist of up to 256 spreadsheets or worksheets (denoted by tabs at the bottom of each worksheet). All data for one site are kept in two Excel files (workbooks), one for biological data and one for socio-economic data, with the file name given as the official site name (e.g., Sinub bio.xls or Sinub socio.xls). Both files have two types of spreadsheets, the LFDB and a worksheet template. The LFDB is the place where all biological or socio-economic summary data for a site are maintained. The worksheet is the place where data from a survey are first entered and calculations are made; the results are then transferred to the LFDB on the first

spreadsheet. The worksheet template is copied to other spreadsheets (tabs) as surveys at the site are done at various times.

In the biological workbook, the LFDB is on the first spreadsheet (first tab). Two templates, one for T1/T3 data and the other for T2 data, are on the second and third worksheets (tabs); these worksheets can be copied to new worksheets in the workbook or can be deleted and replaced with other spreadsheet formats being used for biological data in the LMMA. In the socio-economic workbook, the LFDB is on the first spreadsheet (first tab) and the worksheet template is on the second spreadsheet (second tab). This worksheet is more complicated than those in the biological workbook. Data from the focus group, key informant, household tally, catch survey and/or observer-secondary forms from a survey event are entered into the worksheet and summarized for entry into the LFDB. Letters designating columns in the LFDB (e.g., column P or AE) appear in the worksheet for linkage between the worksheet and LFDB.

The Access version of the LFDB is menu-driven and easy to use. Once the raw data have been entered into the Excel LFDB and the summary data (sample size, mean and standard deviations) have been calculated, the summary data, both quantitative and qualitative, can be entered into the Access LFDB. The Excel LFDB can be used to maintain raw data at the Site and Country levels. The Access LFDB can be used to maintain summary data at the Site and Country levels and to transmit summary data and reports to the Network level (raw data should also be sent to the Network level so that summary data and reports can be checked for accuracy).

Master copies of the both versions of the LFDB are provided on a CD. The LFDB should be transferred to a computer hard drive, and the CD stored for backup of the master copy. Each time a new site is started, the hard drive copy of the LFDB should be copied to create two new files or workbooks (assuming both biological data and socio-economic data will be collected at the site). *The master copy of the LFDB should not be modified. Instead, please use the LFDB as is, but record errors or problems and transmit these to Alifereti Tawake (tawake_a@usp.ac.fj) and/or Ron Vave (ron@lmmanetwork.org).*

Strategy and Structure of the LFDB

What is the purpose of the Learning Framework Database (LFDB)? The LFDB is based solely on the LF Document of the LMMA Network. It is not intended to meet the data management needs of non-LMMA projects in a country. LMMA needs are met by using the LFDB to fulfill two basic purposes: “measures of success” and “lessons learned”. Measures of success are based on the Target Factors and are the means by which the success of an

intervention is evaluated; these measures are primarily used at the site level. Lessons learned are the results of comparing success of sites within or among countries; these lessons are the basis for the existence of the LMMA Network.

Must the LFDB be standardized so that data from all countries can be combined into a single database? It will not be necessary, or even desirable, to combine data from different projects and sites, neither within nor among countries. The use of *meta-analysis* will allow the measures of success to be compared among projects and sites without combining data into a single database. The big advantage of this approach is the independence afforded each country and project to use the LFDB as they see fit, to meet their needs, and still contribute results (measures of success in the form of reports) to the Network to achieve lessons learned. There may be some instances where a country wishes to combine data from projects and sites into a single country database. The LFDB could be used for such a purpose, but that will require the country to standardize even further than what is done at the Network level, a difficult task but not impossible.

Should the names of organisms (e.g. fish) be standardized and put in a pop-down menu in the LFDB? There are too many names to ever attempt the use of a menu – it would be so large as to be un-manageable. It really does not matter if scientific, common or local names are used, as long as they are consistently used within a project. Raw data analysis and measures of success happen at the site and project levels. Sites and projects have the flexibility and freedom to pick the names that are best for their purposes.

Why is the LFDB divided into biological and socio-economic components? It was previously explained that biological data come from the LMMA but socio-economic data come from the community; this basic difference is the reason for splitting the LFDB into two components. Furthermore, the only factors considered during biological surveys are the target factors T1, T2 and T3 plus the LMMA tool (S1) or other tools (S2) being used at the station location. However, the socio-economic component of the LFDB is used to record data on target factors T3 (Ecosystem Health), T4 (Threat Reduction Assessment), and T5 (Human Well-Being) plus all other factors – practitioners, LMMA strategies, and direct and indirect threats.

Are there other important differences between the two components? Other than the difference in content, the biological and socio-economic components also differ in structure. The biological component has an almost infinite number of variables that could be used (e.g., species names of plants and animals), far too many to assign each one a column heading. Instead, the headings are limited to those related to the blocks described above and the rows

are used to designate variables (e.g., a row for each species in a survey, each listed under the column heading "Item" under Species Health). However, column headings are assigned to each variable in the socio-economic component because the number of variables are fixed by the Learning Framework; thus, the data from one survey results in only a few rows of data because there are many columns, one for each variable (e.g., one or more for each factor).

Biological Component

The biological component of the Excel LFDB is divided into color-coded blocks of columns that share a common topic. The names and colors of these blocks are General Description (white), Biological Sample Description (yellow), Biological Sampling Conditions (orange), and Target Factors (green). Each block heading contains a comment box with further explanation of the block content. The Target Factors used in this component are T1 (Species Health), T2 (Habitat Health) and T3 (Ecosystem Health). The LMMA tool in force at the station location is entered in the Biological Sample Description Block to allow analysis of the effect of a LMMA tool on T1, T2 and/or T3; this is done by pop-down menu selection.

Most of the blocks (General Description, Biological Sample Description and Biological Sampling Conditions) contain columns about the biological samples being taken; it is important to provide as much information as possible because these variables help to explain sampling variation (e.g., samples taken at different tide levels). The Target Factors are the Y-variables or response variables and provide a measure of success. Each target factor is assigned five columns. First, a column called "Item" to describe what is being, counted, measured or ranked (e.g., clam species x); second, a column called "Unit" for the unit being used (e.g., number/m2); third, a column called "Sample Size" for the number of samples taken (that is, the number of observation used to calculate the mean and standard deviation; fourth, a column called "Sample Mean" where the mean value is entered; and fifth, a column called "Sample SD" where the standard deviation is entered. *Data should be copied and pasted, not re-typed, from the worksheet to the LFDB.* One record (line or row) of data will result for each observation of a factor from a sample. For example, if abundance of 10 indicator species are used for Species Health (T1), then 10 records of data will result for one sample, even if some indicator species were absent from the sample (because zero is an observation). If data were collected on both abundance and average size for these 10 species, then 20 records of data would result for the sample.

Socio-economic Component

The socio-economic component of the Excel LFDB database is divided into color-coded blocks of columns that share a common topic. The names and colors of these blocks are General Description (white), Socioeconomic Sample Description (yellow), Target Factors (green), Direct Threats (dark blue), Indirect Threats/Human Population (pink), Indirect Threats/Livelihood (light blue), Indirect Threats/Governance (aqua green), Strategy Factors (tan), and Practitioner Factors (gray). Each block heading contains a comment box with further explanation of the block content.

Within each block there are column headings for variables plus a "COMMENTS?" column that is used to add stories and comments; in each cell of this column a pop-down menu is used to insert the answer "yes" or "no" as to whether or not the cell has a comments box attached. Some factors may have only one column for data entry about the factor; other factors have up to four columns because the LF calls for more than one measure of the factor. For example, factor G4 (Compliance and Enforcement) has four columns for data because four measures are used for this factor.

Quantitative Data

Quantitative data may be in the form of counts, measures, ratings, rankings, and scores (also called indexes). *Counts* are the number of individuals counted in a survey such as the number of fish in a transect or number of people in a household. *Measures* are measurement data such as the length of a fish or the monthly income of a household. *Ratings* use a 5-point system (1-5 where 1 means little or none and 5 means all or maximum) to quantify opinions about a topic (e.g., extent of agreement with a statement). *Rankings* are the result of ordering a list of items, such as threats, with respect to their relative importance. *Scores and indexes* are based on opinions but do not have a maximum value like a rating. All quantitative data are used to compute sample size (the number of observations in the sample), the mean or average and the standard deviation. However, in some cases only one value occurs in a sample (e.g., focus group agrees on one rating value in response to a question); in these cases, no computations are necessary and the sample size is 1, the standard deviation is zero and the rating is entered as the "mean". These cases are shown clearly in the worksheet.

Qualitative Data

Text data (e.g., stories or comments) can be stored in the LFDB by attaching a comment box to any cell that is appropriate (e.g., explanation of why a mean rank value is high). To attach a comment to a cell, select the cell, then select Comment from the Insert menu and type text in the box; the box can be re-sized to fit the comments. To close the box, click anywhere outside the comment box. When a comment box is attached, a red triangle

appears in the upper right corner of the cell. To change text in an existing box, highlight the cell, select Edit Comment from the Insert menu and revise the text in the box. To delete a comment box, select the cell, point to Clear on the Edit menu, then select Comments. Digital photos can be inserted to a spreadsheet with the Picture submenu (From File) command in the Insert menu.

Data Management

Raw Data Entry and Verification - Excel

Each column, regardless of the block it is in, requires consistent and careful raw data input. It is important to use the same name to describe the same items or units. For example, site and project names should never vary in spelling because various spellings will create new, but invalid, categories and make it difficult to sort and group rows of data entry. In some columns, where choices for data entry are fixed (e.g., country), a pop-down menu is available for data entry. But in many cases, the data enterer will have to use manual entry; thus, two readers, comparing the original data source to database entries, for correctness, should verify all rows of data. **Tip:** When a row of data entry has been verified, bold the font of the data enterer's name (column A) to confirm verification. Rows where the data enterer's name is not in bold are easily recognized as being unverified.

If no data are observed for any particular factor, leave the cell(s) blank (that is, do not enter "no data" or some other entry). Leaving "no data" cells blank makes it easier to use data sets in software programs like SYSTAT or SPSS. The strategy of this database is to use the power of Excel to sort, select, copy, and move sets of data that require analysis. So, one might sort out all data for a particular species at both harvest and full reserve areas for a LMMA and move those data to a separate spreadsheet (tab) for analysis.

Database Maintenance and Backup

A master copy of the project LFDB should be maintained by the database manager (one person or one group). Others who use the LFDB should not change entries to the LFDB; they should report errors to the manager. The master copy should never be used for data analysis; it is always maintained as the uncorrupted source and is only changed when new data are added and verified; even then, data should be added only to a work copy, and then transferred to the master copy after being verified. When the master copy has been updated, at least one electronic backup copy should be transferred to another computer at another location, and a new CD copy should be placed at each location. All updated copies should be dated and all outdated copies should be deleted or destroyed.

Data Analysis

The LFDB does not have special programs for data analysis; instead it uses existing functions in Excel for this purpose. Analysis is purposely kept simple so that the widest audience is served.

Site/Project and Country Level – BACI Method

BACI (usually pronounced bah-kee) is short for **B**efore-**A**fter-**C**ontrol-**I**mpact (or **I**ntervention), a type of experimental design used to evaluate the effect of an impact or intervention. If only one group is being tested over time, then there is only a before-after (**BA**) component in the design. For example, an area at the onset of intervention, such as establishment of a reserve, is compared to the same reserve after a period of reserve effect. If two groups are compared at the same time, one with intervention (e.g., reserve area) and one without (e.g., harvest area), then there is only a control-impact (**CI**) component in the design. However, if two groups (reserve and harvest areas) are compared at the beginning of intervention and again, after an effect period, then the full **BACI** design is in effect.

The **BACI** analysis is very suitable for data resulting from this type of management of local marine areas. Test design is given below in terms of reserve and harvest areas monitored at the start of a reserve and after a period in which the reserve is in place.

When displayed as a table the BACI design shows that four comparisons, or statistical tests, are possible:

	Before	After
Control (Harvest)	A	C
Intervention (Reserve)	B	D

A versus B: This CI test compares the means of the harvest and reserve areas when the reserve area is first established. There should be no significant difference between the two means if other CI tests (*C versus D*), using data from later surveys, are to be considered valid. If this test shows a significant difference, only the BA tests are valid.

A versus C: This BA test compares the means of the harvest area at the beginning and end of the test period. If there is no significant difference between the means, then the harvesr area is independent and isolated from the reserve area because no change has occurred. If there is a significant increase, this may mean that “spill-over” from the reserve area to the harvest area has occurred (see further comment below).

B versus D: This BA test compares the means of the reserve area at the beginning and end of the test period. If there is no significant difference between the means, then the

reserve area has had no effect over the test period; a significant increase in the means indicates a positive effect of intervention.

C versus D: This CI test compares the means of the harvest and reserve areas at the end of the test period. If the means were non-significantly different at the beginning the period, then a significantly higher mean in the reserve area at the end of the period indicates that the intervention has had a positive effect.

A "spill-over" effect occurs when a significant increase in the mean in the reserve (B versus D or C versus D) area coincides with a significant increase in the mean in the harvest area (A versus C). This is also referred to as a significant "interaction" which means the intervention has a positive effect on both the reserve and harvest areas.

Which test is better: before-after or control-intervention? Choice of test depends on the question to be answered. The control-intervention test is appropriate if the main interest is between reserve and harvest areas for each survey (e.g., year). Reserve-harvest comparisons by survey have the advantage of showing if the reserve area is "gaining" on the harvest area. The before-after test is better if the main interest is in separate time trends for the reserve and harvest areas. In before-after tests, data from two or more surveys (e.g., two or more years) are compared against the base survey. For example, if surveys were done in 1999, 2000 and 2001, the reserve area data for 2000 and 2001 would each be compared against 1999, the base year; the same would be done for harvest area data. Year-by-year comparisons with the base year by area have the advantage of showing time trends in the reserve and harvest areas, including "spill-over" in the harvest area (assuming that it is not all being removed by harvest). The year-by-year comparison is also free of the bias that occurs if the reserve and harvest areas are different in the base year (this bias makes the reserve-harvest test invalid).

The means are tested with a t-test of the difference between two group means; this test is called "t-test: Two-Sample Assuming Unequal Variances" in the Excel Analysis Toolpak. The t-test assumes that the group means have normal distributions (approximate), that sample size may be small (N of each group is less than 5) and that group variances are unequal. The t-test output table provides the means, variances and sample sizes (called "observations") of each group, plus the calculated t-value and the P (probability) values for one and two-tailed tests. Because the test is usually aimed at testing the difference in one direction (e.g., Is the reserve mean higher than the harvest mean?), *use of the one-tail P value is recommended.* Use of the two-tailed P value will test for the possibility of a difference in either direction but it is more demanding (i.e., the P value of the two-tail test is always twice that of the one-tail

test). With either test, the test t-value must be less than the critical t-value to indicate a significant difference between the two group means.

To use the test in Excel, select Data Analysis in the Tools menu, then select the correct t-test near the end of the list; an input box appears that requires the ranges of data for both groups, the hypothesized difference between the two means (numerical zero), probability level (0.05 is recommended) and the desired location of the t-test results table. There is a Help button on the input box for obtaining more information on using the input box. If the Data Analysis option does not appear in the Tools menu, select Add-Ins in the Tools menu, check the box by Analysis Toolpak in the list window that appears and click OK; the Data Analysis option will then be available. If Analysis Toolpak does not appear in the Add-Ins list, it is not available in your version of Excel and you must use other software or get a newer version of Excel.

The Access version of the LFDB also provides for t-tests using summarized data. In other words, the summarized data can be entered into the Access LFDB, then the BACI tests can be conducted in Access using the menu-driven selections. This option is better because the results are included in the automatic generation of reports. The Access LFDB allows for selection of confidence level (P= 0.10, 0.05 or 0.01) and type of test (one-tail or two-tail test) with the results, including test and critical t-values automatically given in a statement format.

Country and Network Levels – Meta-Analysis

Meta-analysis compares the effect of intervention among different sites and projects, even when the measures of success are different. For example, changes in animal abundance can be compared, even if one site measures animal density and another measures catch per unit effort. Changes in animal abundance (T-1) may also be compared, for example, with changes in species richness (T-3) or in habitat composition (T-2), but caution is necessary because some measures of success respond more quickly to intervention than others.

In meta-analysis, the difference between group means due to intervention (or a mean response) must be "standardized" with respect to the variation in the mean. A mean response may be large in relative terms (the difference between means as a percent of the lesser mean) but the standardized response may be much smaller if the variation in observations making up the mean is large. This is because large variations in observations give less confidence to the estimate of the mean. The response to intervention at a site is measured as "standardized mean difference" or

SMD = [(Mi-Mc)/Sp] where:

Mi = mean of intervention or reserve group;

Mc = mean of control or harvest group;

Sp = pooled standard deviation (for both groups)

$= \sqrt{\{[(Ni-1)Si^2 + (Nc-1)Sc^2] / [(Ni-1) + (Nc-1)]\}}$ where:

Si^2 and Sc^2 are the variances of Mi and Mc

Ni and Nc are the sample sizes for the reserve and harvest groups; and

$\sqrt{}$ = square root of the value inside {} brackets

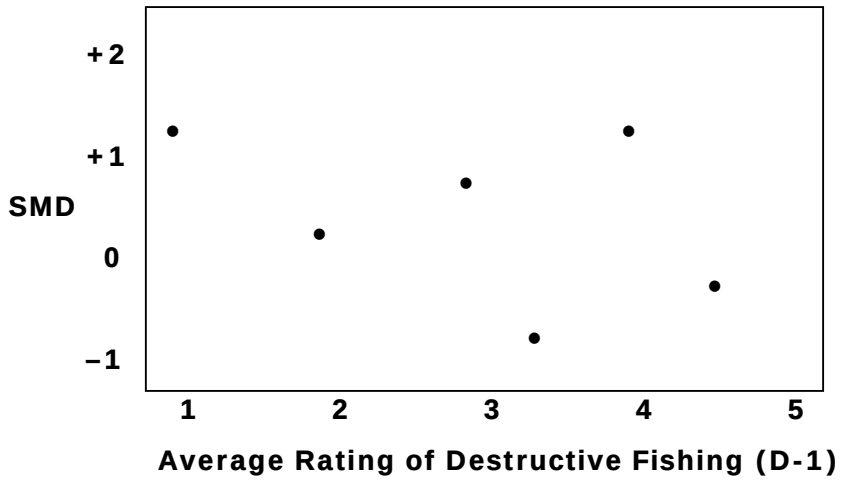
If the combined sample (N = Ni + Nc) is less than 10, the SMD will be biased too high and should be adjusted for small sample size:

SMD' = SMD [1-(3/(4N-9))]

(*This bias can be avoided by making sure that Ni and Nc are each 5 or more during surveys*.)

SMD (and SMD') values that are negative indicate a reverse effect of intervention (e.g., harvest area mean is higher than reserve area mean). SMD values of 0.0 indicate no effect of intervention. SMD values of 0.1-0.3 indicate a small intervention effect, 0.4-0.8 a medium effect and more than 0.8 a large intervention effect.

Once we know from meta-analysis to what degree our intervention was successful, we would be interested in investigating the reasons for success or *lessons learned.* To do that, one can test the assumptions outlined in the direct threats factors, indirect threats factors such as human population, livelihood and governance, strategies factors and practitioners factors and investigate relationships between the success/target factors and these dependent variables. This can be done in two ways, analysis of quantitative data and use of anecdotes and stories. Quantitative data from a number of sites, using various measures of success (SMD) are compared to various factors affecting success using regression or correlation analysis. For example, a meta-analysis of six sites for SMD versus Factor D1 might look like:



Anecdotes and stories are often helpful, especially if quantitative analysis fails to give useful results. Whatever is used, it is important to attempt an explanation of the results.

Site Report and Lessons Learned

Reporting results and lessons learned is a critical final step in the Learning Framework. To make reporting easier and more standardized, a Site Report form using Microsoft Word is provided (Appendix J). This does not mean that other reports or other forms of reporting cannot be used; only that the reporting form is a *minimum requirement* of the LMMA. Ideally, a Site Report should be done after each survey.

The General Description block of the Site Report form is very important. The "Site Name" should be consistently used. "Current Period Covered" refers to the period of data collection being reported. For example, if all data in the report were collected during 2001, 2002 and 2003, the Current Period Covered would be "2001-2003"; including the months in the period can also be useful, for example "Jan 2001- Aug 2003", especially if one report period ends and another begins in the same year. "Past Period Covered" refers to the periods covered in previous Site Reports (LMMA, not other reports); if there are no previous reports for the site, enter "None". "LMMA Strategy" is the place to *describe the LMMA tool(s)* and other tool(s) being used in the LMMA during the period covered and to *explain why this tool or set of tools was selected for use*. If the reason for the strategy is unknown (was not clarified by the community during planning), say so in this block. Remember, it is not possible to separate the effect of two or more tools being used at the same time in the same LMMA, so the entire tool "set" is the LMMA strategy and is the intervention being evaluated. "Contact Person" is not meant to be a list of all the people who worked at the site (such credits can be given in the Report Summary); it is the name, mailing address, telephone and e-mail address of one or two people who helped prepare the report and can respond to questions.

The importance of the "Site Description" cannot be overstated. Without an adequate site description the results will not be thoroughly interpreted nor understood by the site/project team or others. To this end a Site Description Guide (Appendix L) has been provided to for assistance in preparing a thorough Site Description. The location and size of both the LMMA and the reserve(s) should be described; pasting a map in this block is also helpful. A brief history should include the month and year that the LMMA was officially started (recognized by the community), when the LMMA tool(s) was established and any periods when the LMMA tool was suspended or moved (e.g., when a reserve was opened for harvest, then closed again or opened and moved to another part of the LMMA). The methods

for both biological and socio-economic surveys, assuming data for both are included in the Site Report, should be described, at least with enough detail for a reader of the report to understand the general approach to data collection. For example, describe the type, size and number of sampling units (e.g., belt transects) and the T1, T2 and/or T3 indicators used in a biological survey. Don't forget to describe major changes at the site that would affect the LMMA; for example, lease of land to build a resort or change in the size or location of a reserve. Describe the types of socio-economic surveys used in the community (e.g., key informant and household), when the surveys were done and the sample sizes (number of people or households interviewed). Finally, provide general information about the community, such as human diversity, population size and economic status.

The Site Report form is divided into biological and socio-economic components. Within each component, all the factors covered by each component are listed; this is important because if no data were collected for a factor, that fact should be reported in an active way (as opposed to passive reporting by just omitting it). For each component there is a quantitative data section and a qualitative data section; both are important.

Quantitative data reporting includes the sample size, mean and standard deviation for each factor. If there are more than one variable for a factor (e.g., several indicator species for T1) or if there are more than one date or place for a factor (e.g., data from both reserve and harvest areas and/or from two or more surveys of the same LMMA), duplicate the line for the appropriate factor (e.g., T1-Species Health) as many times as necessary. Enter the month and year of the survey under "Date", describe the variable in the "Item" column (e.g., "seagrass cover, harvest area") and the unit of measure under "Unit" (e.g., percent). "Sample size" is the number of observations used to calculate the mean. Enter the mean and standard deviation with at least three digits behind the decimal point if there are three or more.

Qualitative data reporting includes any results of statistical tests, text from comment boxes, or summaries thereof, and any photographs that provide clarity or further meaning to the quantitative data. Enter "Nothing to Report" in the space for qualitative data if no data were collected for a particular factor. Do NOT duplicate rows in the qualitative sections; instead, describe all the quantitative results (t-test results, etc) in a single row for each factor. The report form may be expanded simply by wording wrapping within a cell (continuous typing) or by using the return key; by either method the cell will increase in height indefinitely. Qualitative data (report text) should be kept brief and to the point.

The final step in the Site Report is the Report Summary. This is not simply a repeat of what was said in the component sections. This is where the meaning of the results is

explained. Did the results (measures of success) indicate that the LMMA tool was successful during the reporting period? Why or why not? If you don't know, what is your opinion? In other words, what lessons were learned? Be concise and to the point. Paint the big picture!

APPENDIX A – LEARNING FRAMEWORK FACTORS AS RELATED TO FIELD DATA FORMS

(BL=biological, FG=focus group, KI=key informant, HH=household survey, CS=catch survey, OS=observer-secondary)

Factor	What to Measure/Describe	Source of Information	BL	FG	KI	HH	CS	OS
T1	*Species Health*; abundance and size of various indicator species of plants and/or animals	Biological form for counts of species or groups and for mean size of animal groups	X					
T2	*Habitat Health;* the quantity and quality of various habitat types in the LMMA	Biological form for mapping of habitats by area (hectares) of frequency along transects (%)	X					
T3	*Ecosystem Health*; benefits and services provided by ecosystem over time	Biological form for data on biodiversity; focus groups for tangible and intangible benefits	X	X				
T4	*Reduction of Threat*; identify threats and develop TRA index during focus group session	Focus group session		X				
T5	*Human Well-Being*; responses to questions about material benefits from the LMMAs	Household survey				X		
D1	*Local Marine Resource Harvesting*; methods, catch and effort by local harvesters	Household survey for methods; catch survey for methods, catch and effort			X	X	X	
D2	*Commercial Marine Resource Harvesting*; estimates of effort and harvest and level of destructive harvesting	Key informant interviews for levels of destructive fishing; secondary sources for harvest and effort and number of permits			X			X
D3	*Habitat Loss and Degradation*; causes and severity of habitat degradation/loss for different habitats as used in T2	Focus group session		X				X
D4	*Marine Environment Pollution*; source, extent and severity of various pollutants	Key informant interviews and/or observer-secondary sources			X			X

Factor	What to Measure/Describe	Source of Information	BL	FG	KI	HH	CS	OS
D5	*Invasive Species and Disease*; types, extent and severity of each invasive species and/or disease identified in the LMMA	Key informants and other sources; also information from bio-data for T1 and T2 (used as comments)			X			X
D6	*Climate Change*; data on coral bleaching, water temperature and frequency/intensity of cyclones affecting LMMA	Data on coral bleaching from bio-data for T2 if available; temperature and cyclone data from other sources	X					X
H1	*Number of People at Site*; number of residents by household and the number of visitors/use of LMMA resources per year	Key informants for data on visitors; household survey for data on residents		X		X		
H2	*Human Migration*; number of people moving into and out of the project site during a specified period and their use of LMMA	Household survey				X		X
H3	*Human Population Diversity*; number and proportion of people at the site by diversity such as religion, ethnicity and language	Focus group and household survey		X		X		
H4	*Degree of Consensus*; degree of consensus among stakeholders about LMMA use	Key informants representing various factions in community			X			
L1	*Economic Status*; levels and distribution of material wealth among the households in the community	Household survey OR observer information OR focus group		X		X		X
L2	*Dependence on Marine Resources*; degree of dependence of local stakeholders on LMMA for income and subsistence and the amount of non-marine alternatives for same	Household survey			X	X		
L3	*Market for Marine Products*; demand, access and competition of markets for each marine products from the LMMA	Household survey and focus group		X		X		

Factor	What to Measure/Describe	Source of Information	BL	FG	KI	HH	CS	OS
L4	*Infrastructure and Technology*; degree of economic development in the area	Key informants and/or direct observations		X				X
L5	*Formal Education*; number of years of formal schooling for men and women	Household survey (probably of those 18 or older); children?				X		
L6	*Environmental Knowledge and Attitudes*; degree that local people understand the natural environment and feeling about its use	Key informants and household survey			X	X		
G1	*Governance Institutions*; credibility of individuals/ and groups, formal or informal, that govern LMMA use	Key informants representing different stakeholders (combined with G7 on KI interview form)			X			
G2	*Marine Resource Rights*; specific rights, and their strengths, that stakeholders have over the use of LMMA resources	Key informants representing different stakeholders			X			
G3	*Resource Rules*; awareness, complexity, involvement in establishment and perceived fairness of rules for use of LMMA resources	Key informants representing different stakeholders			X			
G4	*Compliance and Enforcement*; degree to which stakeholders follow resource rules and credibility of enforcement officials	Key informants			X			X
G5	*Political System*; type of political system and degree of democracy affecting LMMA site	Key informants		X	X			
G6	*Cultural Values and Beliefs*; values and beliefs of stakeholders about LMMA use	Key informants and/or household survey			X	X		
G7	*Leadership*; strength and influence of groups or individuals who provide leadership	Key informants representing different stakeholders (combined with G7 on KI interview form)		X				

Factor	What to Measure/Describe	Source of Information	BL	FG	KI	HH	CS	OS
G8	*Resource Conflict*; degree of competition and conflict within community and outsiders	Key informants			X			
S1	*LMMA Tools*; types of LMMA tools by area (hectares) and time in place in the LMMA	Key informants using a map of the LMMA	X	X				X
S2	*Other Conservation Tools*; Non-LMMA tools by area (hectares) and time in use	Key informants using a map of the LMMA	X	X				X
S3	*LMMA Benefits*; types of benefits from the LMMA and degree of distribution	Key informants representing different stakeholders		X				
P1	*Local Participation*; degree of local involvement in the LMMA project	Key informants and household survey			X	X		
P2	*Project Team*; the capacity and involvement of community and staff supporting project	Project records/staff and key informants						X
P3	*Project Investment*; amount of funding provided by/through support organizations	Project records/staff and key informants						X
P4	*Project History*; experience and of community with current project and others	Project records/staff and key informants						X
P5	*Project Partnerships*; degree of linkage, informal and formal, with partner groups	Project records/staff and key informants						X

Appendix B – PACKARD FOUNDATION INDICATORS

The information in this appendix has been specifically requested by the Packard Foundation for inclusion in site reports. The information is organized by relation to the LF database.

For inclusion in the Site Description in the Site Report

- Year in which the Site joined the LMMA network and year monitoring began
- Size of the LMMA in hectares
- Number of full reserves or other protected areas in the LMMA
- For each reserve or protected area, size in hectares and year established**.**

For inclusion in the biological component of the Site Report

- Density or relative abundance of key indicator species (report as a T1 item for each date of survey being reported)
- Density or relative abundance of depleted species (if different to indicator species); report as a T1 item for each date of survey being reported
- Percentage of live coral and/or seagrass cover (report as a T2 item for each date of survey being reported)

For inclusion on the Observer-Secondary data form

- Number of incidences of illegal fishing practices (G4)
- Number of new bans or restrictions placed on specific fishing gears, methods, fish species, etc. (G4)
- Number of new technologies or best practices introduced in the last year to improve LMMA management (S1)
- Number of new policies adopted at local or national levels to improve LMMA management (S2)
- Number of people who received skills training and are actively applying it (P2)
- Presence of plans for long-term financing of the protected area; should include estimates for annual operational costs and sustainable revenue generation (P3)
- Number of new LMMA-related enterprises started and their financial status (P3)

For inclusion in the Project Summary in the Site Report

What is the biggest change (or success) that has occurred since you have implemented your LMMA?

What is the biggest obstacle/difficulty you have encountered in implementing your LMMA?

What is the biggest lesson you have learned in implementing your LMMA?

What is the one piece of advice you would give to others who are considering implementing an LMMA?

Appendix C – BIOLOGICAL DATA FIELD SURVEY FORM

Learning Framework Database
Locally-Managed Marine Area Network

Transfer field data to this form. The first page of this data form is used to record information about the sampling place, time and conditions. Please record as much information as possible.

General Description

Data Enterer	**Country**	
Project	**Site**	**Community**

Biological Sample Description

LMMA Name ***(if different than site name)***	
LMMA Tool ***(circle one)*** ***open harvest species-specific refugia full reserve effort/behavior restriction***	**Date**
Time Start ***(24 hr clock)***	**Time Stop** ***(24 hr clock)***
Station ID	**Sample Unit** ***(e.g. line or belt transect)***
Length ***(meters)***	**Width** ***(meters)***
Area ***(hectares)***	**Effort** ***(circle one)*** ***minutes hours***
Method ***(e.g., gear or technique)***	**Data Recorder**
Comments ***(use additional paper if needed)***	

Biological Sampling Conditions

Habitat Type ***(circle one) mangrove estuary mud flat seagrass back reef reef flat reef crest lagoon fore reef***	**Period of Day** ***(circle one)*** ***day night dawn dusk***
Salinity (ppt)	**Surface Temperature (C)**
Weather ***(circle one)*** ***clear/calm clear/windy cloudy/calm cloudy/windy rain/calm rain/windy***	
Maximum Depth ***(meters)*** **Estimated? Measured?**	**Underwater Visibility** ***(meters)*** **Estimated? Measured?**
Tide ***(circle one)*** ***high low rising falling***	**Sea State** ***(circle one)*** ***calm wavelets small waves medium waves large waves***
Current Direction ***(circle one)*** ***along-shore on-shore off-shore surge absent***	**Current Speed** ***(circle one)*** ***nil perceptible moderate affects sampling***

BIOLOGICAL DATA FIELD SURVEY FORM – Page 2

Learning Framework Database
Locally-Managed Marine Area Network

<u>Count Data</u> – Fish and/or Invertebrates

Sample ID	Species/Group	Number	Sample ID	Species/Group	Number

BIOLOGICAL DATA FIELD SURVEY FORM – Page 3

Learning Framework Database
Locally-Managed Marine Area Network

<u>Measurement Data</u>* – *Fish and/or Invertebrates

Sample ID	Species/Group	Size (cm)	Sample ID	Species/Group	Size (cm)

BIOLOGICAL DATA FIELD SURVEY FORM – Page 4

Learning Framework Database
Locally-Managed Marine Area Network

Mapping and/or Point-Intercept Transect Data

Sample ID	Habitat Type	Area (ha)	Substrate Type	Frequency	Percent

Appendix D – SOCIO-ECONOMIC SURVEY FORM – FOCUS GROUP
Learning Framework Data Base – Locally-Managed Marine Area Network

Focus Groups can consist of key informants and/or stakeholder representatives
(Group members should be encouraged to represent the views of the stakeholders they represent)

General Description

Country	Project	Site	Community	Date	Facilitator

Focus Group Identification

Name	ID	Sex	Age	Rep Role*	Occupation**	Education***	Language****
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
Are any stakeholders not represented in this focus group? If yes, who?							

****stakeholder group represented **primary occupation ***years of education (see User Guide) ****preferred spoken language***

Target Factors

Factor	Question	Group Response
T3	**What benefits and services does your community receive from the marine ecosystem? What is the importance of each one listed? *(1=least important, 5=most)***	– – –
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
T4	***Use the Threat Reduction Analysis worksheet for data on T4***	TRA Index =

Direct Threats *(summarize answers to questions on separate paper; then get group response)*

Factor	Question	Group Response
D3	**What are causes of habitat loss and degradation in the LMMA, if any? Where are these losses occurring? *(use a map, if possible)* How fast are these losses occurring? *(hectares or % lost per year)***	**After documenting any problems, rate the importance of habitat loss as (circle one): *1=none, 2=minor, 3=somewhat, 4=considerable, 5=serious***

Indirect Threats – Human Population

Factor	Question	Group Response
H1	Do you have visitors to the community who use the LMMA in some way? If so, estimate the number per year and describe their use of the LMMA.	After documenting visitor use of the LMMA, rate the importance of visitor use (circle one): *1=little or none, 2=some, 3=moderate, 4=considerable, 5=extreme importance*
H3	What is the diversity of people living in the community? *(clans, ethnic groups, religions are examples)* Estimate the percentage of each. Do any of these groups use the LMMA resources more than the others?	After documenting the diversity of people, rate importance of diversity on LMMA use: *1=little or none, 2=some, 3=somewhat, 4=considerable, 5=extreme importance*

Indirect Threats – Livelihood

Factor	Question	Group Response
L1	What are the sources of material wealth for the community as a whole? Estimate the percent that each of these sources contributes to the total.	After documenting sources of wealth and percentages, rate overall community wealth: *1=poor, 2=some, 3=average, 4=moderate wealth, 5=rich (circle one)*
L3	What are the major products from the LMMA that are taken to market? For each product, rate the competition from other suppliers *(1=lots of other suppliers, 2=many, 3=moderate, 4=some, 5=few or none)*	After documenting the major LMMA market products from the community, rate the overall market competition: *1= little or none, 2= some, 3=moderate, 4= much, 5= a lot*
L4	What are communications with outside world in your community? *(1=only mail, radios, 2=mail and radio with some telephones also, 3=telephone, mail, radios are common, 4=TVs common, some internet, 5=same as any urban center)*	After documenting and rating the communications and transportation, rate the overall level of infrastructure and technology in the community (circle one): *1=little or no infrastructure/technology, 2=some, 3=average, 4=considerable, 5=full services*
L4	What is the transportation access to outside world in your community? *(1=reach outside world only by human power, 2=irregular air/marine service, 3=regular air/marine service, 4=unpaved roads, 5=paved roads)*	
G5	What is the type of local political system that affects the LMMA?	After discussion, rate the political system: *1=imposed leader, 2=hereditary ruler, 3=limited citizen participation, 4=participation with some hereditary rule, 5=rulers elected by people*

Indirect Threats – Governance/Leadership (G7) *(use a secret ballot for this factor only)*

List the LMMA Governance Individuals and Institutions	Average the Ratings of Leadership for each Indiv/Instit*

List each ballot result for each leader based on the following ratings: 1=leader has no influence, 2=has minimal influence, 3=has fair degree of influence, 4=has large degree of influence, 5=leader significantly and consistently influence constituency

Strategies

Factor	Question	Group Response
S1	What LMMA tools are being used in the LMMA? Describe each tool in detail including where it is being used (on a map) and for how long.	Documentation only; no rating
S2	What non-LMMA tools are being used in the LMMA? Describe each tool in detail including where it is being used (on a map) and for how long.	Documentation only; no rating
S3	How are the benefits of the LMMA distributed among local people? *(1=kept by one person/family, 2=kept by one group, 3=shared among certain groups, 4=widely shared among groups, 5=equally shared by all)*	

Comments *(during and/or after focus group session; use additional paper*

Appendix E – SOCIO-ECONOMIC SURVEY FORM – THREAT REDUCTION ASSESSMENT
Learning Framework Data Base – Locally-Managed Marine Area Network
(This form should be used with a focus group to gather information for Factor T4)

General Description

Data Enterer	Country	Project	Site Name	Community	Date

Threat Reduction Assessment ***(where lowest threat is 1 and highest threat is n or number of threats)***

ID	Name of Threat *(and what is required for 100% reduction)*	Area Rating	Intensity Rating	Urgency Rating	Sum of Ratings	% Threat Reduced	Raw Score
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
	Total					---	
TRA Index = (total raw score / total sum of ratings) x 100 =							

Appendix F – SOCIO-ECONOMIC SURVEY FORM – KEY INFORMANT

Learning Framework Data Base – Locally-Managed Marine Area Network

General Description

Data Enterer	Country	Project	Site	Community

Key Informant Identification *(interviews should be done privately with each key informant)*

Name	ID	Sex	Age	Rep Role*	Occupation**	Education***	Language****	Interviewer	Date
	K1								
	K2								
	K3								
	K4								
	K5								
	K6								
	K7								
	K8								
	K9								
	K10								

***position in community** ****primary occupation** *****years of formal education (see User Guide)** ******preferred spoken language**

Are all stakeholders represented by key informants? If not, list those stakeholders not represented:	

SOCIO-ECONOMIC KEY INFORMANT SURVEY FORM

Direct Threats

Factor	Question	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
D1	What is the level of destructive harvesting for local use in the LMMA? *(1=few/no incidents, 2=limited incidents, 3=some incidents, 4=frequent incidents, 5=constant incidents of destructive fishing)*										
D2	What is the level of destructive harvest for commercial use in the LMMA? *(1=few/no incidents, 2=limited incidents, 3=some incidents, 4=frequent incidents, 5=constant incidents of destructive fishing)*										
D4	What is the area or extent of pollution in the LMMA? *(1=none, 2-a few areas, 3=several areas, 4-most areas, 5=entire LMMA)*										
D4	What is the severity of pollution in the LMMA? *(1=none, 2-minor, 3=somewhat, 4-considerable, 5=serious)*										
D5	What is the area or extent of invasive species and plant/animal diseases? *(1=none, 2-a few areas, 3=several areas, 4-most areas, 5=entire LMMA)*										
D5	What is the severity of invasive species and plant/animal diseases? *(1=none, 2-minor, 3=somewhat, 4-considerable, 5=serious)*										

Indirect Threats – Human Population

H4	What is the level of consensus in the community about the LMMA policies and practices? *(1=no consensus, 2=limited consensus, 3=moderate consensus, 4=strong consensus, 5=absolute consensus)*										

Indirect Threats – Livelihood

L2	What part of the community livelihood comes from marine resources? *(1=little or none, 2=some, 3=about half, 4=most, 5=all or almost all)*										
L2	What is the availability of non-marine livelihood activites to the people? *(1=little or none, 2=some, 3=moderate, 4=many, 5=very many)*										
L6	What is the level of environmental knowledge among the people? *(1=little or none, 2=some, 3=moderate, 4=good, 5=excellent)*										
L6	What is the level of environmental attitude of the prople? *(1=strongly negative, 2=negative, 3=neutral, 4=positive, 5=strongly positive)*										

SOCIO-ECONOMIC KEY INFORMANT SURVEY FORM

Indirect Threats – Governance

Factor	Question	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
G1	What is the level of credibility of the institutions governing the LMMA? *1= have no credibility, 2=minimal credibility, 3=fair degree of credibility, 4=large degree of credibility, 5=exceptional credibility*										
G2	What are the marine resource rights of the community members? *(1=have no rights, 2=have limited access rights, 3=have some access rights, 4=have some ownership rights, 5=have full owndership rights)*										
G3	What part of the community is aware of the local LMMA rules? *(1=none, 2=a few, 3=some, 4=most, 5=all are aware of the rules)*										
G3	How well do people understand the resource rules of the LMMA? *(1=too complex to understand, 2=some understanding, 3=many understand, 4=most understand, 5=rules are simple and all understand)*										
G3	To what extent were people involved in making the resource rules? *(1=no involvement, 2=a few were involved, 3=some were involved, 4=most were involved, 5=all were involved)*										
G3	What is the level of agreement with the rules among the people? *(1=no agreement, 2=low level of agreement, 3=about half agree, 4=most agree, 5=all or almost all agree to the rules)*										
G4	What is the level of compliance with the LMMA resource rules? *(1=no compliance, 2=limited, 3=moderate, 4=good, 5=excellent)*										
G4	What is the level of local respect for those who enforce the LMMA rules? *(1=no respect, 2=little, 3=moderate, 4=good, 5=widespread respect)*										
G4	What is the likelihood of penalty for conviction of breaking LMMA rules? *(1=no penalty, 2=token penalty, 3=average, 4=stiff, 5=maximum by law)*										
G4	What is the level of credibility of LMMA law enforcers among the people? *(1=have no authority, 2=have authority but no means to act, 3=have authority but does not act, 4=have authority and is trying to use it, 5=have authority and are successfully using it)*										
G5	What is the type of local political system that affects the LMMA? *(1=imposed leader, 2=hereditary ruler, 3=limited citizen participation, 4=participation with some hereditary rule, 5=rulers elected by people)*										

SOCIO-ECONOMIC KEY INFORMANT SURVEY FORM

Indirect Threats – Governance

Factor	Question	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
G6	What is the level of compatibility between local values and LMMA goals? *(1=no compatibility, 2=limited, 3=moderate, 4=extensive, 5=complete)*										
G6	To what degree to local people value nature for non-material reasons? *(1=no value, 2=some, 3= moderate, 4=strong, 5=only non-material)*										
G8	What is the level of conflict within the community for marine resources? *(1=frequent conflict, 2=some, moderate, limited, no conflict)*										
G8	What is the level of conflict with outsiders for marine resources? *(1=frequent conflict, 2=some, moderate, limited, no conflict)*										

Practitioners

P1	What is the level of local participation by people in the LMMA project? *(1=no participation, 2=a little, 3=moderate, 4=a lot, 5=fully involved)*										
P2	What is the capacity of the project team in adaptive management? *(1=little or none, 2=some, 3=moderate, 4=strong, 5=excellent)*										
P2	What is the interest of the project team in adaptive management? *(1=limited, 2=some, 3=moderate, 4=strong, 5=excellent)*										
P3	*Use project personnel and records to evaluate project investment*										
P4	What is the degree of local origin (history) of the project? *(1=all external, 2=mostly external, 3=balanced origin, 4=extensive local, 5=all local)*										
P4	What is the degree of prior experience with conservation projects?*1=very negative, 2=negative, 3=none or balanced, 4=positive, 5=very positive*										
P4	What is the degree of material expectations of the LMMA? *(1=no expectations, 2=some, 3=moderate, 4=high, 5=very high)*										
P5	*Use project personnel and records to evaluate project partnerships*										

Appendix G – SOCIO-ECONOMIC SURVEY FORM – HOUSEHOLD INTERVIEW

Learning Framework Database – Locally-Managed Marine Area Network

General Description

Data Enterer	Country	Project	Site	Community

Household Identification *(interviewer: remind respondent to answer only for his/her household)*

Surname/Number	Date	Interviewer
Respondent	Family Status *(circle one) husband wife adult child adult relative other*	Comments? *(circle one, use page 4) yes no*

Household Members *(present in household now)*

First Name	Sex	Age	Married?	Occupation*	Education**	Ethnicity	Religion	Language***	Recent****

**primary occupation **years of education ***preferred spoken language ****moved into community during past 2 years?*

SOCIO-ECONOMIC HOUSEHOLD SURVEY FORM

Out-Migrating Household Members *(those who lived in household and move out of community past 2 years*)*

First Name	Sex	Age	Married?	Occupation**	Education***	Ethnicity	Religion	Language****

**do not include people who have died **primary occupation ***years of formal education ****preferred spoken language*

Household Economics *(use broad categories for income and expenditure; see User Guide)*

Rating*	Income Category	Monthly Value** (estimated)	Expenditure Category	Monthly Value** (estimated)	Material Asset***	Estimated Value**
1						
2						
3						
4						
5						
6						
7						
8						

**1=most important, 8=least important **cash values; may be too sensitive to ask ***real property owned*

SOCIO-ECONOMIC HOUSEHOLD SURVEY FORM

Dependence on Land and Marine Resources *(including cultivated animals and plants; use broad groups)*

Resource*	Family and Shared Use		Commercial Use			
	Harvest Frequency**	Quantity and Unit***	Harvest Frequency**	Quantity and Unit***	Market Demand****	Sale Value per Unit
From the land:						
From the sea:						

list important resources by name, first land then marine **weekly, monthly, annually ***e.g., 1 bundle, 2 bags, 3 items
*****1=can never sell, 2=can rarely sell, 3=can sometimes sell, 4=can often sell, 5=can always sell***

SOCIO-ECONOMIC HOUSEHOLD SURVEY FORM

Fishing Gear Used by Household *(background information only)*

Type of Fishing Gear	Men	Women	Both

LMMA Benefits and Awareness

Statement	HH Response*	Interviewer Rating**
1. My household gets material benefits (eg, cash) from the LMMA	1 2 3 4 5	1 2 3 4 5
2. My household gets non-material benefits (eg, good health) from the LMMA	1 2 3 4 5	
3. The LMMA is compatible with our culture	1 2 3 4 5	1 2 3 4 5
4. The culture of our community benefits from the LMMA	1 2 3 4 5	
5. My household knows about the community LMMA	1 2 3 4 5	1 2 3 4 5
6. My household participates in the community LMMA	1 2 3 4 5	

(1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

****(1=no LMMA support,2=weak LMMA support, 3=adequate LMMA support, 4=good LMMA support, 5=excellent LMMA support)***

Environmental Awareness *(list the issues in your community)*

Environmental Issue	Environmental Issue

Interviewer Observations *(observe assets during visit to household)*

Household Assets
House construction:
Furniture:
Appliances:
Toilet type:
Electricity/Lighting:
Transportation:
Other:
Interview OR observer rating of household wealth relative to local standard of living: *Circle one: 1=poor, 2=little wealth, 3=average, 4=moderate wealth, 5=rich*

Interviewer Comments *(during and/or after the interview; use additional paper)*

Appendix H – SOCIO-ECONOMIC SURVEY FORM – HOUSEHOLD TALLY SHEET
Learning Framework Database – Locally-Managed Marine Area Network

(Interviewers use this form to summarize data from household surveys)

General Description

Data Enterer	Country	Project	Site	Community	Date of Survey

Number Households Surveyed	Number Households in Community	Source of Information for Number of Community Households

Household Size *(compile the data from all households surveyed)*

	Household																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Number in Household																				
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Number in Household																				

Household Demographics *(use the data from all households surveyed including out-migrants*)*

Sex	Total Number	Age Group *(years)*										
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100+
Male												
Female												
Total Number												

column and row totals should add up to the total number of people in the households surveyed

SOCIO-ECONOMIC HOUSEHOLD SURVEY TALLY SHEET

Household Diversity *(use the data from all households surveyed including out-migrants*)*

Education		Occupation		Ethnicity		Religion		Language	
Years	People	Type	People*	Type	People*	Type	People*	Type	People*
0-1									
2-3									
4-5									
6-7									
8-9									
10-11									
12-13									
14-15									
16-17									
18-19									
20+									

tally the number of people in each category (eg, each type of occupation); calculate the percentage in each category

Marriages and Migrations by Sex *(use the data from all households surveyed including out-migrants*)*

Sex	Total Number	Number Married	Number Recent Move-ins	Number Recent Move-outs
Male				
Female				
Total				

the total number of people should equal the total number of people in the households surveyed

SOCIO-ECONOMIC HOUSEHOLD SURVEY TALLY SHEET

Household Income, Wealth, Dependence, Environmental Awareness and LMMA Views

	Household																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Income[a]																				
Wealth[b]																				
Dependence[c]																				
Awareness[d]																				
Benefits[e]																				
Compatibility[f]																				
Participation[g]																				
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Income[a]																				
Wealth[b]																				
Dependence[c]																				
Awareness[d]																				
Benefits[e]																				
Compatibility[f]																				
Participation[g]																				

[a] ***Interviewer: Enter the monthly incomes by household from page 2 of the household survey form***

[b] ***Interviewer: : Based on interviews and observations, enter rating of wealth from page 4 of the household survey form***

[c] ***Interviewer: : Based on interviews, enter rating of marine resource dependence from page 3 household survey form***

[d] ***Interviewer: : Based on interviews, enter rating of environmental awareness from page 4 household survey form***

[e] ***Interviewer: : Based on questions 1 and 2 on household survey form page 4, enter your rating of LMMA benefits***

[f] ***Interviewer: : Based on question 3 and 4 on household survey form page 4, enter your rating of LMMA compatibility***

[g] ***Interviewer: : Based on questions 5 and 6 on household survey form page 4, enter your rating of LMMA participation***

SOCIO-ECONOMIC HOUSEHOLD SURVEY TALLY SHEET

(the steps below require input from this tally sheet to the LFDB database worksheet*)

Worksheet *Row	Action
49-50	Transfer the data on the total number of households and the household sizes to the worksheet
53-55	Transfer the data on household demographics (page 1 of tally sheet) to the worksheet
69	Education: Transfer the data on years of formal education (page 2 of tally sheet) to the worksheet
57	Occupation: calculate the percentage of people in each category and assign a rating to the results: *(1= one is 80% or more, 2=one is 60-79%, 3=one or more is 40-59%, 4= one or more is 20-39%, 5= each category 19% or less);* then enter the rating on page 2 of the tally sheet and on the worksheet
58	Ethnicity: calculate the percentage of people in each category and assign a rating to the results: *(1= one is 80% or more, 2=one is 60-79%, 3=one or more is 40-59%, 4= one or more is 20-39%, 5= each category 19% or less);* then enter the rating on page 2 of the tally sheet and on the worksheet
59	Religion: calculate the percentage of people in each category and assign a rating to the results: *(1= one is 80% or more, 2=one is 60-79%, 3=one or more is 40-59%, 4= one or more is 20-39%, 5= each category 19% or less);* then enter the rating on page 2 of the tally sheet and on the worksheet
60	Language: calculate the percentage of people in each category and assign a rating to the results: *(1= one is 80% or more, 2=one is 60-79%, 3=one or more is 40-59%, 4= one or more is 20-39%, 5= each category 19% or less);* then enter the rating on page 2 of the tally sheet and on the worksheet
61-63	Transfer the data in the marriage and migration table (page 2 of the tally sheet) to the worksheet
64	Income: Transfer the data on monthly income by household (page 3 of the tally sheet) to the worksheet
65	Wealth: Transfer the ratings of wealth (household assets) by household that resulted from the interviews OR that were made by the observer, BUT NOT BOTH, from page 3 of the tally sheet to the worksheet
66	Dependence: Transfer the ratings of dependence on marine resources by household (page 3 of the tally sheet) to the worksheet
67	Market Demand for Marine Products: Based on the interviews (page 3 of HOUSEHOLD SURVEY) assign a rating to each household for market demand of household marine products *(1=no demand, 2=weak demand, 3=adequate demand, 4=good demand, 5=strong demand)* and transfer these rating to the worksheet
70	Environmental Awareness: Transfer data on ratings of awareness of environmental issues (page 3 of the tally sheet) to the worksheet
71-73	LMMA Benefits, Compatibility, Participation: Transfer interviewer ratings for LMMA benefits, compatibility and participation (page 3 of the tally sheet) to the worksheet

Appendix I – SOCIO-ECONOMIC SURVEY FORM – CATCH SURVEY
Learning Framework Database
Locally-Managed Marine Area Network

General Description

Enterer	Country	Site/Community

Survey Information

Name of Head Fisher	Date	Time (24-hour clock)
Home of Head Fisher	Type of Fisher *subsistence commercial both*	Total Crew Number
Gear Used *(for this catch)*	Number of Hours Spent	Percent of Catch Sampled *10 25 50 75 100 other:*
Location(s) of this catch		

Catch Composition *(circle appropriate measurement)*

Species or Group	Total No. or Wt.	Length (cm) or Weight (g) Measurements												

Appendix J
SOCIO-ECONOMIC SURVEY FORM – OBSERVER-SECONDARY
Learning Framework Database
Locally-Managed Marine Area Network

General Description

Data Enterer	Country	Project	Site	Community	Date

Background Information *(other surveys during this event)*

Name of Observer	Key Informant Interviews? *no yes date:*	Household Survey? *no yes date:*
Focus Group Survey? *no yes date:*	Catch Survey? *no yes date:*	TRA Survey? *no yes date:*

Additional Information from Observer and Secondary Sources

Factor	Question	Response or Rating	Source of Data
D2	What is the period of effort and harvest for commercial fishing?		
D3	What habitat loss and degradation has occurred in the LMMA?		
D4	What are the sources, extent and severity of various pollutants?		
D5	What invasive species and diseases are affecting the LMMA?		
D6	What are the effects of climate change on the LMMA?		
H2	What are the rates of migration for the site from census records?		
L1	What are levels and distribution of wealth in the community?		
L4	What is the infrastructure and technology in the community?		
P2	What is the capacity and involvement of personnel involved in the project?		
G4*	What is the change in number (+ or -) of illegal fishing practices?		
G4*	What is the number of new fishing restrictions on gear, fish species, etc?		

S1*	**What is the number of new technologies or best practices introduced last year to improve LMMA management?**		
S2*	**What is the number of new policies adopted at local or national levels to improve LMMA management?**		
P2**	**What is the number of individuals who received skills training and are actively applying it?**		
P3*	**What is the presence of plans for long-term LMMA financing, including annual operational costs and sustainable revenue generation?**		
P3*	**What is the number of new LMMA-related enterprises started (comment on their financial status)?**		
P3	**What is the amount of funding provided by and through support groups?**		
P4	**What is the experience of the community with this project and others?**		
P5	**What is the degree of formal and informal linkages with partners?**		

***Packard Foundation indicator**

****If people were trained (P2), complete this table and summarize in the line for P2 in qualitative socio-economic component of Site Report**

How many community members have been trained in monitoring?

How many community members are actually participating in monitoring?

How many of those community members who have attended LMMA workshops are actively engaged in the LMMA or related activities?

How many community members have attended LMMA workshops?

Number of cross site visits, specifically:

Someone from your site to a different site (in country) _____ (number)

Someone from a different site to your site (in country) _____ (number)

Someone from your site to a different site (internationally) _____ (number)

Someone from a different site to your site (internationally) _____ (number)

Appendix K – SITE REPORT
Learning Framework Database
Locally-Managed Marine Area Network

For factors with no data, enter "Nothing to Report".
Cells may be expanded using the return key or by word wrapping.
Duplicate rows for quantitative data as needed, but not qualitative data.

General Description

Country	**Site Name**
Current Period Covered ***(by this report)***	**Past Period Covered, if any** ***(by previous reports)***
LMMA Strategy ***(explain why tool(s) was selected)***	**Contact Person for this Report**
Site Description ***(brief history and description, including map of LMMA and location, number and size of reserves)***	

Biological Component/Quantitative Data

Factor	Date	Item	Unit	Sample Size	Mean	SD
T1-Species Health						
T2-Habitat Health						
T3-Ecosystem Health						

Biological Component/Qualitative Data

Factor	Report
T1-Species Health	
T2-Habitat Health	
T3-Ecosystem Health	

Socio-economic Component/Quantitative Data

Factor	Date	Item	Unit	Sample Size	Mean	SD
T3-Ecosystem Health						
T4-Threat Reduction						
T5-Human Well-Being						
D1-Local Marine Harvest						
D2-Commercial Marine Harvest						
D3-Habitat Loss/Degradation						
D4-Marine Pollution						
D5-Invasive Species/Diseases						
D6-Climate Change						
H1-Human Population						
H2-Human Migration						
H3-Human Population Diversity						
H4-Degree of Consensus						
L1-Economic Status						
L2-Marine Resource Dependence						
L3-Market for Marine Products						
L4-Infrastructure/Technology						
L5-Formal Education						
L6-Environment Knowledge						
G1-Governance Institutions						

Factor	Date	Item	Unit	Sample Size	Mean	SD
G2-Marine Resource Rights						
G3-Resource Rules						
G4-Compliance/Enforcement						
G5-Political System						
G6-Cultural Values/Beliefs						
G7-Leadership						
G8-Resource Conflict						
S1-LMMA Tools						
S2-Other Conservation Tools						
S3-LMMA Benefits						
P1-Local Participation						
P2-Project Team						
P3-Project Investment						
P4-Project History						
P5-Project Partnerships						

Socio-economic Component/Qualitative Data

Factor	Report
T3-Ecosystem Health	
T4-Threat Reduction	
T5-Human Well-Being	
D1-Local Marine Harvest	
D2-Commercial Marine Harvest	
D3-Habitat Loss/Degradation	
D4-Marine Pollution	
D5-Invasive Species/Diseases	
D6-Climate Change	
H1-Human Population	
H2-Human Migration	
H3-Human Population Diversity	
H4-Degree of Consensus	
L1-Economic Status	
L2-Marine Resource Dependence	
L3-Market for Marine Products	
L4-Infrastructure/Technology	
L5-Formal Education	
L6-Environment Knowledge	
G1-Governance Institutions	
G2-Marine Resource Rights	
G3-Resource Rules	
G4-Compliance/Enforcement	
G5-Political System	
G6-Cultural Values/Beliefs	
G7-Leadership	
G8-Resource Conflict	
S1-LMMA Tools	
S2-Other Conservation Tools	
S3-LMMA Benefits	
P1-Local Participation	
P2-Project Team	
P3-Project Investment	
P4-Project History	
P5-Project Partnerships	

Report Summary
