Developing Human Capacity for Marine Scientific Research in Myanmar

Roxane S. de Waegh
University of Miami, dw.roxy@gmail.com

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DEVELOPING HUMAN CAPACITY FOR MARINE SCIENTIFIC RESEARCH IN MYANMAR

By

Roxane S. de Waegh

A THESIS

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DEVELOPING HUMAN CAPACITY FOR MARINE SCIENTIFIC RESEARCH IN
MYANMAR

Roxane S. de Waegh

Approved:

Sarah Keene Meltzoff, Ph.D.
Associate Professor
Marine Affairs and Policy

John W. McManus, Ph.D.
Professor, Marine Biology and Fisheries

Dean of the Graduate School

Johann Besserer, M.Sc.
Executive Director
Intercultural Outreach Initiative
Galapagos, Ecuador
Scientists worldwide believe that sustainable resource management must be based on results derived from successful research (Strigl, 2003). Therefore, scientists are constantly engaged in research projects in order to obtain more results and create new knowledge. In this constant pursuit of knowledge, the international scientific community is minimally participating in the development of human capacity, especially when their research is based in low-income countries (LIC) (Strigl, 2003). This research-based agenda benefits scientific societies in developed countries, as they continuously add value to their knowledge-based economy, while the local communities’ education levels remain stagnant. LIC’s needs in education and science are great yet their research infrastructure is poor (OECD, 2012). Thus, research networking becomes essential as it offers the necessary connections to build a collaborative platform from which innovation can start bottom up.

The strategy to guiding the knowledge economy is based on innovation. It concerns multiple disciplines and stakeholders, from education and training in the social environment to job creation in the economic environment (OECD, 2012). In 2011, The Organisation for Economic Co-operation and Development (OECD) proposed an Innovation Strategy based on three years of dialogue and analysis of good practices (OECD, 2012). The strategy emphasis that: (1) education empowers people to innovate;
(2) strong scientific research capacity can promote this breach in local innovation; and (3) that the key tool for sharing new knowledge and good practice is networking (OECD, 2012.) The international scientific research community has a responsibility to align their academic research to the educational development of local people. A shift in research agenda is essential for the growth of a global knowledge economy.

The objective of my research is to help guide the “seeking” and “building of knowledge” in a manner that empowers local communities with scientific knowledge and builds the human capacity for locally implemented research projects. Based on extensive background research, this thesis proposes an innovative strategy to achieve the research objective and proceeds to implement the strategy for the inclusive development of marine scientific research in the rapidly developing country of Myanmar.

Since innovation concerns multiple disciplines, the strategy selected an interdisciplinary field of research known as Social Coastal Ecology. The strategy consists of three phases: (1) Creating a Scientific Research Network; (2) Training and Education for Multidisciplinary Research; and (3) A Field-Based Approach to Integrating Knowledge. The success of this framework is dependent on the individual achievements derived from each phase. Therefore, each phase is essentially connected to one another, and must be conducted in this order.

The implementation of the proposed pioneering strategy in Myanmar resulted in a series of accomplishments, which are summarized into three chapters based on the framework’s three phases. This thesis can be used as a guide for global scientists who wish to conduct research while sharing their expertise and knowledge with local people, empowering them with education and leading them to innovation.
ACKNOWLEDGEMENTS

Thank you to my mother, fathers, grandparents, brothers and sisters for growing with me and teaching me the art of connectedness. Despite living in our fantasy world, filled with over-sensitizing international experiences, we never lost touch with the world of realities and simplicities. Each of you has contributed to this thesis, since the knowledge I have now is just a mere reflection of the lessons you have shared with me. This thesis is dedicated to you, my global trotting nomadic family—and especially to the courageous leader of our crazy tribe, my mother, Catherine Beeckman—“l’amour maternel ne veut que le bonheur de l’être aimé, même sans en être la source” (Henri Frédéric Amiel, 1877.)

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(NNO) and Khin Myo Myo Tint (Chu-Chu), for joining me on a field-based research trip in Myanmar’s Ayeyarwady Delta region during the middle of the monsoon season.

Thank you to Fauna and Flora International (FFI) for offering NNO and Chu-Chu a real field-based marine science research experience by inviting them to collaborate with your team of experts in Mein-ma-hla Kyun Wildlife Sanctuary (MWKS). Thank you FFI project managers, Robert Howard and U Zau Lunn, for facilitating this research by providing the guidance of your two on-site field coordinators - Khin Maung Soe and Thant Zin Tun- and thank you to the field coordinators for sharing your boat and guiding the students and I to 23 traditional fishing villages. Thank you to Myanmar’s Forest Department in Bogalay Township for providing the official permits necessary to conduct research, and for offering the expert guidance of two of your Forest Rangers, Zaw Htoo Aung and Kyaw Kawy Naing. Thank you Dr. Tint Swe for sharing your unique knowledge on the traditional fisheries of Bogalay Township and for helping the students and I identify over 53 species of marine, brackish and freshwater fish. Finally, a special thank you to all the villagers around Mein-ma-hla Kyun Wildlife Sanctuary for welcoming me to their homes, for inviting me to experience their traditional livelihoods and for sharing their time, knowledge, and infinite smiles.

In summary, thank you to everyone who made this research initiative possible by collaborating in this open-ended network. The information in this thesis is created for all of you to share with the relevant stakeholder groups you desire for the purpose of enhancing communication and increasing information transparency within Myanmar’s marine scientific research community.
PREFACE

This thesis was written and formatted following the guidelines presented by the University of Miami Graduate School. There are three chapters: Designing a Marine Science Research Network (Chapter 1), Training and Education for Multidisciplinary Research (Chapter 2), and A Field-Based Approach to Integrating Knowledge (Chapter 3).
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INTRODUCTION

DEVELOPING HUMAN CAPACITY

The human is one of the most valuable resources available to any economy. If a human is not healthy, educated, and integrated into meaningful work, that is detrimental not just for the individual but for society as a whole. For the first time, humanity is moving towards the systems of both economic governments and economic production, which are human-centric rather than machine centric. The movement towards the human capital centric economy is an age of change, where human capital becomes the most important capital of production (Gurdgiev, 2013). The term “human capital” has become increasingly more individualized – more human – by including the social skills of a human, their innovative capacity and entrepreneurial skills, and by focusing on the ability of a human to create social networks that enables empathy towards other human beings across different geographies. Within the context of this thesis, the term “human capital” is defined as the available education and skills within the low-income country (LIC) of Myanmar, and how civil society can collaborate in order to further develop the human capital within the context of limited marine scientific research capacity in LICs.

The main explanations for limited research capacity in LIC have been identified in the literature as: inadequate resources for education at every level; the drain of expertise to high-income countries (HIC); dependence on HIC research funding; inequitable access to the literature; unbalanced research collaborations between LIC and HIC, and poor support from local government (Gaffar, Ijsselmuider & Zicker, 2008). Some see the perpetuation of inadequate research capacity as replicating the imbalance in
global trade relationships (Nchinda, 2002) and essentially semi-colonial (Costello & Zumla, 2000). Whilst the main causes of weak research capacity are clearly macro-economic, the *process* of conducting research might contribute to the problem and may be more readily modified (Green, 2003).

Marine scientific research could be improved in LICs if international development and research institutions in HICs were to: 1) operate graduate training programs for local scientists in their home countries or comparable locations rather than abroad to ensure that scientists learn to research in realistic settings, are able to help solve local problems, and could continue their research after completion of their degree, 2) provide practical short-term training, by local and foreign experts for marine scientists who work directly with fishermen/related to fisheries, in an advisory capacity, 3) provide literature or grants for preparation and publication of books and bulletins by local scientists to improve access to up-to-date information in countries with inadequate libraries and information resources and 4) sponsor demonstration projects. The goal of such efforts is to promote the scientific, technical, and management expertise developing countries need to carry on work beyond the life span of individual aid projects, and to ensure that research at the local level can be cooperative, accessible, and relevant. This thesis explores methods to improve the process of marine scientific research and proceeds to implement an ideated solution in Myanmar.
CHAPTER 1:
DESIGNING A MARINE SCIENCE RESEARCH NETWORK

PERSPECTIVE

A scientific research network aims to strengthen human linkages by creating a collaborative platform on which stakeholders can contribute their unique skills and knowledge. These networks already exist in many developed countries, where universities have close affiliations with national and international agencies, government agencies, private research institutions, NGOs, and even foreign governments (Morisson et al., 2013). Students are able to use these extensive connections to utilize their theoretical knowledge in a real world setting that involves field-based training and research. These experiences allow students to further develop the skills and knowledge they possess, as well as acquire new talents in their research field.

In contrast, most developing countries lack these supportive networks, which results in the limited research capacity of their local universities (Morisson et al., 2013). In order to build the research capacity of universities in developing countries, the innovative strategy must first create a network that increases student access to research opportunities. By using a design-thinking method, this chapter illustrates the development of a marine science research network in Myanmar. The network: (1) supports local and global outreach initiatives by linking international universities to local universities; (2) builds partnerships between educational and environmental INGOs by aligning their research interests to collectively reach their project objectives; and (3) creates a mutually beneficial relationship between the student and the involved stakeholders.
OVERVIEW

Myanmar’s military dictatorship devastated the country’s higher education system. The height of the dictatorship’s violent oppression was in 1988, as the military used its power to brutally suppress student protests resulting in thousands of deaths and arrests. Since then, Myanmar’s university system was effectively dismantled, universities were nationalized under 13 ministries, and academics were cut off from their international counterparts (Brownell, 2014). These actions taken by the military dictatorship did not only aim at physically dispersing student populations by creating undergraduate courses in isolated satellite campuses, but it also sent a strong message that you cannot use higher education institutions for political activities (Than, 2014).

Since the quasi-free elections in 2010, the country has been slowly opening up and changes in higher education have been happening rapidly (McCord, Denis & Weil, 2013.) There are plans to give universities more autonomy and to decentralize powers by slowly moving some authority away from the ministries (McCord, Denis & Weil, 2013). There is also a strong understanding that the current vocational and higher education curriculums may not be relevant to the needs of the opening job markets (Brownell, 2014). For example, as tourism is exponentially increasing in Myanmar, development risks being held back by a shortfall in higher education and vocational training in essential, skills such as hospitality, foreign languages, and environmental education for eco-tourism. Therefore, courses need to be designed with a greater job orientation in practical areas and nurture the development for critical thinking skills. Additionally, there is also an understanding that international educational links are essential for universities to improve their courses and prepare students from the global job market (Brownell,
In response to these needs, many international non-governmental organizations (INGOs) have taken an active role in the humanitarian development for Myanmar (IHRB, 2014). One of these INGOs, pointB Design + Training (pointB) is the pivotal centerpiece of the designed marine scientific research network.

PointB is a US-based NGO working to support the rebuilding of education systems and community governance in Myanmar (pointB, 2014). PointB understands that “Education” is a key element in the Innovation Strategy, yet it uses education to promote creative teaching which will enable critical thinking skills and entrepreneurial attitudes – a step closer to sustainable change. Under a Memoriam of Understanding (MoU) with Myanmar’s Ministry of Education, pointB is establishing a Design-Thinking Center for Community Engagement at Mawlamyine University in Mon State, Myanmar (pointB, 2013).

Mawlamyine University was established in 1953 and is currently Myanmar’s third largest university, enrolling 9,000 full-time students and 8,000 correspondent students (Aung, 2014). The university has 15 departments with an emphasis in Marine Science. From 1982 to 1986 the UNDP provided assistance to expand the Mawlamyine University Marine Science Research program to other areas of Mon State (Aung, 2013). To date, these research extension centers have been closed due to budgetary constraints and national policy. Consequently, the Rector of Mawlamyine University, Dr. Htay Aung, has asked pointB to support Mawlamyine University as it rebuilds its Marine Science research and education programs (Aung, 2013) in exchange for letting pointB open their Design-Thinking Center for Community Engagement on Mawlamyine University’s campus. PointB has used their extensive international network and created yet another
partnership with Scripps Institution of Oceanography (SIO), University of California, San Diego, in order to build capacity for marine scientific research at Mawlamyine University (pointB, 2015).

Thus, the partnership between pointB and Mawlamyine University is based on aligning two stakeholders’ shared interest in rebuilding educational programs. This collaboration offers mutual benefits to both partners: (1) PointB is now able to open their Design-Thinking Center for Community Engagement on Mawlamyine University’s campus and use the university’s local network to build local partnerships with various civil society organizations, local government, and local businesses; and (2) Mawlamyine University is now in an active partnership with a prestigious US-based research institution, but more importantly, is able to communicate with the international scientific research community by using pointB’s extensive global network.

This collaborative platform between pointB, Myanmar Ministry of Education, Scripps and Mawlamyine University, dissolved the communication barrier between Mawlamyine University and the international scientific community. The result of this intercultural outreach initiative, led by pointB’s innovative design-thinking method, offered me all the start-up tools and connections that I needed to create a marine science research network. However, in order to use pointB’s tools and local connections, I had to create a partnership with them by aligning my research interest with their mission to support the rebuilding of marine scientific research at Mawlamyine University. After a series of open-ended dialogues with the pointB team, via emails and Skype—from Miami, Florida to Mawlamyine, Myanmar—pointB offered me a Student Fellowship starting June 2015 in Mawlamyine, Mon State, Myanmar. Since June 2015, we have
continued to learn together about how design-thinking works in the Myanmar context, and are actively collaborating to expand this open-ended marine science network which will support students at Mawlamyine University by increasing their access to research opportunities.

**MATERIALS AND METHODS**

The method known as “design-thinking” is a formal method for creative solutions of problems, starting with a goal instead of specific problem (Lawson, 2002). Design-thinkers solve by synthesis, as they try to find open alternative paths to a desired goal. In contrast, scientists solve by problem analysis, using the common analytical scientific method (Cross, 1982). As scientists break down an intellectual or substantial whole into parts or components, design-thinkers combine separate elements or components in order to form an innovative coherent whole (Ritchley, 1991). I used the design-thinking method to start building a comprehensive marine science research network.

Despite having chosen design-thinking over the common scientific method, it is important to understand the meaning of both methods, as careless interpretations can lead a researcher to believe that one method is inherently better than the other. Such a conclusion would be meaningless, since the two methods complement one another. In classical Greek, the term analysis literally means, “to loosen up” and synthesis means “to put together” (Ritchley, 1991). Every synthesis is built upon the blocks separated by a preceding analysis, and every analysis requires a subsequent synthesis in order to verify and correct its results (Ritchey, 1991.) Therefore, one method cannot exist without the other; they complement one another by using different thinking processes.
Design thinkers use divergent thinking, which is the ability to offer unique ideas by exploring many solutions (Jones, 1992). Design-thinking encourages divergent thinking, critical for the brainstorming phase, and the “thinking outside the box phase”, which enables ideas to build without limitations. By creating an environment where all ideas are possible, design-thinkers reduce the fear of failure or criticism, which may otherwise prevent someone from participating in this inclusive process (Robson, 2002). Design-thinking promotes collective action by including various perspectives, empathizing with participants, and including numerous and diverse stakeholder groups.

There are many versions, or paths, that a researcher can adopt as they use the solution-based design-thinking method. The path that pointB chose, and the one I have learned to use, is based on a set of tools and techniques from design-thinking – including “frog’s Collective Action Toolkit”. Frog is a global design and strategy firm whose passion is to transform ideas into realities (Frog, 2015). Frog is partnered with interdisciplinary teams of clients to solve the toughest of challenges. For example, Frog is in a partnership with Federal Emergency Management Agency (FEMA) to rethink disaster relief management by developing concepts that empower locals to begin the recovery process before FEMA arrives on the scene (Frog, 2015.) In summary, frog is contributing their professional design-thinking talent and energy to people and places that need it the most – including Myanmar, by partnering with pointB.
By combining frog’s Collective Action Toolkit and pointB’s design-thinking tools and techniques, I was able to design an open-ended marine science research network built on collective action and empowerment.

PointB’s design-thinking tools that were used can be summarized in seven steps –

(1) Empathize – “to create meaningful innovations, you need to know your users and care about their lives” (Both, 2012).
   a. This is the centerpiece of a human-centered design process. This is the work you do to understand people, within the context of your design challenge (Both, 2012). It is your effort to understand the way they do things and why, their physical and emotional needs, how they think about the world, and what is meaningful to them.

(2) Define – “Framing the right problem is the only way to create the right solution” (Both, 2012).
   a. Construct a point of view that is based on user needs & insights.

(3) Ideate – “It’s not about coming up with the “right” idea, it’s about generating the broadest range of possibilities” (Both, 2012).
   a. Brainstorm and come up with a creative solution.

(4) Prototype – “Build to think and test to learn” (Both, 2012).
   a. Build a representation of one or more of your ideas to show to others.

(5) Test – “Testing is an opportunity to learn about your solution and your user” (Both, 2012).
   a. Return to your original user group and test your ideas for feedback.

(6) Creative Needs-Finding
   a. Trust that your ability to define a problem will emerge during the needs-finding process by uncovering latent need.

(7) Ecosystem Map
   a. Find where opportunities are, what you can do, and whom the people are that you need to connect with in order to reach your goal.

Frog’s Collective Action Tools can be summarized in the following six steps:

(1) Clarify a Goal
   a. Decide what kind of impact you want your group to have.
   b. Define your problem.
c. Set the goals you want to achieve – and when you want to achieve them.
d. Check your goals over time since goals tend to change over time, see if anything has changed about the goals you want your group to achieve.

(2) Build Your Group
a. Skill share—encourage group members to share their unique skills, and determine what skills they may need to reach their goals.
b. Knowledge hunt—find out what your team already knows about challenges you’re interested in solving together and what you’d like to learn.
c. Who inspires us—identify people in the community and beyond that inspire your group and could help you solve your group’s challenges.
d. Rings of connection—discover which people in your community can help your team with specific challenges.

(3) Seek New Understanding
a. Find issues, uncover needs—reach out to people and gain their perspective on issues that matter to them, and consider what your group is able to do collectively to help.
b. Interview—carry out on open-ended, emphatic ethnographic interviews.
c. Share—share what group members discovered from their interviews, then identify important themes to consider across the interviews.
d. Pattern quest—dive deeper into what group members discovered in their interviews, identifying deeper reasons behind issues.

(4) Imagine More Ideas
a. Create new solutions—explore a range of different solutions by building upon each other’s ideas in a supportive manner.
b. Combine ideas—take ideas from the group, whether good or bad, and combine them in different ways to generate new ones.
c. Grow an idea—build off the unique strengths of each other’s ideas to create even better ones.
d. Select—look across all the ideas your group has created and decide which ideas should be made real, and for the right reasons.

(5) Make Something Real
a. Storyboarding – create a visual story that explains how an idea would impact people over time.
b. Write – craft a simply story that explains to other people why your group’s idea is relevant, then practice sharing it with others.
c. Share ideas – share ideas with other people in a way that relates new concepts to real-world examples.
d. Prototype it – physically make a real-word version of your idea and test it with people in the community.

(6) Plan for Action
a. Setting an agenda – identify the most pressing challenges your team needs to tackle, then agree on the steps you should take to address them.
b. Divide and conquer – split your group into smaller teams that can plan and execute specific action items.
c. Set the timeline – create a schedule for your team to keep track of what needs to get done and what you’ve accomplished.
d. Keeping the momentum – motivate everyone on your team to keep moving forward at a productive rate, and communicating about who’s doing what.

These innovative design approaches have allowed me to create partnerships and increase human-linkages between diverse groups of stakeholders in Myanmar. The progression of these partnerships were dependent on an adaptive framework, where I built partnerships based on the locations I was in and used the available tools (e.g. computer, internet, cell phone) available in the different areas. The shifting resources and access to people in various places over time effected what I could accomplish.

I had started to design the research network in Miami, Florida in August, 2014, by seeking new understandings, finding issues and uncovering needs. The core problem was defined based on the need for an increase in participation from the international scientific community in humanitarian development. However, in order to create a meaningful innovation to solve this problem, I had to learn to understand the people within the context of my design challenge in Myanmar. As I empathized with the people who would benefit from my research through the creative needs-finding method, I was able to clarify my research objective, decide what kind of interactions I wanted to have, and define a clear problem based on user needs and local insights. Using the resources in my changing environment ion multiple sites, I started to build a group of members who were interested in solving the core problem together and who were willing to share their unique skills and knowledge.
RESULTS AND DISCUSSION

I started to build an open-ended network in Miami with myself and Dr. John McManus, Dr. Sarah Meltzoff and Johann Besserer. Each of us possess a unique set of skills, knowledge interest and most importantly—a unique way of thinking. Dr. McManus, a Professor of Marine Biology and Fisheries, has a talent for creating innovative approaches to science in support of coastal and watershed management. Dr. Meltzoff, an anthropologist and Associate Professor of Marine Ecosystems and Society, has a unique ability to blend empathic ethnography with ideas to successfully engage fishermen in community grassroots management of resources. Johann Besserer, the co-founder of an NGO in the Galápagos--Intercultural Outreach Initiative--is known for being a successful idealist and businessman with extensive experience-based knowledge within the field of sustainable development. This initial team embodies and combines distinct ways of thinking Dr. McManus’s cognitive thinking guided by a problem-oriented scientific research method. Dr. Meltzoff’s interdisciplinary way of thinking, builds on empathy and integration. Johann Besserer’s divergent manner of thinking builds on bringing ideas into reality. Together with my growing understanding of design-thinking, we started to ideate, brainstorming to generate the broadest range of possibilities, and combining our ideas to generate new ones.

As a designer starts to create ideas based on the seeds of collective action and knowledge-sharing, they can truly advance the human experience, facilitating understanding among a diverse group of people in various parts of the world. Thus the sharing of ideas, skills and knowledge has extended from our group in Miami to the project team in pointB, local and to the international environmental NGOs based in
Myanmar, various ministries, government departments and even tourism agencies in Myanmar. All of these partnerships are summarized in Appendix A with a detailed description of: (1) how partnerships were created; (2) benefits for each stakeholder involved; and (3) results of collective actions.

A total of eleven diverse stakeholder groups were connected through active collaboration, alignment of stakeholder interests, and effective needs-finding for all participants. Two groups are international universities (Scripps and University of Miami), one is a local university (Mawlamyine University), two are INGOs (FFI and pointB), one is a local NGO (MSAM), one is a government department (Forestry Department), two are ministries (MOECAF and Ministry of Education) and four are tourism agencies (SST, MST, MTE, and TTM). However, the main result of using the pointB’s design-thinking tools and Frog’s Collective Action Plan has been the creation of a “design-research” initiative. Without this preliminary innovative method, the next two chapters of this thesis could not exist.

The next chapter, “Training and Education for Multidisciplinary Research” is the prototype of an idea that was jointly created by Dr. Meltzoff and myself, the pointB team, and Mawlamyine University, based on the tools of creative needs-finding and skill sharing. By empathizing, defining and ideating, we recognized the specific gap of the marine science programs at Mawlamyine University which is the lack of interdisciplinary courses. The design-thinking process then encouraged the group members to share their unique skills in order to select the necessary skills to support the identified need. The creative solution resulting from brainstorming was for Dr. Meltzoff to contribute her unique talent and knowledge by co-designing and teaching a two-week field course on
Collectively, we prototyped the idea, presented it the Rector of Mawlamyine University, and with the Rector’s approval, proceeded to test our prototype from June 15th through 26th, 2015 in coastal areas surrounding Mawlamyine in Mon State. 

**SUMMARY AND CONCLUSION**

Scientific research can be sustainably implemented if it is regional, place-based and “solution-oriented” – which is by essence multidisciplinary: addressing the major socio-ecological challenges of the Antropocene (Haase & Frantzeskaki, 2014). The projects must also focus at intermediate scales where multiple stresses intersect, complexity is manageable, integration is possible, significant transitions can start bottom up, and most importantly, where innovation occurs (WSSD, 2002).

The design of the network for marine scientific research in Myanmar has adapted the best practices and recommendations proposed in the World Summit of Sustainable Development (WSSD, 2002) and developed an open-ended network that promotes innovation. The list of partnerships provided in the Results section exists in the past and in the present, but because a design thinker emphasizes innovation of ideas and solutions in the future, this network is open-ended in order to allow it to grow as collective action continues to bring the foreseen into the moment. This design project aims to produce sustainable marine scientific research projects in Myanmar that are locally lead and managed.
CHAPTER 2:
TRAINING AND EDUCATION FOR INTERDISCIPLINARY RESEARCH

PERSPECTIVE

Interdisciplinary research can facilitate the flow of ideas, people and resources across disciplinary boundaries, leading to knowledge creation and innovation, which frequently occur at the interface of disciplines (Solomon, 2013). The National Academy of Sciences defines interdisciplinary research as “one of the most producing and inspiring of human pursuits- one that provides a format for conversations and connections that lead to new knowledge” (National Academies, 2004).

The academic structure of scientific programs in many low-income countries (LIC) is based on traditional disciplinary curriculums that individualize research into separate categories, such as biology, chemistry, geology and physics (Morrison et al., 2013). In contrast, modern scientific research in high-income countries (HIC) is adapting an interdisciplinary approach, and provides their students with training and education in these integrated fields of knowledge (Morisson, et al., 2013). Thus, there is a need to create multidisciplinary educational opportunities for universities in LIC to build the capacity of local students as they develop the skills and knowledge required for a comprehensive understanding of the challenges in their society.

The second phase of the innovative strategy is the implementation of the prototyped idea collectively created in the first phase of the project. Using the tools of the collaborative platform and the support of the marine scientific research network, Dr. Meltzoff taught a two-week interdisciplinary field-course on Social Coastal Ecology to
(local marine science students at Mawlamyine University, Mon State, Myanmar. This chapter: (1) reviews the definitions of political ecology within the context of marine science and describes the implementation process of Dr. Meltzoff’s two-week course; (2) defines the methods taught by Dr. Meltzoff and the theoretical knowledge she shared with her students; and (3) provides a summary of results from this pioneering initiative with the goal of empowering local students with education and innovation.

OVERVIEW

There is a growing interest in interdisciplinary research among professionals in the international scientific community, especially now that funding agencies such as the National Institutes of Health (NIH) and the National Science Foundation (NSF) are offering support for research that is explicitly “cross cutting” or “bridging” between and among disciplines (Billing, 2013). Despite the increase of appreciation for interdisciplinary research, this progressive era predominantly remains in HIC (Billing, 2013). These gaps in higher education between HIC and LIC become even wider if there is not an immediate effort from the international scientifically advanced community to contribute their talents and innovative methods to scientifically lagging countries.

The major issues in our modern society require a collective effort by different disciplines collaborating in interdisciplinary groups (Billing, 2013). Just as networks are built on connectivity and collaboration to reach collective action and provide diverse benefits, the structure of higher education systems need to be built on integration and “multidisciplinarity” to support students as they seek solutions to society’s modern challenges. Recent studies conducted in Asia’s developing countries revealed that
university graduates lacked creativity and innovativeness (Sarjit & Gurnam, 2010). These studies also emphasized the need for technical/vocational and educational programs to be implemented with a multidisciplinary approach in order to stimulate creativity, innovation, leadership and entrepreneurship skills among students (Sarjit & Gunmar, 2010). It is necessary to create a holistic model for humanitarian development that emphasizes the growth of knowledge, technical/vocational skills and intellectual critical thinking capacity in the interdisciplinary fields of science (Sarjit & Gunmar, 2010).

This chapter focuses on a particular field of science known as political ecology, and analyzes how political ecology contributes to the multidisciplinary subject of Marine Ecosystems and Society. Political ecology is the study of the relationships between political, economic and social factors with environmental issues and changes (Thone, 1953). Political ecology offers wide-ranging studies integrating ecological social science with political economy in topics such as degradation and marginalization, environmental justice and conflict, conservation and control, and environmental identities and social movements (Robbins, 2012). Due to its broad scope and interdisciplinary nature, political ecology can lend itself to multiple fields of science and adapt various definitions. However, there are three fundamental assumptions in practicing political ecology (Bryant & Bailey, 1999).

The first commonly accepted assumption is that costs and benefits associated with environmental change are not distributed equally (Bryant & Bailey, 1999). Thus, changes in the natural world affect society in a heterogeneous manner due to the differences in political, social and economic environment. Consequently, the second assumption is that any change in environmental conditions must affect the political and economic status
quo (Bryant & Bailey, 1999). The third theory is a shared understanding that the unequal distribution of costs and benefits, and the continuous reinforcing of pre-existing inequities, results in political implications that change relationships of power (Bryant & Bailey, 1999). In realizing these fundamental concepts of the dynamic natural world, political ecologists attempt to understand and provide alternative interactions of the environment with political, economic and social change (Robbins, 2012).

Scientific research led by political ecologists aims to: (1) inform policymakers and organizations of the complexities surrounding the environment and development; (2) understand local communities in historical perspective and the decisions they make about their ecosystems in the context of their political environment, economic pressure, and societal regulations; and (3) define how the natural environment is affected by the unequal relations within societies (Robbins, 2012). Dr. Meltzoff, a cultural anthropologist and ethnographer doing political ecology fieldwork (Meltzoff, 2012), has adapted the fundamental assumptions of political ecology and adopted the rubric of Social Coastal Ecology for fieldwork and teaching in Myanmar, blending political ecology and empathic ethnography. This innovative research method provides a unique perspective on the human-ecological dimensions in coastal communities and is a true collective effort by which interdisciplinary groups collaborate to seek solutions for modern society’s major issues.

In seeking to support the rebuilding of Myanmar’s higher education system, Dr. Meltzoff partnered with pointB. PointB has partnered with Myanmar’s Ministry of Education and local Mawlamyine University to open a Design + Thinking School for Community Engagement in order to facilitate inter-cultural learning opportunities for
students in Myanmar. The Design + Thinking School is a space where creative professionals, such as Dr. Meltzoff, can contribute their talent and energy to help restructure Myanmar’s traditional academic system that had been dismantled for several decades. Through this collective action and effective partnership, Dr. Meltzoff was able to share her unique knowledge and experiences with local graduate marine science students at Mawlamyine University.

From June 15th-26th, 2015, Dr. Meltzoff shared her theoretical knowledge on SCE as well as providing field-based training in descriptive empathic ethnography with seven local Ph.D. and MS students from the Department of Marine Science at Mawlamyine University. I served as the Teaching Assistant. The students acquired new knowledge in a unique interdisciplinary field of marine science and were given the opportunity to apply their theoretical knowledge in a real-world fieldwork research project with an international expert.

This authentic way of learning requires experts and novice learners to collectively engage in local cultural activities in order for effective knowledge sharing to occur (Bluckley & Jakovljevic, 2013). Dr. Metlzoff’s two-week field course, built on an innovative approach that promotes multicultural knowledge exchange, supported this authentic learning style.

**MATERIALS AND METHODS**

Dr. Meltzoff shared her knowledge in a “learning-by-doing” approach during the two-week field course (Appendix B). The course was co-designed in collaboration with Point B, Mawlamyine Univeristy during the first two weeks of June, 2015. Dr. Meltzoff
then proceeded to teach the course during the last two weeks of the month from June 16\textsuperscript{th} -25\textsuperscript{th}, 2015. Students in attendance were instructed in how to conduct interviews, take field notes and create field journals based modeling their own interviews based on Dr. Meltzoff’s in-depth life and work histories of locals involved in the various aspects of fisheries and coastal development. Student’s fieldwork served as raw material to fuel daily seminars. Students wrote up their interviews to create a coherent, fleshed out version using sub-headings and also practiced keeping a daily field journal, which was complimented with visual anthropology, photography, videos and illustrations, and additional descriptions they deemed important to the story.

The method that Dr. Meltzoff implements in her interdisciplinary research within SCE is known as Descriptive Empathic Ethnography (Meltzoff, 2012). Descriptive Empathic Ethnography (DEE) shares various similarities with pointB’s design-thinking approach to social impact. Both strategies are built on empathy and are therefore highly human-centered, designed to understand people within the context of a defined challenge (pointB, 2013). In the context of marine science, the bridging fields of SCE and DEE aim to emphasize the human dimensions of the natural environment of marine ecosystems.

DEE is a multi-level approach that allows fieldwork to include a wide range of perspectives (Meltzoff, 2012). It enables a comprehensive understanding of the heterogeneous nature of coastal communities by observing and actively engaging with various competing interest groups (Meltzoff, 2012). DEE stimulates holistic and inclusive results that can provide conservationist consultants, tourism agencies, development managers, NGOs, government departments and private organizations with understanding the interactions of the various stakeholder groups, and how to incorporate local coastal
communities in the natural resource management process. The multi-level strategy seeks to build diverse partnerships between local communities and various stakeholder groups and empower locals with the knowledge required to take ownerships of their surrounding ecosystem (Meltzoff, 2012). Dr. Meltzoff demonstrated the tools and techniques of SCE and DEE by collectively conducting research with her students. Following an open-ended syllabus, Dr. Meltzoff and the local students mutually learned about Mon State’s coastal fishing communities.

*Syllabus: Fieldwork in Social Coastal Ecology at Mawlamyine University, Myanmar.*

Professor Sarah Keene Meltzoff and Research Assistant Roxane de Waegh
Department of Marine Ecology and Society
Rosenstiel School of Marine & Atmospheric Science
University of Miami, 4600 Rickenbacker Cswy, Miami, Florida 33149 USA

I. Course duration:

II. Number of Students in course
   a. Max 7 students.

III. Prerequisites for course:
   a. Advanced/Honor student status
   b. English translator necessary

IV. Grading Criteria
   a. 10% exam
   b. 30% class discussion
   c. 60% field interviews and journal observations

V. Purpose of course
   a. To understand local livelihood and social conservation given important ongoing social and environmental changes (explore overlapping social, political,
economic and environmental changes in historical perspective) and map the perspectives and interrelationships of the multilevel stakeholder groups).

VI. Course Activities

a. Life and Work History Mapping
   
i. Students will learn basic open-ended in-depth life and work history field interview techniques, and how analyze social organization and shifts in local fishing communities.

b. Participatory Observation (PO)
   
i. Students will explore how people’s ideals are not the same as their practices; and will learn how to observe the interrelationships among local livelihoods, including those of women in farming, crafts and post harvesting of fish/seaweed/salting.
   
ii. The class will carry out small group interviews with locals engaged in subsistence forms of fishing, local crafts and marketing.

c. Discovering Interest Group Perspectives Comparing PO to PIC and CAGE
   
i. Compare PO to PIC – commonly held Concepts derived from Institutions that inspire Practice

ii. To find common patterns within interest groups, use CAGE which looks at Capital (financial, educational, cultural, and family connections), Age (generation), Gender, and Ethnic identity (self-identified based on child rearing, familiar foods, or even spiritual beliefs)

iii. Given spiritual practices surrounding social conservation, the course discusses the importance of local folk practices and beliefs surrounding nature and conservation. The class will learn how these spiritual practices and concepts of nature and conservation structure livelihood and local interactions with the environment. The class will carry out group interviews with local monks, as well as net kadaws and shrine guardians.

d. Mapping of Different Interest Groups
   
i. The class practices how to observe livelihood changes due to interaction with market opportunities, coastal development, and tourism. Interviews will be carried out with various interest groups/resource users in fish markets as well as the coastal development and tourism sector.
   
ii. Students will be asked to consider the new tourism industry and how tourism can interact with livelihood strategies and conservation. The
class will look at possible local-level tourism efforts and will then conduct small group interviews with the interest groups for grassroots tourism.

e. Mapping the Roles within Fishing Communities

i. The course discusses the management and conservation practices of local fisheries – with special attention to the local Tender System. The class carries out small group interviews seeking to understand the cultural logic and perceptions of management held by competing interest groups. Students will also observe traditional fisheries techniques and follow management efforts for biological conservation.

f. Creating a Transparent Map of Perceptions

i. Once interest groups are mapped, students will then be asked to analyze how these different interest groups may have competing perspectives, mistrusts, allies, rivals etc.

ii. After mapping out these different interest groups based on work and life histories, and participatory observation, students will consider how to promote grass-roots leadership empowered through the knowledge obtained by transparent maps of the perspectives of the competing and allied interest groups. Individual interests can then be aligned with collective interests, eventually leading to a decrease of conflicts and an increase in resolutions.

g. Human-Environment Interactions

i. The class will discuss changing local interactions with nature over time, potential points of pollution and interactions with management efforts. The class will visit an area of low development and one of impending development, Bilu Island, to observe the social perceptions on external development, land booms, and shifting markets to gain a comprehensive understanding of local perspectives on development.

Students in Attendance: (2 Masters of Science & 5 PhD Students)

1. Jar San – jarsan.jarsan@gmail.com (PhD – Seaweed Phycology)
2. Zin Mar Aye – zinmar.marine@gmail.com (PhD – Fishery Biology of Ta Nin Tha Yi Coast)
3. Chaw Thiri (Grace) – Chawthirigrace@gmail.com (PhD – Seaweed Sargaseum Species)
4. Naung Naung Oo – naungnaungoomarine@gmail.com (PhD focus on Phytoplankton and Zooplankton of Rakkhine, Ayerwardy Delta, and Ta Nin Tha Yi Coast)
5. Htet Myet Maw – htetmyetman1992@gmail.com (Masters of Science- focus on benthos: Rakhinne, Ayerwardy Delta, Ta Nin Tha Yi Coast)
6. Chue Nge – chuenge92@gmail.com (Masters of Research – Fisheries Data (Species and traditional gear) in MWKS)
7. Aung Aung Aye – aungaungaye2009@gmail.com (PhD – Marine Bio-chemistry of Seagrass in Rakhinne coastal region)

Field Work Research Sites based on Multi-Cited Ethnography Approach
1. Kyauk Tan Village, Mawlamyine Township (19/6/2015)
2. Mawlamyine Holdings Limited (fish processing plant) (19/6/2015)
3. Thanlwin Market, Mawlamyine, Mon State (20/6/2015)
4. Set-se Village - Than-byu-za-yat Township (21/6/2015)
5. Ka-mar-kae Village of Chaung-Sone Township, Bilu Island, Mon State (23/6/2015)
8. Da-min-state Village, Thanbyuzayaat Township, Mon State (25/6/2015)
9. Kyaik-Kha-Mi, Department of Fisheries official, Mon State (25/6/2015)

The materials used:
(1) Dr. Sarah Meltzoff’s syllabus
(2) 9 copies of Dr. Metlzoff’s book: Listening to Sea Lions: Currents of Change from Galapagos to Patagonia. 1-23. (double check these page numbers)
(3) Classroom at pointB’s Design + Thinking School
(4) White board, dry/erase markers, projector, laptop, powerpoint, sticky notes and USB memory stick
(5) Taxi-truck with enough space for 9 people – used for transportation to/from field research sites
(6) Passenger boat – local transportation to/from Bilu island research site

The open-ended life and work history interviews were conducted in two small groups. These small groups each had three or four students and were accompanied by either Dr. Meltzoff or myself. During the class-based portion of the field-course, the small groups came together to share their field notes, experience-based knowledge and new perceptions. The class collectively designed a research question based on the sharing of information and jointly ideated potential solutions for the defined problem.
RESULTS AND DISCUSSION

During the two-week field course on SCE, the seven graduate students, Dr. Meltzoff and myself visited nine research sites in Mon State, Mawlamyine, including: artisanal fishing communities, fish landing sites, fish markets, and a fish processing plant. A total of twenty-two open-ended life and work history interviews were conducted. Together, we learned how to apply the theoretical knowledge of SCE and DEE into effective field-based research within Myanmar’s artisanal fishing communities. We co-created human-ecological maps by connecting multiple interest groups in the local fishing communities. In addition to mutually learning and sharing knowledge, each student produced a final report including a summary of their interviews, ecosystem maps of the fishing sector and a thorough critical analysis of the research survey areas. Due to the extensive length of the students’ final report, interviews and ecosystem maps, the results are included in this chapter’s respective appendix (Appendix B). This section serves to summarize the main outcomes of the innovative initiative for training and education in interdisciplinary research within Myanmar context.

This pioneering two-week course on SCE—the first course allowed to be taught by a foreign professor at Mawlamyine University—created awareness of the human/environmental linkages amongst the students and staff at Mawlamyine University. The collaboration between local and international universities, facilitated by the pointB, allowed these students to gain access to research opportunities, demonstrating the effectiveness of collective action. The barrier between Mawlamyine University and the international scientific community was successfully dissolved. This field course offered local students the chance to build partnerships with international experts in real time with
real humans, thereby advancing their human experience. The mutual knowledge-sharing experience for local students also resulted in a comprehensive understanding of the interdisciplinary field of marine science, which integrates critical social dimensions.

Innovation has also resulted from this training and educational project. Naung Naung Oo, the top student from Dr. Meltzoff’s field course, is now taking his students on field research trips to artisanal fishing communities in Mon coastal areas. As an assistant lecturer in the 4th year of his PhD studies, Naung Naung Oo is continuing to build this open-ended framework through his own ideated initiatives and locally implemented marine scientific field research. The second top student from the field course, Chu Nge, has also prototyped her own idea, and re-designed her Masters of Research into an interdisciplinary thesis that will study both the fisheries and eco-tourism development within a defined research site. The voices of both Naung Naung Oo and Chu Nge join me in the third chapter of this thesis, to show how we have adapted a field-based approach to integrating knowledge and co-created even more partnerships with environmental INGOs, local NGOs, international experts, local conservation ministries and government departments (Appendix A).

**SUMMARY AND CONCLUSION**

The descriptive empathic ethnography method and the design-thinking method are techniques used to support curiosity by providing a mutual learning environment. Both approaches use similar educative tools to harness innovation by empowering people with knowledge. Additionally, both methods are built on empathy and promote knowledge-sharing and information transparency. Thus, despite different labels, the
similarities in these methods have enabled a progressive continuation within this thesis’s innovative strategy. The open-ended network co-designed from the first research phase, and the education and training in Social Coastal Ecology in this second phase, are both derivatives of multidisciplinary initiatives. Consequently, we share a strong emphasis on interdisciplinary research in building the marine scientific research capacity of Mawlamyne University. The research educational systems in Myanmar, however, are still weak in the interdisciplinary approach and remain limited in research opportunities for local students.

The second phase of the project, by providing interdisciplinary education and training, has empowered Myanmar students at Mawlamyne University with the necessary skills and knowledge required to comprehend the complexity of real world issues. The third phase tests this newly acquired knowledge by integrating the learned information into a real-world scientific research project. Through the connections developed in the open-ended network, an opportunity has been created for students to participate in the interdisciplinary scientific research project in Mein-ma-hla Kyun Wildlife Sanctuary (MKWS). Herein lies my pay-it-forward philosophy in practice.
CHAPTER 3:
INTEGRATING KNOWLEDGE WITH A FIELD-BASED APPROACH

PERSPECTIVE

Scientific researchers often find themselves at a loss for why they cannot directly translate their results into practice (Parry, Salsberg & Macaulay, 2006). Before projects even begin, researchers should identify and approach the potential users of the knowledge created by their studies. This can enable knowledge to move from its traditional place at the end of research, “end of grant knowledge”, to its integration throughout all stages of the research process (Parry, Salsbery & Macaulay, 2006). This approach to learning through research can help lead everyone involved through an integrated approach to creating knowledge, ultimately translating it to action. Such knowledge-users may include other researchers, defined interest groups within local communities, local and international organizations and institutions, policy makers, private industries, the general public, and all who make use of, benefit from, or may be impacted by research results used as political tools for policy-making (Parry, Salsbery & Macaulay).

The final phase of this thesis is the translation of knowledge, created in the first two chapters, into action generated by locally implemented research. Two students from Dr. Meltzoff’s course, in the “Training and Education for Interdisciplinary Research” research phase (Chapter 2), tested their newly acquired critical thinking knowledge and field research skills by joining me in an active local research project lead by Fauna & Flora International (FFI). FFI is an INGO whose mission is to conserve ecosystems worldwide, with a long-standing presence in Myanmar. The extensions and partnerships
co-created in the “Designing of a Marine Scientific Research Network” research phase (Chapter 1), were used to create the research opportunity for local students.

While offering their talents and energy to the collaborative research project with FFI, the two students used a field-based approach to integrating knowledge with the local communities in the defined study area. By using this method, the collaborative research initiative gained a comprehensive understanding of local stakeholder groups’ perspectives on the defined problem; provided diverse results that include local insights; and enabled the researchers to create a partnership with the knowledge users. This final chapter: (1) defines/outlines of integrated knowledge translation and its relevant counterparts; (2) introduces the two local students that participated in the FFI research project and provides relevant background information; (3) shares the methods and results from the local students’ research initiative; and (4) uses the results to emphasize the essential importance of integrating knowledge throughout all phases of a given research project.

OVERVIEW

Given the role of the international community within the context of higher education, NGOs, funding agencies and the private sector all share responsibility for supporting countries in transition with economic reform and humanitarian development (McCord, Denis & Weil, 2013). The objective of the international scientific community should be to both develop new knowledge and ensure that their research initiatives are translated into practical results for local use (Parry, Salsbery & Macaulay, 2006). The
new information should also generate local initiatives that improve the social-well being of the respective communities and their ecosystems (Graham et al., 2006).

The term Knowledge Translation (KT) is a process that aims to: (1) make knowledge users aware of new knowledge and actively facilitates the use of knowledge to improve a locally defined challenge through evidence-based and practice-based results; (2) adapt the knowledge into local contexts; (3) move research knowledge into concrete action; and (4) sustain knowledge use through monitoring and evaluation procedures (Graham et al., 2006). Similar to the design-thinking approach, the KT method can adapt various forms of strategies and activities which will vary according to the defined research subject and its relevant audience of knowledge users (Parry, Salsbery & Macaulay, 2006). Knowledge users are all those who might use, benefit from, or be interact with policies and other results of the research, but are not necessarily involved in their production (Graham et al., 2006).

The classic way that the international scientific community translates their research is by discussing results with peers, presenting at conferences, and publishing findings (Parry, Salsbery & Macaulay, 2006). This form of KT is known as end of grant knowledge translation. In contrast, the integrated knowledge translation (IKT) involves engaging and integrating the knowledge users into the research process (Macaulay et al., 1999). IKT requires researchers and knowledge users to develop partnerships and engage in a collaborative process with the encompassing objective being the co-creation and grassroots sharing of knowledge, and its translation into local action (Minkler, 2004). The minimum prerequisite for IKT is that researchers and knowledge users: (1) make joint decisions to shape the research question; (2) interpret the study findings together; and (3)
collectively translate the results into local contexts for the integration of knowledge to promote local action and practice (Minkler, 2004).

Within the context of this thesis, the partnership created between the researcher and the knowledge users has extended beyond the minimum requirements of IKT. Since the first phase described in Chapter 1 the innovative strategy has included the knowledge users in the co-designing of the research methodology, collectively developed tools and techniques, and co-created a system for data collection. Due to the complexity of this thesis, the three phases each have required different forms of expertise, varied knowledge, experience and viewpoints. Therefore they serve different knowledge users. For example, the first phase of this research has focused on networking, and thus required the collaboration of pointB’s team, Myanmar’s Ministry of Education, the rector and professors of Mawlaymine University, professors and students from University of Miami, and various other knowledge user groups that offered the pertinent skills and knowledge relevant to the chapter’s theme. The second phase has focused on integration of interdisciplinary fields in marine science, and therefore required knowledge users in the form of research experts in interdisciplinary sciences and fieldwork, such as Dr. Meltzoff. The third phase focuses on integration where the pool of knowledge users has grown incredibly diverse and numerous as it combines all the knowledge users from the previous phases, and maximizes the potential of each participating knowledge user. The collective action resulting from these collaboratively built partnerships between the researcher and knowledge users has been so effective that one of the knowledge users, that one of the knowledge users shifted roles. Chu Nge, She is now the primary
researcher of a locally designed and implemented marine science research project (Appendix C).

There are numerous significant advantages when knowledge users contribute to the IKT research method. (Graham et al., 2006). First, they have a comprehensive understanding of the defined problem within the environmental context of the research site. Second, they have the ability to readily identify potential facilitators and barriers throughout all phases of the research. Third, they are willingly positioned to adopt new knowledge. Fourth, they have the capacity to tailor research findings into local contexts for effective knowledge dissemination. Fifth, they have the capability to evaluate the implementation process and outcomes, even once the researchers leave the study area. And sixth, they have the skills of knowledge users which are vital in the development plan and implementation phase for the continuous distribution of information. (Graham et al., 2006) Overall, by combining their local networks with the national and international researchers’ networks, they may be able to collectively provide reports to funding agencies, conduct seminars to stakeholders, lead educational sessions in local universities/schools/villages, and make use of local media for broader knowledge dissemination. In summary, knowledge users bring different understandings, talents and insights to a research project, have unique perceptions of the results, and are well positioned to move these results into action (Parry, Salsbery & Macaulay, 2006).

The most active knowledge users in this final chapter are myself and the two local marine science students from Mawlamyine University: Naung Naung Oo (NNO) and Chu Nge (Chu-Chu). NNO and Chu-Chu both participated in Dr. Metzloff’s interdisciplinary field course on Social Coastal Ecology from June 16-26th, 2015(Appendix B).
NNO is 28 years old man, in his 4\textsuperscript{th} year as a PhD student and Chu-Chu is a 23-year-old woman, in her first year as a Masters of Research student. During Dr. Meltzoff’s field course, NNO and Chu both demonstrated exemplarily critical thinking skills and were able to rapidly adopt new knowledge in the classroom and in the field (Appendix B). Due to their advanced intellectual capacities, progressive curiosity, and courageous willingness to participate in an unfamiliar field-based research project during the height of the intense monsoon season, NNO and Chu-Chu were selected to join me in fieldwork, contributing their knowledge and skills to FFI’s conservation and eco-tourism project in the Ayeyarwady Delta region of Myanmar.

Today FFI is active in over 40 countries, and has been operating in Myanmar since the political atmosphere opened up in 2007 (FFI, 2015). Their mission is to conserve ecosystems worldwide, choosing solutions that are sustainable, based on sound science, and take into account human needs (FFI, 2015). Consequently, FFI mostly uses the problem-oriented scientific method to produce the necessary sound science for their defined projects. However, FFI’s vision is closely aligned with the concepts taught in Dr. Metlzoff’s SCE course, as they regard conservation and biodiversity efforts to only be effective if conserved by the people living there, supported by national and global communities (FFI, 2015). Therefore, FFI’s project strategy promotes interdisciplinary research by emphasizing the importance of social-ecological dimensions within their project areas, making them the ideal research partner for NNO and Chu-Chu as they tested their newly acquired fieldwork skills and interdisciplinary knowledge.

At an organizational level, FFI works with local partners in order to gain a wider and comprehensive understanding of the places involved, as well as the critical social,
economic and political contexts (FFI, 2015). Their local partnerships provide them with essential on-the-ground knowledge of the issues and what will work in any given context (FFI, 2015). Additionally, FFI draws experience from across its own teams comprised of diverse nationalities including Myanmar, and from the wider international sources of conservation expertise, to help inform and improve their work on the ground (FFI, 2015).

FFI’s research project that included NNO and Chu-Chu demonstrates FFI’s local partnerships in action within Myanmar.

This research project was planned in 2013 under the project name: “Ecosystems Management and Biodiversity Conservation through Community Participation in Mein-ma-hla Kyun Wildlife Sanctuary”, to be implemented as a partnership between the Ministry of Environmental Conservation and Forestry (MOECAF), FFI, and the Biodiversity and Nature Conservation Association (BANCA) - a local NGO (Grindley & Klemm, 2013). Under the guidance of the Myanmar Conservation and Development Program (MCDP), People Resources and Conservation Foundation (PRCF) and BANCA, FFI has continued to conduct multidisciplinary research in Mein-ma-hla Kyun Wildlife Sanctuary. FFI has also been actively implementing various training workshops, educational seminars, and even small micro-financing projects in the area (FFI, 2014).

Mein-ma-hla Kyun--also known as “Beautiful Lady Island” in local Myanmar language--is located southwest of Bogalay Township, in the Pyapon District of the Ayeyarwady Region, Myanmar (Grindley & Klemm, 2013). The island is located in a low flat delta area, where freshwater from the Bogalay River meets the marine waters of the Adaman Sea, forming an incredibly diverse ecosystem (FFI, 2014). In 1985, the island was designated a Reserve Forest for Firewood (FFI, 2014). Later, in 1994, it was
declared a Wildlife Sanctuary. Finally, in 2003, Mein-ma-hla Kyun Wildlife Sanctuary (MWKS) became one of the 32 Heritage Parks in the ASEAN Centre for Biodiversity (ACB) (Grindley & Klemm, 2013). Due to these conservation efforts, MWKS has remained uninhabited for over 30 years. However, the island is surrounded by 22 villages, 11 villages along the east side of the river and 11 villages along the west (FFI, 2014).

The majority of these villages are poor to extremely poor and are still recovering from the devastating effects the 2008 Cyclone Nargis (FFI, 2014). The disaster-relief aid from dozens of UN agencies, local NGOs (LNGO), international NGOs (INGO), and various organizations and donors was stopped 3 years after Nargis (FFI, 2014). Currently, only a few INGOs remain involved in the environment’s recovery and humanitarian development (Appendix C – Phase 2). Due to Myanmar’s recent open-market policy in 2010, the country is undergoing rapid economic development. Subsequently, the ecotourism industry is also emerging. Given these nascent conditions, FFI recognized the potential for community-based ecotourism in MWKS. However, FFI is faced with a series of challenges, as their recent reports emphasize the limited economic benefits to local people from increased tourism (Grindley & Klemm, 2013). NNO and Chu-Chu joined the FFI research team to seek solutions to this defined challenge.

MATERIALS AND METHODS

Throughout the collaborative research initiative with FFI and their local partners, the students and I applied the Integrated Knowledge Translation (IKT) method within the context of this chapter’s defined research project. The students and I as the knowledge
users and the researchers simultaneously, integrated knowledge from Dr. Metlzoff’s course and translated it into action as we implemented our skills to FFI’s defined challenge in the MKWS study area. Thus, the IKT method was coupled with the Descriptive Empathic Ethnography approach and the relevant counterparts necessary to conduct Social Coastal Ecology scientific research (Chapter 2). Additionally, since the defined research challenge was identified by the use of FFI’s tools and techniques, which are predominately based on a problem-oriented approach, the students and I also included the scientific research method within our innovative IKT approach. Therefore, the implemented research methodology, which was co-designed between the researcher (myself) and the knowledge users (NNO and Chu-Chu), integrates various forms of inquisitive and authentic learning styles, including both solution-oriented approach (design-thinking), problem-oriented approach (scientific method), and the interdisciplinary approach of Social Coastal Ecology, which bridges the two dominant approaches by blending cognitive and divergent thinking abilities.

NNO, Chu-Chu, and my research was implemented in three phases: (1) Fieldwork in Yangon among Tourism Agencies operating in MWKS; (2) Fieldwork in MWKS; and (3) Analysis and Knowledge Dissemination of Research.

Research started on July 15th, 2015 in Yangon, Myanmar’s former capital. From July 15th-19th, 2015, a total of 21 Yangon-based tourism agencies were contacted via telephone interviews, using the methods of descriptive emphatic ethnography (Appendix C). We only interviewed tourism agencies that promote MKWS as an eco-tourism destination. Based on the results of these 21 interviews, the four most informative agencies were selected for follow-up interviews. On July 20th, NNO and Chu-Chu
applied the interdisciplinary research tools and techniques of Social Coastal Ecology to conduct these interviews in the four Yangon agencies (Appendix C).

NNO, Chu-Chu, and I travelled to MWKS, conducting ethnographic while using our co-designed pioneering IKT approach, from July 21st-28th. Dr. Tint Swe – a fisheries expert from the local NGO Marine Science Association Myanmar (MSAM) – accompanied us for the first three days of research. By ensuring the use of the innovative strategy, we were able to integrate and share our knowledge with other knowledge users, including but not limited to: (1) the villagers from the 22 local communities we visited; (2) the forest rangers from the Forestry Department who guided our journey through the research site’s complex brackish waterways; and (3) FFI’s on site Field Coordinators who facilitated our open-ended life and work history interviews with local villagers.

FFI’s project manager, U Zau Lunn, provided us with the following travel agenda to successfully reach our study area in MWKS:

*Agenda DAY #1: Travel Day: Tuesday, July 21st, 2015*

1. 7:00 am at Dangon center, Yangon. Meet with Dr. Tint Swe, NNO and Chu-Chu. Take taxi together from Dangon Center to Pan-Soe-Dan port, Yangon. Taxi duration time -15 minutes without traffic.
2. Arrive at Pan-Soe-Dan port – purchase ferry ticket to Dala. Take 7:45 am ferry to Dala port – arrive at Dala port at 8:00 am. (15 minute ferry ride).
3. Purchase bus ticket for transportation from Dala to Bogalay. Departure from Dala 8:30 am – arrive at Bogalay at 12:00 pm. Total travel time 4 hours.
5. Go to Bogalay Forest Department. Meet Forest Ranger Zaw Htoo Aung, who will also be accompanying us to MWKS in order to supervise our activities. Give passport and sign authorization papers. Paper work process - about 30 minutes.
6. Once cleared start our journey to Chaung Byo Gyi – Transportation by FFI staff boat. Departure time from Bogalay - 2:00 pm - Trip duration, 3.5 hours.
7. Arrive at Chaung-byo-gyi at 5:30 pm. No interviews conducted today – only travel day. Chuang-byo-gyi is the most southern village on the West of MWKS.
8. **Villages where we conducted research over six days:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Village</th>
<th>No. of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 22\textsuperscript{nd}, 2015</td>
<td>11:00 am</td>
<td>Mee-Laung-Kwinn</td>
<td>3</td>
</tr>
<tr>
<td>(West Side)</td>
<td>2:00 pm</td>
<td>Kan-Seik</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5:00 pm</td>
<td>Chaung-byegyi</td>
<td>6</td>
</tr>
<tr>
<td>July 23\textsuperscript{rd}, 2015</td>
<td>8:00 am</td>
<td>Gway-chaung-gyi</td>
<td>4</td>
</tr>
<tr>
<td>(West Side)</td>
<td>10:30 am</td>
<td>Ma-pway-tann</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1:00 pm</td>
<td>Kone-tann-pauk</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3:25 pm</td>
<td>Ah-pyin-ma-yan</td>
<td>2</td>
</tr>
<tr>
<td>July 24\textsuperscript{th}, 2015</td>
<td>7:00 am</td>
<td>Nga-poke-thin-tann</td>
<td>4</td>
</tr>
<tr>
<td>(West Side)</td>
<td>8:30 am</td>
<td>Pa-dai-kaw</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>12:10 pm</td>
<td>Ah-pyin-boke-chaung</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3:30 pm</td>
<td>La-wine</td>
<td>3</td>
</tr>
<tr>
<td>July 25\textsuperscript{th}, 2015</td>
<td>9:30 am</td>
<td>Pyin-boe-gyi</td>
<td>3</td>
</tr>
<tr>
<td>(East Side)</td>
<td>12:30 pm</td>
<td>Kant-malar-chaung</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>4:20 pm</td>
<td>Aung-chan-tha</td>
<td>3</td>
</tr>
<tr>
<td>July 26\textsuperscript{th}, 2015</td>
<td>7:15 am</td>
<td>Kone-tann-pauk</td>
<td>4</td>
</tr>
<tr>
<td>(East Side)</td>
<td>10:00 am</td>
<td>Yway-chaung</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12:10 pm</td>
<td>Da-min-naung</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3:00 pm</td>
<td>Htaw-paing</td>
<td>4</td>
</tr>
<tr>
<td>July 27\textsuperscript{th}, 2015</td>
<td>7:30 am</td>
<td>Sein-ya-ti</td>
<td>3</td>
</tr>
<tr>
<td>(East Side)</td>
<td>10:00 am</td>
<td>Ah-se-lay</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1:00 pm</td>
<td>Ah-se-gyi</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1.1. Chronological description of daily ethnographic activities in MWKS research.

**Research Costs funded by Roxane de Waegh:**

<table>
<thead>
<tr>
<th>Description of Expense Item</th>
<th>Individual</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferry from Yangon port to Dala Port (x2 roundtrip)</td>
<td>2,500 K</td>
<td>5,000 K</td>
</tr>
<tr>
<td>Mini Bus from Dala to Bogalay (x2 roundtrip)</td>
<td>4,000 K</td>
<td>8,000 K</td>
</tr>
<tr>
<td>Fuel for FFI staff boat for 8 days</td>
<td>80,000 K</td>
<td>80,000 K</td>
</tr>
<tr>
<td>Chaung Byo Gyi Home stay (x2 nights)</td>
<td>7,000 K</td>
<td>14,000 K</td>
</tr>
<tr>
<td>Daily stipend for food (x8)</td>
<td>7,000 K</td>
<td>56,000 K</td>
</tr>
<tr>
<td>Pocket money for FREDA guest house staff (my personal decision to pay since we were offered the guest house for free for one night)</td>
<td>10,000 K</td>
<td>10,000 K</td>
</tr>
<tr>
<td>Pocket money for family at Forest Ranger house (personal decision to pay family since they cooked for us and kept our bags safe during our daily excursions)</td>
<td>15,000 K</td>
<td>15,000 K</td>
</tr>
<tr>
<td>Pocket money for boat driver (personal decision since he was amazingly helpful, kind, and incredibly brave during the storms – and)</td>
<td>30,000 K</td>
<td>30,000 K</td>
</tr>
</tbody>
</table>
even had to spend nearly 6 hours in the water/rain/storm trying to fix engine)

Donations to monasteries (x3)  
5,000 K  
15,000 K  
233,000 K  

Table 1.2. Expense report for field research costs from July 21st-28th, 2015. Exchange rate approximately 1,200 K/USD $1

We returned to Mawlamyine University in order to analyze our field data, leaving MWKS for Yangon on July 28th, 2015, continuing on to Mawlamyine on July 29th, 2015. The analyzing period was from August 4th-9th, 2015. We presented our findings to Rochelle Ardesher and Greg Santos, the co-founders pointB on August 9th. Greg and Rochelle generously shared their talents in design-thinking and offered us guidance as we translated our research findings into concepts that generate a comprehensive understanding for a wider and more inclusive audience. We created presentations and reports, and formally shared our research findings with three diverse knowledge user groups: (1) Marine Science Department at Mawlamyine University on August 10th; (2) UNICEF representatives in Mawlamyine on August 11th; and (3) FFI project managers in Yangon on August 13th, 2015.

RESULTS AND DISCUSSION

Due to the extensive nature of the integrated research, the results have been clearly organized into three sections in Appendix C. Each section includes the results of their respective research phase, defined above. This section briefly summarizes the results and discusses the significance and purpose of the tested co-designed IKT strategy:

1. Yangon-based Tourism Agencies
   a. 21 Agencies interviewed via phone and email:
      i. Decent Myanmar Travel
      ii. Myanmar Holiday – Interconnection Travels
iii. Myanmar Tour East
iv. The Ultimate Guide To Myanmar
v. Aventura Travel
vi. Cirrus Travels and Tours
vii. Manie Sithu Travels and Tours
viii. GBS Tours
ix. Honey World Tour Agency
tax. Mekong Responsible Tourism
xi. Tourism Transparency
txii. Sun Travels
txiii. Green Palace Travels & Tours Co., LTD
txiv. Seven Star Tours - S.S.T. Tourism Co., LTD
txv. Yellow Earth Travel
txvi. Glamorous Myanmar
txvii. Time Travel Myanmar
txviii. Explore Myanmar
txix. Elegant Myanmar Tours
txx. Travel Expert Co., LTD
txxi. Mebs Tours

b. Four Agencies interviewed in-person following up on phone/email interviews:

   i. Myanmar Tour East
      1. Personal Interview with Aung Si Yoon: au
   ii. Seven Star Tours
      1. Personal Interview with Phyu Phyu Mar
   iii. Manie Sithu Travel and Tours
      1. Personal Interview with Kalayar Naing
   iv. Time Travel Myanmar
      1. Personal Interview with Tun Naing

c. Conclusion and Follow-up Initiatives

2. Open-Ended Life and Work History Interviews

   a. 78 open-ended in-depth life and work histories in 22 villages. Interviews
      integrated and translated knowledge with a diverse pool of knowledge users
      including:

   b. Classification of Jobs

   c. Classification of Religion

      i. Buddhism
      ii. Karen Baptist Convention (KBC)
iii. Nat Spirits
   1. U Shin Gyi
   2. Pin-lae-pyin-maung-hna-ma

d. Analysis of Local/INGOs both past/present in MWKS
   i. Total of 27 L/INGOs identified based on local knowledge

e. Classification of Environment
   i. Mein-ma-hla Kyun Protected Area
   ii. Ka-don-ka-ni Protected Area
   iii. Pyin-da-yal Protected Area
   iv. Mangrove ecosystems
   v. Sand dunes and mud flats
   vi. Paddy fields

f. Classification of Shelter
   i. Public Storm Shelter – made of cement
   ii. School Shelter – made of cement in some villages
   iii. Clinic Shelter – made of cement
   iv. Local Shelter – huts made of local wood, mangrove species, and shrubs

g. Classification of Education
   i. Unofficial or Informal Primary School – Grade 1 to Grade 5
      1. Local community/villagers collectively contribute to paying a local teacher’s salary
   ii. Ba-Ka School – Grade 1 to Grade 5
      1. Monastery education supported by local monks and monasteries from Bogalay Townships
   iii. Government Primary School – Grade 1 to Grade 5
      1. Basic Education Primary School (B.E.P.S.)
   iv. Government Post Primary School – Grade 1 to Grade 7
   v. Government Middle School – Grade 1 to Grade 8
      1. Basic Education Middle School (B.E.M.S.)
   vi. Government High School – Grade 1 to Grade 11
      1. Basic Education High School (B.E.H.S.)

3. Fisheries-Related Data
a. 57 Species of Fish
   2. Photo record of each species and associated scientific name
   3. Descriptions of price for each species

b. 10 Types of Artisanal Fishing Gear
   4. Measurements of gear and photo records
   5. Descriptions of use and associated target species for each method

c. Dry Fishing Methods
   6. Description of different local drying methods
   7. Description of different species that are dried
   8. Price for each dried fish
   9. Description of dried swim bladders and associated species
  10. Price for each dried swim bladders depending on species

d. Main Fishing Seasons with Associated Catch
   11. The Hot Season – Feb-May
   12. The Rainy Season – June to September
   13. The Cold Season – October to January
   14. Seasons based on Wind patterns
      a. Monsoon Season -- May to September
         i. Winds come from Bay of Bengal and North of Indian Ocean – wind direction SW to NE – max 4 knots
      b. Cold/Hot Season – October to March
         i. Winds comes from northern China, Mongolia, Tibet – wind direction NE to SW – max 2 knots
      c. Currents
         i. Dependent on winds and tides, so there is a current categorized by the NE winds and another current categorized by the SW winds

h. Crab-Related Data
   i. Classification of Crabs Based on Local Methods and Weight
      1. Name of classifications
      2. Price for each classification
      3. Scientific species identification of mangrove crabs
      4. Photos of crabs and crab-related photos
   ii. Crab Traps
      1. Three main type of crab traps
         b. Description of each type, price for each, and photo evidence
2. Description of families that make crab-traps

   iii. Crab Buyers
       1. Description of crab buyer system

   iv. Soft Crab Fattening projects
       1. New micro financing project for soft crab – description provided through local insights gathered from interview

   i. Prawn-related Data

       i. Classification of prawn based on local methods
       ii. Price of prawn at different sizes/classifications
       iii. Photos of prawns

4. Classification of Myanmar Language Terms

   iv. Translation of 22 village names “in Myanmar and English language”
   v. Definitions of 15 fisheries-related terms “”
   vi. Definitions of 12 forestry-related terms “”
   vii. Translation five of animal husbandry related terms “”
   viii. Translation of seven commonly used pronouns “”
   ix. Definition of three traditional Myanmar snacks “”
   x. Translation of five traditional/seasonal fruits “”
   xi. Definitions of 12 traditional Myanmar food in “”
   xii. Definition of eight traditional Myanmar medicine “”
   xiii. Definition of 11 religion-related terms “”
   xiv. Definition of four traditional Myanmar music-related terms “”
   xv. Definition of four Myanmar festivals “”
   xvi. Description of L/INGOs’ and Private Organizations’ Objectives, Local Interactions, and Duration of Initiatives.

5. Knowledge Dissemination

   j. Analysis of Research Findings – August 4th-9th, 2015

       i. Sharing knowledge and information of our interviews with NNO and Chu-Chu – joining all of our knowledge together
       ii. Co-creating a report based on findings
           a. Report highlights research results of the scientific study – simple scientific format
       iii. Co-design a report for FFI and Forestry Department
a. Report proposes community-based eco-tourism activities to increase economic opportunities for local communities around MWKS
   i. Report is designed in a “brochure type” format, including photos of local livelihood activities. This format enables the report an interesting read and facilitate understanding for various knowledge users -and including tourist

k. Briefing of Research Findings with pointB Team – August 9th, 2015
   i. Persons in attendance (2):
      1. Greg Santos
      2. Rochelle Ardesher

l. PowerPoint Presentation of Research to the Marine Science Department. Mawlamyine University – August 10th, 2015
   i. Persons in attendance (approximately 50):
      1. local MS and PhD students of marine science
      2. Professors, and staff

m. Educational Seminar on Research to UNICEF Members and pointB Change Agents – August 11th, 2015
   i. Persons in attendance (approximately 30)
      1. Sandy Shum (pointB)
      2. Greg Santos (pointB)
      3. Rochelle Ardesher (pointB)
      4. Three UNICEF members
      5. Approximately 20 pointB change agents

n. Discussion and Presentation with FFI – August 13th, 2015
   i. Persons in attendance (3)
      1. U Zau Lunn (FFI local project manager)
      2. Robert Howard (FFI marine project manager)
      3. Mark Grindley (FFI eco-tourism specialist)

o. Building Partnerships Between Students and INGO
   i. Contract signed between Chu-Chu and FFI
      1. FFI has offered to sponsor Chu-Chu’s research expenses until December, 2015 (and possibly until May – depending on progress)
The depth and extensive nature of our research findings, is the result of collective action and continuous efforts towards the integration of knowledge throughout all phases of the research process. Researchers are frequently limited by time and funding. Therefore, researchers are often not able to achieve their ambitious research goals. The use of interdisciplinary knowledge, conducted through an adaptive IKT method, does not only mean to benefit knowledge users and local humanitarian development. It aims at supporting the entire process of knowledge creation, by maximizing the human potential of all the involved participants.

Consequently, the most significant results are: (1) the innovative eco-tourism ideas created by the local villagers empowered with Integrated Knowledge Translation; (2) Chu-Chu’s personal decision to re-design the traditional single subject Masters of Science thesis into her own inventive interdisciplinary research initiative – a true pioneering action given the context of Myanmar’s higher education system; and (3) the international recognition and support for locally implemented research, demonstrated by FFI’s direct action in financially supporting Chu-Chu’s fieldwork. These outcomes are all products of innovation, derived from a facilitated form of education and training that aims to advance the human experience.

**SUMMARY AND CONCLUSION**

The commonly adapted scientific research method depends on the outsider (researcher), rather than insider (local knowledge user), to conceptualize traditional ecological knowledge and disseminate these findings through their perceptions. (Reid,
In contrast, the Integrated Knowledge Translation method promotes researchers and knowledge users to collectively learn about traditional ecological knowledge (TEK) within the context of sustainability (Reid, Teamey & Dillon, 2004). There is need to cultivate ecological knowledge and create an awareness based on the interconnectedness within humans and their natural environment (Judson, 2014).

The cultivation of knowledge and awareness should cross cultural boundaries and empower both educators and learners to become visionaries that collaboratively question, analyze, reflect, critique and engage in forms of social action that will lead toward a culturally diverse “knowledge economy” and ecologically sustainable future (Smith & Williams, 1998). The world’s economies are increasingly based on knowledge and information, and knowledge is now recognized as the driver of productivity and economic growth (OECD, 1996). Thus, there is need to manage knowledge and its transmission to LIC where people need to acquire a range of skills and information to continuously adapt these skills through a “learning economy” (OECD, 1996). Such knowledge and technical diffusion requires networks that are based on innovative innovation systems (OECD, 1996).

By sharing this pioneering strategy for “inclusive knowledge creation”, and collectively testing it through the ITK method, this final research phase hopes to encourage researchers and knowledge users to re-design their project models in a manner that includes the local ecosystem’s interests, needs, and visions for sustainable research and knowledge creation. The results of this thesis can be of use to: (1) local communities living around MWKS; (2) local students within Myanmar’s higher education system; (3)
Ministry of Education and Mawlamyine University; (4) FFI project managers and staff; (5) Forest Department and Ministry of Environmental Conservation and Forestry; and (6) the international scientific research community and any other stakeholders interested in contributing their talent and energy to this innovative open-ended network. It is imperative that the international scientific community addresses the role of science and its direct translation into action.
CONCLUSION:
COLLABORATION IS CAPACITY BUILDING

International scientific collaboration – where scientists work with their counterparts in other countries towards a common research goal – is growing as a percentage of all scientific activity. This form of international collaboration is replacing other models as the preferred method of developing scientific capacity in developing countries (Wagner, 2001). The main objective of collaborating in joint research initiatives with low income countries is to promote action locally and to inform globally. The main results of this thesis demonstrate those exact objectives in three distinctive case studies.

Chu-Chu’s pioneering interdisciplinary thesis is the case study that demonstrates local action through the implementation phase of the marine scientific research initiative in Mien-ma-hla Kyun Wildlife Sanctuary. Additionally, Chu-Chu is able to disseminate her research results globally, to both knowledge users and researchers, by using FFI’s extensive international network and utilizing her connections with University of Miami professor and student. The second case study is Naung Naung Oo’s local initiative of adopting a field-based approach to learning into his own ideated curriculum at Mawlamyine University. This initiative allows the next generation of marine science students to appreciate an authentic learning style, built on the pillars of field-based explorative research. By using pointB’s resources and open-ended network, Naung Naung Oo is able to co-design his modern field-courses with the support of international human-linkages as well as extending his local initiative to a global audience.
Finally, the third case study is my own continuation of applied research as an intern with the Natural Resources Management Division of the INGO WorldFish. During this internship stage, my primary goal is to create a Fisheries Research and Development Network (FRDN) for sharing knowledge between the Department of Fisheries, government, private sectors, international/local academia, and other stakeholders involved in the fisheries sector. The FRDN will ultimately contribute to significantly increase information transparency, facilitate communication between relevant knowledge users/researchers, and help educate students and the general public on Myanmar’s fisheries data and conservation measures. The FRDN will be implemented locally in Myanmar and will provide its users with online access to international fisheries science repositories, thereby creating a multi-directional informative flow of local and global fisheries-related resources.

Collaboration is the key tool applied throughout all research phases of this thesis – collaboration is the enabler of capacity building. Cooperation can lead to self-reliant research by (1) enabling international joint research that aims at constructing sustainable research systems that can contribute to resolving issues, (2) coordinating networking between researches, (3) and training future human resources in developing countries. By creating synergies that support international joint research based on the local needs and interests, the outcomes of this thesis hopes to be continue to promote the development of human resources through joint research activities and enable self-reliant, sustainable research systems that will equip the scientific community to acquire new knowledge that can lead to the resolution of global issues, thereby advancing science and creating innovations.
APPENDIX A

COLLABORATIVE PARTNERSHIPS

Brief Overview:

The co-designed marine scientific research network was first initiated in Miami, Florida, USA by combining literature review on relevant background knowledge, Skype interviews and email communications with various stakeholder groups in Myanmar. The network used the tools and techniques of design-thinking to building connections between various groups based on a needs-finding approach and aligning mutual interests. The following is a list of all actively participating stakeholder groups in this research network:

(1) University of Miami - Rosenstiel School of Marine & Atmospheric Science (RSMAS)

The University of Miami, Rosenstiel School of Marine & Atmospheric Science, has grown into one of the leading academic oceanographic and atmospheric research institutions in the world. The School’s basic and applied research interests encompass virtually all marine-related sciences. I am currently a Masters of Science Research Student pursuing a degree in Marine Ecosystems and Society, and have tailored my research to reach my objective: which is to build the human capacity for marine scientific research in Myanmar. I have formed a thesis committee to help guide me as I conduct this research:

Persons of Contact

Dr. Sarah Meltzoff Email: smeltzoff@gmail.com
Marine Affairs and Policy Phone: 1-305-756-4085
Professor at University of Miami

Dr. John McManus Email: mcmanus.john@gmail.com
Marine Biology and Ecology Phone: 1-305-421-4814
Professor at University of Miami

Johann Besserer Email: johann@ioi-galapagos.ec
Intercultural Outreach Initiative Phone: 1-786 – 301 - 2629
Executive Director and Founder
Isabella, Galapagos
Result of Collaborative Partnership:

As a graduate student under the guidance of my thesis committee, I benefit from all the knowledge, guidance and support from each committee member. In return, the members of the committee can benefit from participating in an innovative research project, conducted in one of the world’s most rapidly developing countries with some of the least published scientific data – thus making this thesis quite a unique initiative to be a part of. Dr. Sarah Metlzoff will benefit the most out of all members, as she has been given the opportunity to teach a two-week field-course on Social Coastal Ecology in Myanmar for local marine science students at Mawlamyine University. This opportunity has made her one of the only (if not only) foreign professors to teach a course on an interdisciplinary field of marine science to local Myanmar students (not staff) at Mawlamyine University.

(2) Point B Design + Training

PointB is a US-based NGO working to support the rebuilding of education systems and community governance in Myanmar. Under the guidance of the Myanmar Ministry of Education, pointB is partnering with Mawlamyine University in Mon Sstate to open a Design-Thinking School for Community Engagement – training multi-ethnic young adults in a creative approach to solving social issues and challenges in local communities. In this collaboration, pointB will provide support in (1) coordination (2) community education (3) outreach/communications.

Persons of Contact:

Rochelle Ardesher  
Email: Rochelle@pointB.is  
Phone: 09255804468

Greg Antos  
Email: greg@pointB.is  
Phone: 09261910667

Sandy Shum  
Email: sandy@pointB.is  
Phone: 09255823680

Result of Collaborative Partnership:

I have been in contact with PointB since January of 2015. After many emails and Skype conversations, in which we discussed various ideas, I finally proposed a detailed project to the pointB team. Shortly after receiving my proposal, they offered me the opportunity to join their Fellowship Program (Figure 1.1) and execute my project. PointB offered me all the necessary start up tools and local connections that I needed in order to execute my research in a time-effective manner. They also opened up more doors by sharing their extensive INGO network and partners during my time in Myanmar. I am currently still benefiting from this collaboration, as the pointB team continuous to share their
knowledge and experience with me, and guide me towards becoming a better design-thinker. PointB benefitted from this partnership as I helped them build the marine science research capacity of Mawlamyine University by linking them with an international expert in the field of Social Coastal Ecology, Dr. Sarah Meltzoff. This link allowed for the creation and implementation of a two-week course on Social Coastal Ecology, lead by Dr. Sarah Meltzoff, for seven local marine science students at Mawlamyine University.

(3) **SCRIPPS Institution of Oceanography (SIO)**

Scripps Institution of Oceanography (SIO), UC San Diego, California is one of the oldest, largest, and most important centers for ocean, Earth and atmospheric science research, education, and public services in the world. In this collaboration, SIO will provide support in: (1) research expertise (2) strengthening educational programs (3) coordinating partners.

**Persons of Contact:**

Tara Witty – SIO Post Doc  
Email: taraswhitty@gmail.com  
Skype: TSWhitty

Ellen Hines (SFSU)  
Email: ehines@sfsu.edu  
Skype: ellenhines

**Result of Collaborative Partnership:**

SIO and PointB currently have a blueprint of 5 integrated projects which they aim to start in 2016 (Appendix A). I have been in close communication with Tara Witty, a post doc from SIO, who has accomplished extensive research on artisanal fishing communities. Tara has been guiding me and advising me since Nov/Dec 2014 and we are still in close communication till this day. I had the opportunity to meet her in Bangkok after her scoping visit to Mon state and Mawlamyine University. I believe that Dr. Sarah Meltzoff’s and my work will help stage the foundation of her future projects in Myanmar and I certainly hope to contribute to these projects as well. I personally benefited from the extensive knowledge sharing and technical guidance that Tara shared with me over the last year. Tara is currently benefiting from all the groundwork that Sarah and I set up during our pioneering two-week field course. She is planning to conduct her own class in 2016, by using Sarah’s syllabus and field notes as a guide.

Ellen Hines (SFSU) is interested in building a collaborative research network with various different universities. Sarah and I skyped with her in July – this future potential collaboration is its very preliminary stages, but it is important to keep as reference.
(4) Mawlamyine University

Local Myanmar University in Mon State. One of the three Universities in Myanmar that offers degrees in Marine Science; the other two are Pathein University and Myeik University. Mawlamyine University is the only University that offers Masters of Science and PhD programs for fields in Marine Science. Mawlamyine University is currently working with pointB to build partnerships with international marine science institutions who can support and guide the rebuilding of its Marine Science research and educational programs.

Persons of Contact:

Dr. Htay Aung – Rector  
Email: mlmrector@mptmail.net.mm  
Phone: +95-057-24619

Dr. Zaw Win – Pro-Rector  
Email: zawmyat24@gmail.com  
Phone: +95-9-497-72328

Dr. San Tha Thun –  
Email: santhatun@gmail.com  
Phone: +95-9-254-099-341

Result of Collaborative Partnership:

On June 15th, Dr. Htay Aung and Dr. Zan Win held an official meeting in the newly built Marine Science Department Building. After discussing the various details my proposal, Dr. Sarah Meltzoff and myself received the official approval to conduct the two week field course on Social Coastal Ecology with seven of his best Marine Science students (letter of approval). Dr. San Tha Thun, the Head of the Marine Science Department, and Rochelle Ardesher were both present in this meeting as well. Dr. San Tha Thun generously helped coordinate various field trips with Mon state artisanal fishing communities during the two weeks of class. This partnership offered Dr. Sarah Meltzoff the unique opportunity to be one of the first foreign professors to be allowed to teach at a local Myanmar university in the interdisciplinary field of Coastal Social Ecology. This has been one of Dr. Sarah Meltzoff’s life long dreams, and thus truly benefits from this collaboration. In return, Mawlamyine University benefits from the support and contribution of an international expert, as well as increases their links for further international scientific research collaboration. The local marine science students that attended the class directly benefited from the educational experience and field-based research training in an interdisciplinary field of marine science – which is unique in comparison to their traditional single-discipline focused curriculum.

(5) Marine Science Association Myanmar (MSAM)

This is a local NGO that engages specialists in different fields within Marine Science. I had the opportunity to work with Dr. Tint Swe, a fish specialist,
and retired professor from Mawlamyine University. He is now the Vice Chairman of MSAM.

**Person of Contact:**

Dr. Tint Swe – Fish Specialist  
Email: utintswe422@gmail.com  
Phone: 09 253924147

**Result of Collaborative Partnership:**

Dr. Tint Swe accompanied on both field research trip to MKWS: (1) June 21\textsuperscript{st} to June 29\textsuperscript{th} and (2) August 18\textsuperscript{th} to August 22\textsuperscript{nd}. Dr. Tint Swe has an agreement with Ramsar and FFI to conduct taxonomic fish species surveys in MKWS for 6 months. Therefore, I coordinated my visits to MKWS with him so that the students and myself could learn from his expertise and local fisheries knowledge. During research trips, Dr. Tint Swe helped the students and I identify various types of freshwater, brackish, and marine species. Additionally, Dr. Tint Swe has offered to guide Chu Nge as she continues to research the fisheries in MWKS for the next 7 months (Appendix C).

(6) **Fauna & Flora International (FFI)**

FFI is an international organization that has been promoting innovative conservation practices since 1903. They focus on strengthening wildlife biodiversity conservation and building capacity for community-based eco-tourism in Myanmar.

**Person of Contact:**

Frank Momberg- Director  
Email: frankmomberg@ffi.com (check)  
Robert Howard - Advisor  
Email: roberthoward@ffi.com(check)  
Zau Lunn – Marine Biologist  
Email: zaulunn@gmail.com  
Phone: +95 9 73094308  
Khin Maung Soe  
Email: khinmaungsoe65@gmail.com  
Phone: 09 31077936  
Thant Zin Tun  
Email: thantzintun1234@gmail.com  
Phone: 09 33614567

**Result of Collaborative Partnership:**

Robert Howard and I have been in contact since November 20\textsuperscript{th}, 2014. As the Program Advisor with FFI Myanmar, Robert was able to educate me on FFI’s strategies on how to develop partnerships with local stakeholders in Myanmar. These processes involved various collaborative efforts between FFI and a series of different ministries (Forestry, Fisheries, Hotels & Tourism, Education, Environmental Conservation, etc), local and international NGOs, as well as
individual local and international stakeholder groups. Robert also informed me about one of FFI’s community-based eco-tourism projects where economic benefits to local communities are currently limited – this is the project located in Meinmahla Kyun Wildlife Sanctuary (MKWS). Robert and Frank Momberg, the FFI country director, emphasized the importance and essential need to discover opportunities in which the local communities could benefit from the increasing tourism activities. Thus, FFI had a project that needed special attention and fresh observations to provide innovative solutions for potential eco-tourism in MKWS, a cyclone-prone area devastated by Cyclone Nargis in 2008, and continuously destroyed by seasonal storms.

Through this needs-finding design-thinking method, I was able to offer my knowledge and skills to FFI and proposed them an offer to collaborate – and they agreed. I offered to conduct 10 days of ethnographic field-research in their project site of MWKS with two marine science students from Mawlamyine University (Naung Naung Oo and Chu Nge), and write a report based on the research findings. This report will seek solutions for the inclusive development of community-based educational tourism for the villages around MWKS (Appendix C). FFI project managers and the Department of Forestry can use this report as a guide for their future eco-tourism projects.

In return, Robert Howard and U Zau Lunn arranged all the details our research trip, cleared us ahead of time with the Department of Forestry, provided us with their boat and made sure we would be accompanied by two other FFI field coordinators based in MWKS (Khin Maung Soe and Thant Zin Tun). In addition, FFI agreed to sponsor Chu Nge’s research expenses as she continues to conduct research in MWKS for the next 7 months. Chu Nge has benefited from this partnership by being offered the opportunity to apply her theoretical knowledge in a real-world research experience, collaborate and share knowledge with INGO staff and re-design her Masters of Research thesis based on these newly acquired experiences. She will now be studying the development of eco-tourism in MWKS as well as collect fisheries data in MWKS – thereby designing a unique interdisciplinary thesis – one of the first integrated thesis to be published in the department of marine science at Mawlamyine University.

(7) Forest Department (FD) and Ministry of Environmental Conservation and Forestry (MOECAF)

The Forest Department is a branch of the Myanmar government that actively cooperates with the Ministry of Environmental Conservation and Forestry (MOECAF). FFI has an MOU with the Forest Department and collaborate with them in order to promote community based tourism in MWKS.

Persons of Contact:

Zaw Htoo Aung –Ranger Email: zawhtoo1111@gmail.com
Result of Collaborative Efforts:

Zaw Htoo Aung and Kyaw Kyaw Naing were both extremely knowledgeable on MKWS. With over 15 years of experience, they knew exactly which villages/villagers used poison to kill fish, which ones cut down mangroves in the protected areas, along with all the village dynamics and feuds between farmers and fishermen. It was an absolute honor to have had the opportunity to work with them throughout the ten days of our field experience. They were always available to clarify local terminology and facilitate communication between the students (who seem to have a different dialect sometimes) and the villagers who were conducted interviews with. The students and I benefited from this collaboration by gaining a new perception on conservation and community-based tourism; the perception of a Ranger working for the Forest Department. This new knowledge helped us build our ecosystem maps and enrich our ideas as we discovered solutions for the MWKS project objectives. The Rangers benefited from the continuous sharing of knowledge, thought-provoking conversation and the experience to work with students in their research projects. They also learned about ethnographic field-work techniques and fisheries data, as they followed us and observed us during our daily research activities.

(8) Tourism Sector

I conducted 21 interviews with different tourism agencies in Yangon that are promoting MKWS as an eco-tourism destination (Appendix C). There is an example of an itinerary with price details provided by Elegant Tours Myanmar (Appendix C), however I find this extraordinarily over-priced. The following four tourism agency companies are the ones that I believe would be best to collaborate with. On July 20th, 2015, Naung Naung OO, Chu-Chu and myself conducted interviews in person with these following agencies (Appendix C).

Persons of Contact:

1.) Seven Star Tours (SST) (Phyu Phyu Mar)
   Email: sevenstar.tours@mptmail.net.mm
   Phyuphyu.mar@sevenstartoursmyanmar.com
   Phone: (+95 9) 401541044
       (+95 9) 401541055
       (+95 9) 799839350
   Mobile: (+95 9) 2005632
   Address: Room 4-B, Kan Road Condo,
   No.90, kan Road, Ward (10),
   Hlaing Township (11051), Myanmar
2.) Manie Sithu Travel (MST) (Kalayar Naing)
Email: maniesithu@gmail.com
sales@maniesithutravels.com
Email: Kalayanaing@gmail.com
yinlet@gmail.com (her friend with more information on MKWS)
Phone: +95 94252972266
+951 581 618
+959 732 115 79
Mobile: +959 425 297 266
Address: No. 495, Tharaphe Street (6th Lane)
34 Ward, North Dagon Township
Yangon, Myanmar

3.) Myanmar Tour East (MTE) (Aung Si Yoon)
Email: Mte.monechanger@gmail.com
aungsi.yoon@gmail.com
Phone: 09 506 4821
09 333 55485
09 970 970 702785
Address: Room No 21, Sule Pagoda (Circle)
Sule Pagoda Road, Kyauktada Township
Yangon, Myanmar

4.) Time Travel Myanmar (TTM) (Tun Naing)
Email: timetravel@myanmar.com.mm
tunnaingnht@myanmar.com.mm
Phone: 95-1 547560, 95-9 73150818
Address: (not specified)

Result of Collaborative Partnership:

After conducting 21 phone interviews (Appendix C), I chose to visit the tourism agencies that seemed to be the most knowledgeable about eco-tourism and MKWS. On July 20th, Naung Naung Oo, Chu Nge and myself visited these four tourism agencies above and conducted in-person interviews. The results/notes from these interviews (Appendix C) greatly expanded our understanding of the current tourism situation in MKWS and the potential for the growth of tourism in MKWS. In return to sharing their knowledge with us, I introduced the idea of forming a partnership with these tourism agencies – a partnership that would be linked to FFI and Forestry Department. These four agencies loved the idea, and are eager to participate in up-coming projects to promote community-based eco-tourism. Once returning from our scoping trip to MKWS, we will present these tourism agencies with a potential itinerary for their clients. This project is still in the pipeline, as it awaits further guidance and approval from U Zau Lunn, Robert Howard and Frank Momberg.
DEAR ROXANE DE WAEGH,

We are incredibly excited to offer you a Student Fellowship with Point B Design + Training (pointB) in Mawlamyine, Mon State, Myanmar starting June 2015.

As you know, pointB was created in a spirit of optimism, exploration, learning, creativity and action. We deeply believe that pointB Fellows will be able to guide our mission in Myanmar to support the rebuilding of education systems and community development in underserved communities by:

- Developing **MULTI-ETHNIC CHANGE AGENTS** who can lead change and facilitate action within rural schools and communities.
- Introducing the **DESIGN-THINKING** process into educational trainings, community development and entrepreneurship in Myanmar.
- Creating new platforms for **COLLABORATION** between diverse groups.
- Tackling social issues and using prototyping to discover new **SOLUTIONS**.
- Enhancing the **VALUE** of education within Mawlamyine University.

pointB is a start-up and there is much room for us to learn together about how design-thinking works in the Myanmar context. In an effort to make the most of your time as a pointB Fellow, we would like to continue to co-create a plan to outline the ways in which you can make a significant contribution to this great work. Here is what we have discussed with you:

- **PRELIMINARY RESEARCH PHASE** to identify all active stakeholder groups — from department of fisheries, ministries of education and tourism, to local universities. By creating this collaborative platform, the team will be able to recognize synergies between various actors and link projects together that share a similar vision. There are three main organizations that will be participating in this research initiative: Point B, Worldfish Center and Fauna & Flora International (FFI).

- **WORKSHOP + TRAINING PHASE** working together with Master’s and PhD students at Mawlamyine University through a series of workshops/trainings to build capacity within the Marine Science department in relation to basic marine practices, partnerships mapping, community research, research methods and techniques, documentation, proposal and grant writing.

- **FIELD-BASED INTERNSHIP PHASE** in partnership with FFI, this phase will give explorative experiences to enhance Mawlamyine University students critical thinking skills. Using a field-based approach to give rise to inclusive solution to conservation practices within the context of Myanmar culture.

POINT B DESIGN + TRAINING

Mawlamyine University
Mon State, Myanmar
+95 (0)94.49.25.4071
learn@pointB.is
APPENDIX B

FIELDWORK IN COASTAL SOCIAL ECOLOGY

SYLLABUS – Co-designed with Dr. Meltzoff, pointB team and Roxane de Waegh.

During the first two weeks of June, a field course on political ecology will be co-designed in collaboration with Point B, Mawlamyine University, and Dr. Sarah Meltzoff. Dr. Sarah Meltzoff will then teach the course during the last two weeks of June. Students will take notes on these open-ended in depth life and work histories. Notes while interviewing locals are just the raw material to help fuel our daily class seminars. Students will then write up these rough, interview notes into a coherent, fleshed out version using sub-headings. Students will also practice keeping a daily field journal, complimenting entries with illustrations or any additional descriptions they may feel is appropriate. The skills developed in this field course along with the information learned will then be used in the second implementation phase. The following is a detailed course description of the propose field course on Coastal Social Ecology.

VII. Course duration:

VIII. Number of Students in course
   a. Max 7 students.

IX. Prerequisites for course:
   a. Advanced/Honor student status
   b. English translator necessary

X. Grading Criteria
   a. 10% exam, 30% class discussion, 60% field interviews and journal observations

XI. Purpose of course
   a. To understand local livelihood and social conservation, given important on-going social and environmental changes (relate to political changes and how that may be effecting the local community, different political environment, devolution of power to township/village level, addressing needs and perspectives of local communities etc).

XII. Course Activities
   a. Life and Work History Mapping
      i. Students will learn basic life and work history filed interview techniques to explore the social organization and shifts in local fisheries and aquaculture and the growing eco-tourism sector.
   b. Participatory Observation (PO)
      i. Students will explore the interrelationships among local livelihoods, including those of women, in farming, crafts, post harvesting of fish/seaweed/salt, marketing.
ii. The class carries out small group interview with locals engaged in subsistence form farming to fishing and local crafts and marketing.

c. Mapping out Perspectives using PIC and CAGE method
   i. PIC – commonly held Concepts derived from Institutions that inspire Practice
   ii. CAGE which looks at capital (financial, educational, cultural, and family connections) age (generation), gender, and ethnic identity (self-identified based on child rearing, familiar foods, or even spiritual beliefs)
   iii. Given spiritual practices surrounding social conservation, the course discusses the importance of local folk practices and believes surrounding nature and conservation. The class will learn how these spiritual practices and concepts of nature and conservation structure livelihood and interactions with the environment. The class will carry out group interviews with local monks, as well as net kadaws and shrine guardians.

d. Mapping of Different Interest Groups
   i. The class practices how to observe livelihood changes due to interaction with market opportunities, coastal development, and tourism. Interviews will be carried out with various interest groups/resource users in fish markets, coastal development, and tourism sector.
   ii. Students will be asked to consider the new tourism industry and how tourism can interact with livelihood strategies and conservation. We will look at possible local-level tourism efforts. Class will then conduct small interviews with community’s interests in grassroots tourism.

e. Mapping the Role of Fisheries, Aquaculture, and Mangrove Ecosystem Services
   i. The course discusses the management of local fisheries and aquaculture. The class looks at local conservation practices and local fisheries (tender system). The class carries out small group interviews in local fishing communities, seeking to understand their cultural logic and perception of management. We will also observe fisheries techniques, aquaculture practices, and other present natural resource extractions.

f. Creating a Transparent Map of Perceptions
   i. Once interest groups are mapped, students will then be asked to analyze how these different interest groups may have competing perspectives, mistrusts, allies, rivals, etc.
   ii. By mapping out these different interest groups, interviewing for work and life histories, conducting participatory observation, students will be able to promote grass-root leaders that are empowered through the knowledge obtained by such transparent maps of perceptions within the communities.
Individual interests can then be aligned with collective interests, eventually leading to a decrease of conflicts and an increase in resolutions.

g. Human-Environment Interactions

i. The class discusses changing local interactions with nature over time, potential points of pollution, and how they interact with conservation management efforts. The class visits artisanal fishing communities in Mon Coast and fish processing plants to observe the social realities of various stakeholder groups. Students will interview fishing processing plant managers, department of fisheries (DOF) officials, artisanal fishermen and their wives involved in the post-harvesting of their catch, LGNOS, INGOs, and various other stakeholder groups to learn their views and insights on conservation, development, and current social changes.

Students in Attendance: (2 Masters of Science & 5 PhD Students)

8. Jar San – jarsan.jarsan@gmail.com (PhD – Seaweed Phycology)
9. Zin Mar Aye – zinmar.marine@gmail.com (PhD – Fishery Biology of Ta Nin Tha Yi Coast)
10. Chaw Thiri (Grace) – Chawthirigrace@gmail.com (PhD – Seaweed Sargaseum Species)
11. Naung Naung Oo – naungnaungoomarine@gmail.com (PhD focus on Phytoplankton and Zooplankton of Rakhine, Ayerwardy Delta, and Ta Nin Tha Yi Coast)
12. Htet Myet Maw – httetmyetman1992@gmail.com (Masters of Science- focus on benthos: Rakhhine, Ayerwardy Delta, Ta Nin Tha Yi Coast)
13. Chue Nge – chueng92@gmail.com (Masters of Research – Fisheries Data (Species and traditional gear) in MWKS)
14. Aung Aung Aye – aungaungaye2009@gmail.com (PhD – Marine Bio-chemistry of Seagrass in Rakhkine coastal region)

Field Work Research Sites based on Multi-Cited Ethnography Approach

During this two course on Coastal-Social-Ecology, the seven students, Dr. Sarah Meltzoff and myself visited nine sites including: artisanal fishing communities, fish landing sites/markets, and one fish processing plant:

10. Kyauk Tan Village, Mawlamyine Township (19/6/2015)
11. Mawlamyine Holdings Limited (fish processing plant) (19/6/2015)
12. Thanlwin Market, Mawlamyine, Mon State (20/6/2015)
13. Set-se Village - Than-byu-za-yat Township (21/6/2015)
17. Da-min-state Village, Thanbyuzayaat Township, Mon State (25/6/2015)
18. Kyaik-Kha-Mi, Department of Fisheries official, Mon State (25/6/2015)

(1) Naung Naung Oo’s Final Assignment: Student was considered the two top student in the class.

Kyauk-tan Village, Mawlamyine Township (19/6/2015)

Name U Aung Myint Oo
Age (32 Yrs)
Income 50,000 - 10,000 kyat/day (Nov, Dec, Jan)
         15,000 – 20,000 kyat/day (other months)
Current Job Fish catching and selling, nets selling and preparing, boats building in Kyauk-tan Village.
Address Kyauk-tan Village, Mawlamyine Township
Religion Buddhist
Education Grade 5 (passed)
Parents Father: U Than Oo (50 Yrs), over 30 years experience in fishing, boat building is main business.
         Mother: Daw Than Myint (50 Yrs), fish and net selling in Kyauk-tan Village.
Relative Grandparents: Farming in this village, they already passed away.
         Ma Thida Oo (30 Yrs), Grade 4 (passed), fish selling in this village and Mawlamyine Markets.
         Ma Moe Thida (28 Yrs), Grade 4 (passed), fish selling in this village and Mawlamyine Markets.
         Ma Ei Ei Phyo (26 Yrs), First year Maths in Mawlamyine University, fish selling in this village and Mawlamyine Market.
         Ma Ei Ei Maw (24 Yrs), Chemistry in Mawlamyine University, now she sewed the clothes in this village.
Wife & children Wife: Naw Mya Win (32 Yrs), History in Mawlamyine University, selling ice – stick in this village.
         Son: Maung Chit Ma Wa Phyo (2 Yrs)
Background history of U Aung - eldest son of his family
Myint Oo - worked in fishery since childhood (12 years old)
- migrate to Thailand, temporary stayed about (7) years, worked in construction & electric as a technician
- now his main business is fishery, he has 5 own boats [35 ft length, 7.5 ft width, 6 ft depth, 13 hp)
- catch (crocker, herring, thread fin, others) seasonally
- selling to local buyer

Set-se Village, Than-byu-za-yat Township (21/6/2015)

Name: Daw Khaing Khaing Latt (Born 1975)
Age: (40 Yrs)
Salary: 160,000 kyat/month
Current Job: Assistant Lab Technician, Aquaculture Research Center, Setse, Marine Science Department, Than-byu-za-yat Township, Mon State
Address: Setse Village, Than-byu-za-yat Township, Mon State
Religion: Buddhist
Education: High school level (passed)
Parents: U Hla, Father, (Engineer, Irrigation Department at Bago), Now pensioner
Daw Mya, Mother, (House wife), Now she take care her grand children
Relative: Grandfather (Belugyun), Fishing, (pass away)
Grandmother (Setse), Fish selling, (pass away)
Daw Suu Suu (Elder sister), live in Setse, Selling fish, bamboo shoot, vegetables
U Myo Min (Younger brother), live in Myeik, Fishing
U Kyaw Kyaw (Younger brother), live in Thailand since 1997 where he works at construction, fishing, cold factory
Husband & children: U Kyaw Khaing, Husband, Hair Stylist and animal husbandry (pig for fattening) sell at within and outside of the village
Ma Yadana, daughter, second year IT student at Mawlamyine Technology University
Ma Jasmine, daughter, Grade 8 student at Setse village high school
Background history of Daw She lived at Setse village since 14 years old (1989). Before she joined the Aquaculture Research Center, Daw Khaing Khaing Latt
Khine Khine Latt sold the fresh water at fishing village, betel leaves, bamboo shoot, seasoning fruits and vegetables (egg plants, lady finger, corns etc.), and fishes; farming. She got a job at Aquaculture Research Center, Setse since 1999.

**Abit-Hnee-Hmote Village, Belu Island = Chaung-sone Township (23/6/2015)**

Name: **U Ko Ko**, eldest son and together live with his parents.

Age: 48 Yrs

Income: 50000 kyat/day

Current Job: Fish buyer

Address: Abit-Hnee-Hmote Village, Belu Island, Mon State

Religion: Buddhist

Education: Grade 11

Parents: Father: U Maung Toe, fishery

Mother: Daw Win Kyi, fishery

Relative: Grandparents: farmers

Background history of U Ko Ko: Farming and rubber plantation are main business of his family, U Ko Ko and his three brothers worked together fishing nets selling, fish buying and selling at local and Mawlamyine Markets. He caught various kinds of estuarine fishes in Than-Lwin River Mouth areas by local inshore fishing boats. He bought fishes from 10 fishing boats of local fishermen in favourable seasons. In this village, Green Peace Project is cooperated with village management team which supported to villagers for business especially farming, animal husbandry and fishery. U Ko Ko is one of the members of village administration office. After constructing the Than-Lwin Bridge (Chaung-sone = Belu Island) the economic status of in this areas will more developed than present.

**Kyar-seik, Kyaik-kha-mi = Amherst (25/6/2015)**

Name: **Chan Myae Aung**, single, second child and together live with his parents.

Age: 26 Yrs

Salary: 50, 00-10, 000 kyat/day

Current Job: General worker at Kyar-seik landing centre

Address: Kyar-seik Village, Kyaik-kha-mi, Mon State
<table>
<thead>
<tr>
<th>Religion</th>
<th>Buddhist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Grade 9 (passed)</td>
</tr>
</tbody>
</table>
| Parents       | Father: U Aung Myine, boat building worker at Thae-gone Village at Kyaik-kha-mi.  
                | Mother: Daw Htwe Nyunt, fish selling at Than-byu-za-yat Market. |
| Relative      | Grandparents: Fish caught by small boat inshore waters, fish buying and selling at local markets.  
                | Elder brother: work at Offshore boat.  
                | Younger brother: general worker at Kyar-seik landing centre.  
                | 4th younger brother; 5th, 6th and 7th younger sisters are primary level students. |
| Background history of Chan Myae Aung | Chan Myae Aung and his brothers worked under the small Labor Association of kyar-seik at Kyaik-kha-mi. This association cooperated with local business men in fish box carrying, salt dry-fish, nets preparing, boats building and other necessary works for general worker. It has two working groups such as Group 1 and Group 2 and also protected from dangerous condition especially mechanical injury at port and sea. He likes very much Labor Association of kyar-seik because it support and needful assistant in various works. Now he works happily U Aye Maung’s fish processing factory as a permanent worker. |
Map of Local Perceptions in context of fish the processing plant at Kyar-seik = Tiger Port, Kyaik-kha-mi (25/6/2015)

U Aye Maung (Owner)

U Paing San Oo (Supervisor, 25,000 kyat/month)

Fresh fish
15 workers
“60,000-150,000 kyat/month/work”

Salt Dry Fish
10 workers

Ten Carry Boats Daily
Mullet, Crocker, Herring, Wolf-herring, Mackerel, Flat fish, Yellow

Mawlamyine
(Cold Storage Plant)
1) Mawlamyine Holding
2) Than-Lwin-Aye

Yangon
Mandalay
(Cold Storage Plant)

CHINA

THAILAND
Critical Thinking of Survey Areas

Population growth, economic development, climate change and subsidence are the main drivers of change in Mon State. These developments pose extensive demands on the available natural resources. But also technological development can be seen as a driver of change: it may provide opportunities for more cost-efficient and innovative infrastructure or exploitation of previously untapped natural resources.

To provide insight into the present interview, a simplified structure is applied in the form of an Interest Group. This Interest Group recognizes three physical planning groups:

The Base group
(Water and soil and including all related elements such as fisheries resources, mangroves),

The Network group
(Infrastructure, but also elements such as agricultural implements, fishing craft and gear) and

The Occupation group
(Zoning of land use functions and livelihood elements such as agricultural and fishery practices)

each with different but interrelated temporal dynamics and public-private involvement. The interest indicates a physical hierarchy in the sense that the Base group influences the other groups through both enabling and constraining factors. For instance, the soil type determines to a large extent the type of agriculture that can be performed in the Occupation group.

Present Situation of Mon State

Geographical Situation

The coast of Myanmar may be divided into three regions as Rakhine, Ayeyawady Delta and Gulf of Mottama (Martaban) and Tanintharyi respectively. Mon state is located between (Lat. 15° 10'N and 17° 30' N and Long. 96° 46'E and 98° 15'E) with a unique ecosystem. Mon coastal region extends 320 km from the mouth of Thanlwin (Salween) River in the north, to War-Kyun (Ye Township) in the south. The areas studied for this interview work include six stations (Kyauk-tan and Mawlamyine Holding Fish and Prawn Processing Factory at Mawlamyine City, Abit-Hnee-Hmote and Ka-Mar-Kae at Chaung Sone (= Belu Island) Township, Kyaik-kha-mi (=Amherst) and Set-se at Thanbyu-zayat Township in Mon State.
Fisheries in the Mon coastal areas

The fishery sector is one of the important sectors in Mon coastal areas after the agriculture sector. The main fishery resources in Mon State include:

Freshwater through:  
1. Fish culture  
2. Leasable resource  
3. Open fisheries

Marine fishery through:  
1. In-shore fisheries  
2. Off-shore fisheries

These fishery practices take place in two main ecological zones in the Mon State which are related to distance to the sea and salinity level:

An estuarine zone characterized by multiple waterways, temporary brackish water, typically estuarine species, degraded mangroves along waterways and a patchwork of rice fields, trees and villages; a coastal front characterized by a very flat land, quasi-permanent brackish water, salty soils, almost no vegetation and fishing activities targeting the coastal and marine zones. In this interview confirmed that fishery stands as the second important source of income after farming in all survey villages located in survey areas of three townships in Mon State. Fishing and processing of fishery products provide an opportunity for landless people to earn income for their livelihood. Based on information from the key informants’ survey; Crocker, herring, mackerel and prawn are the most important source of income in the aquaculture industry in the villages and are given first priority for earning income. Dry prawn, fried fish and prawn paste making industries are performed in most of the surveyed villages.

In the past years, in the diversity of catches and in biomass; the main species characterized by a strong reduction are Crocker and herring. It seemed that the fish species composition looks richer in the flood plain zone than further downstream, which is surprising (the biodiversity of estuarine zones is generally much higher than that of rivers since they combine representatives of the freshwater, brackish and estuarine faunas. Similarly the contribution of migratory species to the biodiversity and to fish yields in this ecological zone is not clear. This zone is characterized by substantial collective efforts in the past to restock water bodies in order to sustain the productivity (lease holders must invest into restocking, and hatcheries provide fingerlings).

From a national perspective the fisheries economics of the estuarine zone are clearly more influenced by coastal and marine fisheries than by local catches, however local fisheries and the lease system play an important role for small shareholders and local communities. The respective role of changes in policies, in competition and in the resource base are not clear and deserve clarification; from that perspective research in biology could focus on medium to long term trends in species composition, catches and dominance.

Commercial fish farming, including some large scale fish farms, have grown successfully in Myanmar in recent years, but now appear to be facing considerable
difficulties in sustaining commercial operations. Large scale aquaculture production in Myanmar is characterized by low productivity and low diversity. The main focus of the production system is on the slow growing, low value commercial species. Ponds are typically large (often 20 hectares by pond) with slow grow-out periods of between 18 to 24 months. Pond resources are not efficiently used. Farms provide seasonal low levels of employment. The low productivity of the aquaculture system is compounded by increasing input costs (feed, labour and electricity) and low outputs benefits raising concerns about the long term sustainability of the model, the species economics and markets.

Large scale export oriented enterprises have reverted to selling on domestic markets, practices in themselves which may be influencing competitiveness of smaller scale commercial producers. Commercial aquaculture enterprises could provide employment, food security and extension and inputs that can support a small scale household oriented aquaculture development. Hatcheries appear to be underperforming, and carp breeding and hatchery programs need revitalisation. Employment opportunities in fisheries and aquaculture are seasonal in nature. Production systems for fish are dominated by extensive and semi-intensive ponds, with some marine and cage culture and rice-fish farming.

Scale of production varies, but particularly in the Mon coastal region, large ponds and more commercially oriented enterprises appear to make most significant contributions to fish supply. Small scale household level aquaculture is surprisingly absent; it can be found with mixed success. Institutional, policy and services appear not yet to be favourable to development of this part of the sector, and it is uncertain whether the present investments will sustain and are able to move to a scale where they can make significant differences to the income and nutrition of the many poor and vulnerable households in Mon coastal region.

WorldFish is the implementing agency for the AU$2 million fishery component of the program and has developed a project for “Improving research and development of Myanmar’s inland and coastal fishery” over the next 4 years, which is called MYFish (Myanmar WorldFish). The project has been developed together with a number of local partners and in particular the Department of Fisheries (DoF) and the NGO association the Food Security Working Group (FSWG).

According to DoF, Mon coastal region has the potential to be as productive as the Thaninthai coastal region. However, pressures (such as overfishing, destructive fishing practices, reduced fish migration routes) exploitation mangroves, limited research and development and monitoring, increasing water pollution are now being exerted on fish stocks and the natural resources that support production in the Mon coastal regions and there are concerns that current fish production, consumption and export earnings levels may become difficult to maintain.

Since the development of the Mon coastal area has been launched only from early 20th century, industries apart from those related to farming (e.g. rice mills) and fishery (e.g. ice factories) are not found yet. The opening up of the country to the outside world and the accompanying liberalisation of the economy will attract more industry to Myanmar.
Khin Myo Myo Tint (Chu-Chu) Final Assignment: Student was considered the second top student from class.

1.6.2015

Inshore fisherman from Kyauk-tan fishing village, Mawlamyine Tsp. Mon state

Name
U Soe Naing (Born 1963)

Age
52 Yrs

Current Job
Old service inshore fisherman

Address
Kyauk-tan fishing village, Mawlamyine Tsp. Mon state

Religion
Pure Buddhist

Education
High School level (Grade 9 failed)

Parents
Carpenter, Kyauk-tan village

Wife & children
Daw Aye Nyo, wife, 48 Yrs, selling and hiring to make fishing nets

7 children, 3 sons and 4 daughters. Their educations are Grade 11 (high school students) and the other two, one is graduated with English Major and the last one is now attending History Major in MLM University.

Background history
His native village is Kyauk Tan village and his wife, too. Moreover, his father is carpenter from this village. His education was Grade 9 (high school student) and his wife was Grade 6 (middle school student). They have 7 children, 3 sons and 4 daughters. They didn’t afford to continue in education. Now they are working at BKK in Thailand.

U Soe Naing accepted to do fishing since he was about 20 years old. In early times, he worked as hire worker, after 5 years he owned a boat to operate fishing. (rowing) Their investments are almost 1300,000 kyat in fishing. If they can’t afford these investments, they borrow some loan from other by money loaned or paying fishes.

About fishing methods
The length of his boat is 25 feet (7.62 m). (about 370000 Kyats) Use 85 feet (25.9m) in the length of the net. (32000 Kyats) The mesh size of cover is 5 inches and lower part is 2.2 inches, namely cover sake. Use the circle shape of plastic ball and small lead ball to sink the net easily under water. Usually fishing operation takes 4 miles from the land near Bilugyun island. Get many species (10) viss per day in hot season (Sep-Dec), mainly Rosy Jew fishes and mango fishes (Polynemus indicus) but scarce in rainy season. During the rainy season, they mainly take making fishing nets and maintain by painting diesel or protecting with some traditional
medicine. His wife sells the fresh fishes near the Mupon local market but sometimes keeps with ice to sell the next day. Sometimes the export sizes are sent to the fish factories in Mawlamyine city. They apply 5000 kyat to the department of fisheries or administrator of village for a fishing license per year.  

Their incomes

They usually get average 30000 kyat per day in hot season but 5000 kyat per day in rainy season. In that season, they do making fishing nets to get extra money. They get 3000 kyat per one. If they own the nets, they can get more money than hireling.  

Social well being

There are many social communities in Kyauk-Tan village like world vision, NGO, UNICEF, emergency ambulance and so on. They can get loans from Save the Children by money loaned (2.5%). But other rich mans in village are given by 12% money loaned. There is a clinic that is free for charge every Saturday. All of the road and communications show the unity of villagers.

<table>
<thead>
<tr>
<th>21.6.2015</th>
<th>Worker, Myanmar Holding Cold Storage, Mawlamyine City, Mon State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Ma Lay Nwel Oo (Born 1980)</td>
</tr>
<tr>
<td>Age</td>
<td>(35 Yrs)</td>
</tr>
<tr>
<td>Salary</td>
<td>120, 000 kyat/month(Bonus 1 month salary in Chinese New Year)</td>
</tr>
<tr>
<td>Current Job</td>
<td>Old service worker, Myanmar Holding Cold Storage, Mawlamyine City, Mon State</td>
</tr>
<tr>
<td>Address</td>
<td>Maung Ngan Ward, Mawlamyine, Mon State</td>
</tr>
<tr>
<td>Religion</td>
<td>Buddhist</td>
</tr>
<tr>
<td>Education</td>
<td>High school level (Grade 11 failed)</td>
</tr>
<tr>
<td>Parents</td>
<td>U Nyunt Oo, Father, (Upper Clerk Retd. at the department of Educational Office)</td>
</tr>
<tr>
<td>Relative</td>
<td>Daw Aye Mya, Mother, (House wife)</td>
</tr>
<tr>
<td>Husband &amp; children</td>
<td>U Kyaw Thu, Husband, (34 Yrs), truck driver from MLM-Ygn</td>
</tr>
<tr>
<td>Background history</td>
<td>No children although their anniversary was for 10 years</td>
</tr>
</tbody>
</table>

She worked at that cold storage factory, Daw Lay Nwel Oo sold bamboo shoot, seasonal fruits and vegetables (egg plants, lady finger, water
convolvulus, Roselle, corns etc.) at Maung Ngan Market. After that, she got a job with her friends in 1997. But her friends left when they married. At the beginning of her job, she got 45 kyat/month. At the present times, she sometimes gets 30,000 as overtime fees in addition to her salary. Some of her salary gives her parents and some are gathered. There are 4 days in a month as the holidays and 5 days during the water festival. She mainly works picking out the various size of fresh prawn according to the fixed export size, but sometimes she picks out fishes when the prawns are caught at fewer amounts. The working time is 8 am – 4 pm and 12 pm – 1 pm is lunch break time. Through the times, that cold storage factory is perfect with standard instrument in her views. Slowly her service becomes over 18 years because she has rapport with all workers. Therefore, she wants to work in that factory as she can be able.

23.6.2015 Old service fisherman from Ka-mar-kae fishing village of Chaung-Sone Tsp. in Mon State
Name U Paw Lin (Born 1950)
Age 65 Yrs
Current Job Old service fisherman
Address Ka-mar-kae fishing village of Chaung-Sone Tsp. in Mon State
Religion Buddist
Education B.E.H.S at Shwe-gon, Hpa-an Tsp. Kayin State
Parents 
U Htoo Lin, Father, peasant (paddy, ground nuts, some beans, and sugar canes and so on)
Daw Nyo Mya, Mother, peasant (paddy, ground nuts, some beans, and sugar canes and so on)
Wife & children 
Daw Mu, wife, Ka-mar-kae fishing village from Chaung-Sone Tsp. in Mon State. (died in 2010)
Mg Soe lin, eldest son, fisherman, died in 2008
Ma Thida lin, 35 Yrs, youngest daughter, house wife
Ko Aung Aung, son in law, 37 Yrs, fisherman
Background history

Before he was a fisherman, he worked as (clerk) at Administrative office. When he was laid off from it, he decided to go only one to Bilugyun Island according to his friend’s advice. At that time, he was 25 yrs old. He started to work as a hired person. And later, he became captain in his own boat. He has three children, two sons and one daughter, but the eldest son died. They went to the B.E.H.S from Mu-yit-ka-lay. His daughter married with Ko Aung Aung who was a fisherman, too. Since he was 14 years old, he worked as a crew member on offshore boat. They have two daughters, elder daughter went to B.E.M.S in Ka-mar-kae but the youngest is Grade 5 (primary level). His son in law continues to work to his boat.

About fishing methods

The length of the boat was only 30 feet when he started as an owner. After 4 years, he changed 50 feet, bigger than the initial boat. There are 11 people as hired workers on his boat. He used drift net for fishing. He stayed over a month when he went to the sea. Early years, he made dried-fish and sold to the Mawlamyine capital market and sometimes he sold to the fish buyer U Khin Maung Myint from Kyaik-kha-me Tsp that he is Rakhine nationalities. He can’t work after he’d suffered from paralytic stroke. Therefore, his service is over 40 years. Now, his son-in-law is still working together with U Khin Maung Myint (KMM Fishing Buyer). They don’t fish during rainy season because getting fishes is lesser than other seasons and they always keep and repair their boat every year. Through the times, the length of their fishing time takes for six month at sea. They use 120 horse power engines. These fishing boats have cold storage boxes to keep fishes. Therefore, they use the carrier boats to bring fishes from these boats. Daw Thida Lin (daughter of U Paw Lin) usually goes to Kyaik-kha-mi three times in a month. When the fishing boats need something, she gives the necessary things with carrier boat. They mostly get Indian mackerels, crockers, threadfin fishes and etc..

Their incomes

Their incomes are 3000000kyat in a month. The wages of hireling is 100000 kyat for a person in month. The cost for petrol is about 460000kyat per month. In addition, they apply 110000 for a license to the Department of Fisheries that the costs are fixed for offshore fishing boats. Sometimes they borrow some money from KMM. They only pay fishes that they get, not including interest.

Before 1995, there was a Fishery Cooperation Association in each Village of Bilugyun Island. All of the boat owners are organized. But later 1995, this association was stopped.
<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.6.2015</td>
<td>Fish buyer from A-bit-hne-hmoke, Chaung sone Tsp. Bilugyun Island, Mon State</td>
</tr>
<tr>
<td>Name</td>
<td>U Ko Ko (Born 1967)</td>
</tr>
<tr>
<td>Age</td>
<td>48 Yrs</td>
</tr>
<tr>
<td>Current Job</td>
<td>Fish buyer, rubber plantation</td>
</tr>
<tr>
<td>Address</td>
<td>A-bit-hne-hmoke, Chaung sone Tsp. Bilugyun Island, Mon State</td>
</tr>
<tr>
<td>Religion</td>
<td>Buddhist</td>
</tr>
<tr>
<td>Education</td>
<td>High School Level (Failed), Mue-yit-ka-lay village, Chaung sone Tsp., Bilugyun island, Mon State</td>
</tr>
<tr>
<td>Parents</td>
<td>U Maung Toe, father, 84 Yrs</td>
</tr>
<tr>
<td></td>
<td>Daw Win Kyi, mother, 68 Yrs</td>
</tr>
<tr>
<td>Wife &amp; children</td>
<td>Single</td>
</tr>
<tr>
<td>Relatives</td>
<td>Three younger brothers are fishermen.</td>
</tr>
<tr>
<td></td>
<td>One younger brother married from Dawei. (Farming)</td>
</tr>
<tr>
<td></td>
<td>Another younger brother is a Taxi-driver around the Bilugyun island.</td>
</tr>
<tr>
<td></td>
<td>One younger sister is rubber plantation. (Married)</td>
</tr>
<tr>
<td></td>
<td>The youngest sister is single. (House works)</td>
</tr>
<tr>
<td>Background history</td>
<td>His main business is not only fish buyer but also rubber plantation.</td>
</tr>
<tr>
<td>25.6.2015</td>
<td>(TTT Fish Buyer) From Kyar-Sake Ward, Kyaik-Kha-Mi Tsp. Mon State</td>
</tr>
<tr>
<td>Name</td>
<td>Sai Win Htet (Born 1977)</td>
</tr>
<tr>
<td>Age</td>
<td>38 Yrs</td>
</tr>
<tr>
<td>Current Job</td>
<td>Fish buyer</td>
</tr>
<tr>
<td>Address</td>
<td>TTT Fish Buyer From Kyar-Sake Ward, Kyaik-Kha-Mi Tsp.</td>
</tr>
<tr>
<td>Religion</td>
<td>Buddhist</td>
</tr>
<tr>
<td>Education</td>
<td>High school level (failed), No. (1) B.E.H.S, Moe gote Tsp., Mandaly Division</td>
</tr>
<tr>
<td>Parents</td>
<td>U Tin Soe, father(70 Yrs), an old member of parliament</td>
</tr>
<tr>
<td></td>
<td>Daw Pway, mother(65Yrs), housewife</td>
</tr>
<tr>
<td>Wife &amp; children</td>
<td>Single</td>
</tr>
<tr>
<td>Relatives</td>
<td>7 brothers and sisters, 5 brothers and 2 sister</td>
</tr>
</tbody>
</table>
He is the eldest brother of twin.

**Background history**
Firstly he worked with his uncle who still works as a manager of fish factory (TTT, Yangon) now. Since he was 28 yrs old, he worked as a manager in a small fish factory (Kyaikkkhami) which is a branch of this fish factory. And then, he also bought fishes from some fishermen. After that, he became a fish buyer. Early years, he sent to Yangon (TTT Fish factory), but last two years, small amount of fishes were caught, so he didn’t sent. In MLM, he usually sends to Thanlwin Aye cold storage factory. Sometimes, he sells to Ko Aung Myint (Fish seller) in Thanlwin market.

**How does he circulate his work environment**
In period of neap tide, Indian mackerel, herrings, wolf-herrings, silver pomfret and Chinese silver pomfret are mostly caught. He lends some money to totally 4 boats. Therefore he gets fishes from those boats and he also buys some boats from A-hlat, A-paung, etc. He doesn’t get any interest on his loaned money. He usually buys fishes at fresh condition. If he gets fishes that have swim bladder, he removes these swim bladders separately. Some persons buy to deliver in Kyaikkami from him. He hires 2 boys to choose export-sized fishes when fishing boats sell fishes to him. Their salary is 120000 kyat for each person. Sometimes he hires other persons to work when his factory has many fishes. But he pays 4000 or 4500 kyat per day. When he sends to Mawlamyine, he keeps selected fishes in cold storage boxes (About 65 viss in 1 storage box). There are 30/40 cold storage boxes in a truck (6 Wheels).

**Revenue for fish buyer license**
He pays 15000 kyat for 150 ton per a year as a levy-tax to Department of Fishery in Kyaikkami.

25.6.2015
Inshore fisherman, Da-min-sate fishing village, Thanbyuzayat Tsp., Mon State

Name: U Myint Kyaw (Born 1971)
Age: 44 Yrs
Current Job: Fisherman
Address: Da-min-sate fishing village, Thanbyuzayat Tsp., Mon State
Religion: Buddhist
Education: Middle school level
Parents: His parents, peasant, lived in Ingapu Tsp. Ayeyarwaddy Region
Wife & children: Daw Htay Htay (wife), 41 Yrs, Da-min-sate fishing village
4 children
Relatives

4 brothers and sisters

His uncle lives in Yathae-thaung village, Setse

Background history

U Myint Kyaw’s parent lived in Ingapu Tsp. Ayeyarwaddy Region and they cultivated paddy field, corns and various kinds of beans on their own land. Before 1986, his parents were lack in healthy, as a result of they sold their farmland to cure their parents. In 1989, he decided to work with his uncle who married a girl from Yathae-thaung village near Setse village. And then, his family came to Da-min-sake village due to the financially ruined in Ingapu. At first, he worked as a crew in other persons’ boat. After 5 years, he owned a boat.

About fishing method

The length of his boat is 30 feet and the height of it is 4 feet. He use long-tailed nets and horse power that he used is 10 hsp. There are 4 people in a boat, 1 owner and 3 crews. Owner can use the fishing nets according to crews because he doesn’t need to pay any charges due to they take their fishing nets. Moreover, they don’t cost the fees when the boat has to mend, but they help the boat owner to collect his fishes from his nets. Their long-tailed net is fixed with bamboo or wooden post to be stable under water. They go to twice in a day according to tidal condition. Some make dry fish, fish sauce or sell at the fresh condition. When they finish making dry fish, they send to Mawlamyine market. They use solar light in dry season but in rainy season, they use charcoal to dry.

Fishing license

They pay 35000 per a year for inshore fishing boats. Department of Fishery allows catching around 10 miles for inshore fishing boats. When they have to take license, DoF announce the administrator from that village.

Discussions

When we interviewed various layers of fishing villages, we observed the following results based on their answering conditions;

Environment - Natural resources are slowly scarcer than the early years due to enlarged fisheries of human being by using various kinds of nets or trawls.

Economic - Most of inshore and offshore fishermen don’t continue to operate their generations as their investments are very high, but they get insufficient amount for recovering their investments or supporting their families.
Political

- Department of Fishery carries out exactly to collect how many fishing boats with license are there in a village, to obey the fishing laws on both inshore and offshore fishing boats, and to share the information and knowledge what the fishermen need to know in fishing.

Social

- is the last stage, if they are not pleasant in everything, e.g. economic depression, bad surroundings, the percentages of society will decrease automatically and they don’t create social well being in their environment.
According to interviews, the common perspectives of these interviews are that the rates of fishing are gradually declined since 1993. This is due to the overfishing (caught more than MSY), illegal fishing (used destructive fishery gears) in inshore and offshore as well as environmental changes such as erosion, sedimentation, deterioration of water quality.

Although many fishing villages are more develop and civilized than previous days for example, easy to transport fishery products from one area to another. The interest groups on fishing and its associate business are reduced because the high cost of investment in fisheries and the rate of catching also declined in rivers and seas.

In the past, the fishery status of Mon coastal area regarded to the medium standard. Today, modern technologies and fishing methods are developed while rule and regulation are also precised. So, I hope many fishery villages and fish product industries in Mon State may be better in near future.
Htet Myet Maw Final Assignment:

21/6/2015, Sunday (Kyauk Tan Village)

*U Bo Myint*, 48 years old, Burmese, Buddhist,
*Following Nats (Minmahagiri and U Shin Gyi),
*born in this village; finished secondary education;
*when 13, started fishing with elder brothers;
*when 26, married with *Ma Khin* from Sittaung Village near Sittaung bridge, going there to buy fishing nets;
*has five children: 3 sons and 2 daughters; Nay Aung, eldest son went to Thailand for money when he had finished secondary school; Second daughter also went to Thailand last year; the rest children are going to school.
*Ma Khin* makes fishing nets, earning about 3000 Kyats per day; sells fish around the village;
*U Bo Myint’s father (passed away) was a carpenter.
*His brothers are not fishing now, changed their jobs.

....... 

U Bo Myint said that during the last years there are less and less fish, and thought that it was due to many conditions such as river currents, sedimentation, and so on.
Sometimes he burrows moneys from NGOs liked Save The Children to buy things he needed, by 2% interests.
Sometimes he prereceives money from Daw Thaung Aye, fish buyer.
He owns one motor boat (26ft long and made of Kaung Hmu wood); uses 85 ft long gill net (cover sake he called); hires one or two workers for fishing; goes to two or three miles to fish; takes 15 to 20 minutes to get there; gets maximum 70000 to 80000 Kyats per one day but sometimes gets only 5000 Kyats or for eating, sells fishes to fish buyer and local market (Mupon).
He gives 5000 Kyats for boat License to DOF yearly.

They may be change their work due to climatic changes- Social Organizations well developed in this village, Environmental education were provided by many INGOs and NGOs to the villagers, Building new bridge from Mawlamyine to Belu Island will make any developing for villages near by, and Union Election will come soon, Green Peace Project becomes more broad.
Their next generations are not going to fish.

The fishermen in the Kyauk Tan Village are not hoping their children to be fishermen liked them.
They want them to be graduated persons. Some are more convenient in Thailand.

Belu Island
Building bridge may change any conditions on this island. It may bring many regional and international investments. Tourism sector may develop after the bridge has finished. Fish buyer U Ko Ko may change his work after it has done. Industrialisation may be developed with supplying more electrical power.
Boat owner U Paw Lin's daughter want to change their work because they face the decreasing of fishes they caught and do not, therefore, have profits. She want her daughter to be a good teacher. Most of Myanmar people are following the Buddha's teachings so that they believe the fishing is not a good work. Thus they want to change their work of fishing.

**Crews on boats**

Captain Min Htu Tin Win (Kyar Seik) He gets good salary (450000 kyats per month). He lives on boat for about 6 months but live at home for only 10-15 days. If he gets a same or more salary on land in a job liked mechanic, he will leave his job on boat. He want to live with his family together warmly. So He may change his job. May be he continues to work on boat for many years after.

According to our interviews,

Fishery sector - depend - chinese demand
Inshore fishing -- several possible ways (crockery fish to export)
Offshore fishing -- mostly export
Fishery laws -- on fishermen <--- DOF's direction
Environmental change -- effect on all levels
Fish buyer -- loan -- inshore fishermen -- all fishes -- fish buyer
Workers -- fish processing factories & boats <--- fishery sector
Climatic changes -- inshore fishery --- Tourism development
Building bridge --- Belu Island<--- electrical power supply

(5) Jar San Final Assignment:

Setse village (Than-byu-za-yat Township)
- U Kyi Aye
- Native town (Bago Region)
- before fisherman, he did a farmer
- he migrate in this Setse village since 1995
- Daw Sein Aye (wife)
- 5 children
- Parents are also farmers
- He was boat owner in the past but not now
- He sells dry fishes to Mawlamyine market buyer

According my point of view, the number of fishermen in this village has increased greatly in these years but fishing boats are not increased. People do not interest to invest in fishing boat. They interested in other economic and nobody wants to be a fisherman and their children like that. The fishing job is very dangerous and getting salary/price is a little. Some people buy fresh fish from fishermen and then they do the drying fish and they sell dry fish to the market. Dry fish selling job is better than fishing/fishermen. Some owners were stopped their fishing boats because of the investment is too much money and their income and out go money are not equal. All of the Setse villagers are not native, they come from different places and almost villagers are farmer before they migrate. According to their said, I think! A fisherman is better than farmer and dry fish selling is better than fishing/fishermen.
(6) Zin Mar Aye Final Assignment:

Kyaik-ka-mi study site
DOF STAFF (U AUNG KO OO)
He said that the fishing boats had gradually decreased in accordance with their record.
Boat owner stopped fishing because of improving investments (such as fuel, crew salary).
Some people migrate to abroad, some changed their jobs.
He explained that both offshore and inshore fishing have licences.
Offshore fishing has boat and crew licences.
Inshore fishing has only boat licence.
In June, July and August, fishing is not allowed
Local fishermen and crews asked the permission to the Central Government for their livelihood all-round the year. DOF permitted to catch according to the number of boats.
Bilu Island
After the project of the building bridge has ended, many conditions of the Bilu Island may change.
It can bring not only regional transportation but also international investments from foreign countries.
It can also develop tourism and many job opportunities for local people and enhance the income for the country.
But, most of the local people are worrying now because they may face with the problem of their fishery.
During this construction, sedimentation is much more than previous years.
Setse
U Kyi Aye (Dried fish seller)
He changed his job from fishing to dried fish selling.
Fishing is difficult for him because it needs many labours. His sons and daughters are married, so no one can help him in his job.
He thought that current job is more suitable for him because with fishing.
He gets the profit one half from the investment.
The main dried fish product is Harpodon nehereus.
He exported the dried fish to the buyers from Mawlamyine of the high income comparatively as a main market.
The Harpodon nehereus is the most abundant species in Mon State, the production of dried fish is common especially for this species in these areas.

(7) Aung Aung Aye – did not turn in a final assignment
APPENDIX C

YANGON-BASED TOURISM SECTOR INTERVIEWS

Brief Overview:

These interviews were conducted from July 15th to July 19th in Yangon, Myanmar. Only tourism agencies that promote MKWS as an eco-tourism destination were selected for interviews. A total of 21 interviews were conducted via phone conversations. The four best agencies, based on the information they were able to provide, were then selected for personal interviews based on a multi-level approach. These four personal interviews were conducted individually, in the respective agencies’ office, throughout Yangon’s various townships, on July 20th, 2015.

The Results:

1.)

Decent Myanmar Travel

Website: http://www.decentmyanmartravel.com/fr/eco_tourism.htm

Tel: +951 663161, +951 656573
Tour Operator: ++95 973077373, ++95 973013851
Email: mtnk@myanmar.com.mm
Address: No. 233, Aung Thu Kha Lane, 9th Mile, Mayangone Township, Yangon Myanmar

Information gathered from phone interview:

- in order to go visit Meinmahla Kyun Wildlife Sanctuary (MKWS), the tourism agency will need to ask permission from the Ministry of Hotels and Tourism.
- They also have eco-tourism to visit elephants in the northern part of Myanmar and the snow-cap mountain in Chan State
- When I asked if I could stay with the villages, they said they would have to ask the permission from the government for home-stay
2.)

**Myanmar Holiday – Interconnection Travels**


Tel: (+951) 371 691, 371 692, 376 109  
Address: No.24-26, 37th Street, Kyauktada Township, Yangon 11182, Myanmar

Information gathered from phone interview:

When asked about eco-tourism they directly started speaking about the elephant tours in Chan State. They also mentioned the bird watching in Moeyingin (near Yangon) where you first go to Bago. When asked about MKWS they said that this eco-tourism site is just being recently promoted. They also mentioned that eco-tourism is very new in Myanmar, so not many tourists ask about this type of tourism – most of tourists are interested in cultural tours. They also kept on telling me about the Myeik archipelago to go and visit mangroves, not MKWS. Right now, this tourism agency does not have tours to MKWS so they kept on trying to get me interested in doing a bird watching eco-tourism tours in the islands of the Myeik.

3.)

**Myanmar Tour East**

Website: [http://www.myanmartoureast.com/eco-site.htm](http://www.myanmartoureast.com/eco-site.htm)

Tel: 951-381334, 392697, 705428, 959-5138402  
Email: myanmartoureast.com@gmail.com  
Address: Room No. 1007, 10th Floor, Central Tower, Anawrahta Road, Kyauktada Township, Yangon, Myanmar

Information gathered from phone conversation:

When I asked about eco-tourism, Aung Si Yoon (John) gave a direct definition “looking around without damaging the environment”. He continued to say “when we do ecotourism they can go to elephant camps and wildlife sanctuary and stay at local house, or the local monastery. Some places it is allowed to have local house where there are not hotels or guesthouses they have to stay at local houses. Although the government doesn’t recommend this because of safety and comfort issues.” He then recommended Chan State for more hiking and trekking. He said “some clients do not like staying at local houses because they are very patchy and annoying; he also said that in areas that there are not guesthouses or hotels, you can stay without permission from government in local houses because there are no other options…”. Sometimes, the locals do not want any money from you – because Myanmar people are very welcoming. If you want to
stay at local house, you first have to see who wants to accept you and first you need to find this by requesting. He kept on talking about the different hiking and trekking near Kha Kaporazi – the tallest mountain in Myanmar – he said this was very dangerous to climb but you can go around it in about 30 days. When asked about MKWS they said that they have never sent clients there they just have the itinerary but not one has expressed interest there – there is a guesthouse called Cerebral 0 in one of the villages near the island (this is the first time I heard about this guest house so I would have to double check). For local stay he said that he would have to ask local guides, boat owners, and see if they can arrange a trip. Also, he said that if I wanted to visit any parts of the area that has any business with import/export then they would have to ask the department of forestry or any government officer: For example, he mentioned that cities that produce rubies and gold, such as Mogok cities (golden butterfly)

4.)

**Myanmar.com – The Ultimate Guide To Myanmar**


There was no contact information on this website – no email or contact number. However, the website on eco-tourism is very well designed, unfortunatately that there is no follow up contact information. The facebook/twitter link doesn’t work either.

5.)

**Aventura Travel**

Website: [http://www.mmtravelling.com/](http://www.mmtravelling.com/)

I left a message on their “contact us” link in their website since there was not email address or phone number to call them. – check on their replied email in inbox and include this later **

6.)

**Cirrus Travels and Tours**


Tel: 09 425 018 270

Email: info@cirrustravel.net

Address: Building 69, Room 303, Botataung Market Street, Yangon, Myanmar

No one answered when I dialed the given number. Teir website is very extensive and great – has full description of objectives of what eco-tourism means to them. I left an email on their website. Also – this seems to be run from New Zealand since they have a special office in New Zealand. Check the email that they replied to in inbox***
7.)

**Manie Sithu Travels and Tours**

Website: [http://myanmartravelplan.net/des-beaches.htm](http://myanmartravelplan.net/des-beaches.htm)
Tel: (951) 581618, (959) 7321 1579 Fax: (951) 581618
Email: maniesithu@gmail.com, sales@maniesithutravels.com, kalayar@maniesithutravels.com
Address: No.495, Tharaphe 6th Lane, 34 Ward, North Dagon Township, Yangon, Myanmar

Information gathered from phone conversation:

- They said that they would have to ask the Myanmar Travel Association before letting any tours in MKWS
- They also said that there are no hotels, and government accepts to sleep in the monestary
- They say that home stay is not allowed – and only have to use guest house – but first they must check if the guest houses are not all full
- They said that they had guests from Switzerland that were mangrove experts and they traveled with the Forest Department with a special permit, but that is the only people they know that went to this area – no tourists
- They kept saying that these areas were not developed, no hotels, no restaurants, not good weather, not good transportation
- They also later contradicted themselves and said that the government doesn’t even allow them to go to this monastery
- When I told this person, Talaya, tha I was a student interested in mangroves and eco-tourism, she then proposed that I met with her in person:
  Her personal mobile number is: 094 2529 7266 – go to Coffee Circles with her and Naung Naung Oo and Chu Nge for follow up interview at 2pm
Follow up interview with Talaya at Coffee Circles @ 2, July 20th, 2015:

8.)

**GBS Tours**

Website: [http://www.myanmartravelandtour.com/meinmahlakyun.htm](http://www.myanmartravelandtour.com/meinmahlakyun.htm)
Tel: (+959) 502 1233
Email: goldenbstt@gmail.com
Address: No.1(A), Shwe Mg Ogh Street, Karan Quarter, Kyimyindine Township, Yangon, Myanmar

Information gathered from phone conversation:
- First attempt to call there was no answer (Friday, July 17, 15)
- Second attempt to call (Saturday, July 17, 2015) there was an answer the lady on the phone did not have much information and she wanted me to email her – so I did – I emailed goldenbstt@gmail.com to ask more information on MKWS - check email that they sent in inbox***

9.)

**Honey World Tour Agency**

Website: [http://myanmartravelhoneyworld.com/eco-tourisms.htm](http://myanmartravelhoneyworld.com/eco-tourisms.htm)
Tel: (+95) 09 431 42 901
Email: honeyworldmyanmartravel@gmail.com, marketing.hwmyanmartravel@gmail.com
Address: No 4D/5, Hnin Cherry St, Snow Garden, Thingunkyune Township, Yangon Myanmar

Information gathered from phone conversation:

- Number doesn’t work – and the email doesn’t work either – so I left a message on the main “contact us” page

10.)

**Mekong Responsible Tourism**

Tel: 95-1378376,252859,371286
Email: mpt.mht@mptmail.net.mm
Address: 118, Maha Bandoohla Garden Street, Kyauktadar Township

Information gathered from phone conservation:

- She wants to meet at the office on Monday – we will meet all together with Naung Naung Oo and Chu Nge at office on Monday

11.)

**Tourism Transparency**

Extremely interesting website – with a professor of Chaing Mai University at the contact page. I sent her an email to ask more about “tourism transparency” and her views on the growing eco-tourism industry in Myanmar – with special interest in Meinmahla Kyun. There was no number or address on the website – so I left Dr. Andrea Valentin a message. I hope to hear back from her soon since this seems to be very interesting.

12.)

**Sun Travels**

Website: [http://www.sunfartravels.com/](http://www.sunfartravels.com/)
Tel: +951 371691
Email: sales@traveltomyanmar.com
Address: MT & K Tourism Company Limited, No.19, Yodaya Lane, 9 mile, Pyay Road, Mayangone, Yangon, Myanmar.

Information gathered from phone conversation:

- He was busy but definitely need to call this number back because he seems like he spoke good English and has good information. Call back on Monday July 20th, 2015.

13.)

**Green Palace Travels & Tours Co., LTD**

OUT OF BUSINESS

14.)

**S.S.T. Tourism Co., Ltd.**

Website: [http://sstmyanmar.com/ecotourism/meinmahlayun.html](http://sstmyanmar.com/ecotourism/meinmahlayun.html)
Tel: 95-01-393086
Email: sst@mptmail.mm
Address: Room No.(S-6), North Wing of Aung San Stadium, Mingalar Taung, Nyunt Township, Yangon, Myanmar

Information gathered from phone conversation:

Contacted on two separate occasions, nobody picked up either times. Although, when I emailed yangonite.com and asked them about eco-tourism in MKWS, they reffered me to this company – so they must be in some sort of network/partnership with other tourism agencies. When I emailed them – they sent me a rather extensive email *** include this when you have internet.
15.)

**Yellow Earth Travel**

Website: www.yellowearthtravel.com  
http://www.yellowearthtravel.com/yellow_earth/meinmahla-kyun-wildlife-sanctuary  
Tel: 951-511756, 959–73185574  
Email: info@yellowearthtravel.com, dos@yellowearthtravel.com, sales1@yellowearthtravel.com, sales2@yellowearthtravel.com

Information gathered from phone conversation:

Nobody picked up on two occasions – but need to email them again/or check if they replied to my email.

16.)

**Glamorous Myanmar**

Website: http://www.glamorousmyanmar.com  
Tel: +951 373396~8, +95 1 245469  
Email: operation@glamorousmyanmar.com  
Address: No.393, Room No. 3C (3rd Floor), City Shine Condo, Bo Aung Kyaw Upper Block, Kyauktadar Township, Yangon, Myanmar

Information gathered from phone conversation:

The person who answered the phone spoke very little English and requested that I emailed her with my questions – so I did – add email/reply in this box once you have internet ** Person to contact is “Mway”**

17.)

**Time Travel Myanmar**

Website: www.timetravelmyanmar.com  
http://www.timetravelmyanmar.com/ecotourism.htm  
Tel: +95-1-547-560, 95-9 73150818  
Email: timetravel@myanmar.com.mm, tunnaingnht@myanmar.com.mm  
Address: Bld (C), Rm (210), 3rd Floor, Kyaikkasan Housing, East Race Course Road, Tamwe Township, Yangon, 11211, Myanmar
Information gathered from phone conversation:

This agency provided us with great information. However, when Naung Naung Oo, Chu Nge, and myself went to visit them at the address indicated above, the manager of the tourism agency was sick with the flu, so he could not attend us. Nevertheless, a few weeks later, I received an email with great information which answered all the questions I had previously asked (add email as evidence here as well***). The email read:

“Dear Roxane, my apology for not being able to see you when you visited. I was down with the flu and did not wish to pass it on to anyone. Please see all the info we are able to give. You will see Prof. Macharg’s reply below.”

“We are pleased to forward the itinerary/program of the last 2 visits by Eckerd College Students- led by their Professor Brian MacHarg. Prof. MacHarg led 3 to 4 groups of students at 2 year intervals. These itineraries/programs required much effort and attention to details especially regarding safety measures. We also need permission from various government departments and support and understanding from many local sources to successfully implement these programs. FYI, please see below itinerary for Eckerd College Students.”

Itinerary & Program for Eckerd College Students visit to Myanmar in Jan 2007

06 Jan. 07 Arrival Yangon off PG#701 (1200:1245). Join the Ygn/Bogale government boat which sets off at 1800hr. Overnight on board in cabins.

07 Jan. 07 Early morning arrive Bogale. Then Bogale to Byonemwe project site by private boat. Bird watching or canoeing around Byonemwe Island. Overnight Byonemwe Island Guest House.

08 Jan. 07 Early morning transfer to Okpho Project site. Lunch at Okpho Project site. Planting in the afternoon as community service work (supposedly 2-5 pm, duration 3 hours). O/N Okpho project.

09-10 Jan.07 Voluntary community service at Okpho Project together with the villagers. O/N Okpho project.


12 Jan.07 Arrive Yangon in the early morning. Proceed by coach to Taungoo (180 miles = 6 hours drive. PM arrive Taungoo and overnight at Myanma Ahla Hotel.

13 Jan.07 AM drive to elephant camp by Toyota trucks. PM arrive elephant camp. O/N at the elephant camp.
14 Jan.07 Commence community work in village (ask what community work???)

15 Jan. 07 Full day community work in the village. Overnight at the village

16 Jan. 07 Leave at 0600 hrs cross the Bago Yoma mountain range jungle by truck to Pyay. Noon proceed to Bagan by coach. Evening arrive Bagan (today travel whole day. We will get an air con coach from Pyay to Bagan) Overnight at Bagan. Thande or Bagan Hotel.

17 Jan.07 Full day sightseeing in Bagan. Overnight at Bagan Thande or Bagan Hotel.

18 Jan.07 AM fly Bagan/Yangon. Full day sightseeing in Yangon. (sometime today, preferably 2 or 3 pm, briefing at American Center) If this timing is not convenient to Ms. Manlove, you can propose 12 noon today) Overnight at Panda Hotel


**Itinerary & Program for Eckerd College Students visit to Myanmar in Jan 2011**

15 Days.14 Nights
(this time I will omit the details that do not concern areas near MKWS)

10 Jan 11 (Mon) Arrive Yangon from Bangkok off flight TG#303 (0800-8500). By coach from Yangon to Bogalay. (90 miles in about 5 hours – faster than in 07) Dinner at local restaurant in Bogalay – overnight at Bogalay.

11 Jan 11 Breakfast at local tea shop. By FREDA (now you see FREDA – means they were only post-Nargis) boat from Bogalay to Byonemwe Island (about 40 nautical miles in 3.5 hours) Activities arranged by FREDA around Byonemwe Island. Overnight Byonemwe Island Guest House.

12 Jan 11 Early morning transfer to Okpho Project site. (72 nautical miles in about 6 hours) Plantin in the afternoon as community service work – about 2-5 PM – about 3 hours. Overnight in Okpho project.

13 Jan 11 Voluntary community service at Okpho Project together with the villagers. Overnight Okpho project.

14 Jan 11. Voluntary community service at Okpho Project together with the villagers. Overnight Okpho project.

15 Jan 11. Voluntary community service at Okpho Project together with the villagers
16 Jan 11. Okpho to Bogalay by FREDA boat. On the way visit Meinmahla Island. PM take public boat journey from Bogalay to Yangon (cabins). Leave Bogalay at 7 pm and arrive Yangon at 5 am. Overnight on board.

(the rest is just sight-seeing around Myanmar and volunteering in Popa)

18.)

Explore Myanmar

Website: explore@mayanmar.com
Tel: +95-1 295510, 299389, 204152, 726322, 726323, 4412898
Email: info@exploremyanmar.com
Address: No.124/126, 50th Street, Yangon, Myanmar

Information gathered from phone conversation:

They don’t arrange any tours to Meinmahla Kyun Wildlife Sanctuary

19.)

Elegant Myanmar Tours

Website: http://www.elegantmyanmartours.com/
Tel: +95-548310, 548317
Email: Contact Us Box – no specific email address
Address: No. (20), Building (D), Mya Yeilk Nyo Hotel Compound, Pa-le Road, Bahan Township, Yangon, Myanmar

Information gathered from phone conversation:

They did not pick up either times, but they replied to the message I left on their website with an elaborate itinerary with special price details (see the next page for details.)
Example of an itinerary and associated price created by a local Yangon-based tourism agency advertising Meinmahla Kyun as a tourism destination.

**Elegant Myanmar Tours**

*Mainmahlakyun Wildlife Sanctuary (3days/2nights)*

**Day 1 Yangon-Bogalay-Meinmahla Kyun by car,boat (-/L-D)**

Elegant Myanmar Tours company guide will pick you up at hotel and land drive about 4 hours on the way observes the local daily life. Arrival at Bogalay apply permit at Forestry Department and then proceed to Meinmahlakyun by boat about 3 hours ride. Then proceed to Camp on shore and night sightseeing is Wild crocodiles watching and Observing turtles in the sea turtles island. Overnight stay on the island at camp.

**Day 2 Meinmahla Kyun – Kadonekani – Meinmahla Kyun byboat (B/L-D)**

Visit to Kadonekani fisherman village and Sea Turtles Island. Evening back to camp. Crocodile watching at the night times. Overnight stay on island at camp.

**Day 2 Meinmahla Kyun – Bogalay – Yangon by boat, car(B/L/-)**

After breakfast at camp transfer by boat to Bogalay where visit local market and downtown then drive back to Yangon.

End of Service

**Above Tour Price Includes:**

- Accommodation 2 nights on Meinmahla Kyun at camp
- Sightseeing and transfer with car and boat (Driver & Fuel Charges)
- English speaking guide
- Wildlife regional guide.
- Meals (Breakfast, Lunch, Dinner)

**Above Tour Price Excludes:**

- Visa Fees
- International Airport Tax
- Travel insurance
- Personal Expense (Phone call, Laundry, Beverages and etc)

**Price in USD**

<table>
<thead>
<tr>
<th>Number of Person</th>
<th>1 person</th>
<th>2 persons</th>
<th>3 persons</th>
<th>4 persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>915USD</td>
<td>1032USD</td>
<td>1149USD</td>
<td>1266USD</td>
</tr>
</tbody>
</table>

The price can be less or more because we could not set the update price for new season.
20.)

**Travel Expert Co., Ltd.**

Website: [www.myanmartravelexpert.com](http://www.myanmartravelexpert.com)
- Myanmartouragent.com
- Myanmartravelelagent.org
Tel: (95-1) 667948, 010 3450146
Mobile: (959) 73051748
Email: sales@myanmartravelexpert.com
- myanmarexpert@gmail.com
Address: Building 4A. Room No. 7, Parami Road (Corner of Karaye Pagoda Road & Parami Road). Mayangone Township, Yangon, Myanmar

Information gathered from phone conversation:

They do not have any tours in Meinmahla Kyun. The only form of eco-tourism that they have is trekking tours around Chin State.

21.)

**Mebs Tours**

Website: sales@mebstours.com
Tel: (+95) 932109027, (+95) 932109028
Email: info@mebstours.com
Address: No.17/19, Level 4, Room 502, 52nd Street, Botahtaung Township, Yangon, Myanmar

Information gathered from phone conversation:

They offer tours to MKWS for birth watching, hiking and trekking. They arrange tours based on customer request. Most of their eco-tourism tours involve flower based tourism, photo tours for natural scenes. Their clients have rarely been to MKWS but they can arrange to stay with villagers – the only problem is that they first have to ask permission from the Ministry of Hotels and Tourism. They said this would take about 1-2 weeks. The person that they would contact to get permission is called ms. Saint

**Email Replies (Brief Overview)**

The following are a list of email replies from the tourism agencies that either did not pick up the phone, preferred to be contacted via email (due to their lack of English speaking skills), and tourism agencies whose phone number on file did not work.
The information gathered from these emails are quite important, and provide a general understanding for how MWKS is being advertised to interested tourists.

There is a total of two email replies.

1.) MT & K Tourism Co, Ltd is one of the authorized Tour Operator and a local Myanmar Travel Agency.

Website: http://www.traveltomyanmar.com/aboutus.htm
Address: MT & K Tourism Company Limited
        Room 202, Building 15-B, ShweGabar Housing, MinDaMa Road
        Mayango Township
        Yangon, Myanmar
Tel: +95 1 656597

From: MTNKTour@gmail.com
To: dw.roxy@gmail.com
Date: July 20th, 2015

Message Body:

I have well received your mail. According to your mail, I would like suggest you that. That area was preserving by one myanmar NGO known as FREDA. They have yangon head office Bogalay branch office and Mainmahla Island office. You need to contact to this NGO or do we need to contact instead of you. If we arrange that trip we will charge/guide/fee/transports/car/a boat.

thank
zin

Sent from my Huawei Mobile

2.) S.S.T Tourism Co., Ltd.
Website: http://www.sstmyanmar.com/tourism/index.htm
Address: S.S.T Tourism Co., Ltd.
        Room No.(S-6), North Wing of Aung San Stadium
        Mingalar Taung Nyunt Township
        Yangon 11221 Myanmar
Tel: +95 1 393086

From: marketing@sstmyanmar.com
To: dw.roxy@gmail.com
Date: July 20th, 2015

Message Body:
Dear Roxane de Waegh,
Mingalarbar!!!
This is greeting from SST Tourist Co., Ltd. Yangon, Myanmar.

Thank you very much for your kind mail to us. We, SST are operating the Eco-tourism to Meainmahlakyune Wildlife Sanctuary. We operate the Wild Crocodile Watching tour, Bird Watching tour, Wildlife study tour, Culture based -eco tour which is to see the mangrove forest and local communities who are fishermen lifestyle. We mention the link to our website. Please visit to this link:

We would like to know the following questions:
1) How many person will be in this tour?
2) When will it be?
3) How many day will you spend?
Please kindly answer above mentioned questions.
Please kindly reply to me if you received this mail.
We are looking forward to your kind response.
We are ready to assist if you have to know something.

With best regards,
Soe Min Aye (Mr.)
General Manager

(Next email)

Mainma Hla Kyun Wildlife Sanctuary is best known for its variety of mangroves, crocodile watching and bird watching. It is located at Bogalay township, Ayeyarwaddy Delta Division. It is 53 sq miles in size and was established in 1993. The sanctuary can be reached by car or boat (6 hours by car from Yangon, one day trip by IWT ship, or 4 hours by express boat from Yangon to Bogalay).

The Mainma Hla Kyun Sanctuary is an island of a part of Ayeyarwaddy Delta. There are still some mangrove forest in Pyin Da Ye reserved forest which is located at the southeast. It is formed by sedimentation within the growing Ayeyarwaddy Delta. Also it is a tidal island. Extensive areas of mud are exposed at low tide, considering the large tidal range.

**Tour Activities**
Conservation, education, and research works on the mangrove ecology system at the
wetland. Wild crocodile (crocodylus porosus) watching with boat in the night time. Watching water birds and migratory birds around the shore of the sea side of the island. Safari boat trip, along the rivers of the island. Studying the 20 species of mangrove forest in the wet land areas.

Tour Itinerary

Day 1: Drive to Bogalay by car (6 hrs drive from Yangon). Hire a boat at Bogalay, head to Thaung Chaung camp (4 hrs on the water ways). (or ) Morning departure from Yangon by IWT ferry ship to Bogalay. Evening arrival to Bogalay. Overnight stay at Bogalay forest department owned guest house (for budget tour). (or ) Depart from Yangon by express boat in the morning and arrive to Bogalay in the afternoon. Hire a boat at Bogalay and boat trip to Thaung Chaung camp at MMHK. Overnight stay at camp.

Day 2 – Day 5 (4 days): Activities at wet land wildlife sanctuary such as conservation, education, research works on ecology of the mangrove forest at wet land. Bird watching, crocodile watching and study of mangrove forest species.

Day 6: Back to Yangon by car, by IWT ferry ship, and express boat. End of services.

(Continued)

Personal Interviews with Top 4 Agencies:

Naung Naung Oo and Chu Nge, the two students from Mawlamyine University, accompanied me for these interviews to practice their descriptive empathic ethnographic interviewing skills.

This field-based experience also allowed the students to gain a better understanding of how MWKS is being promoted as an Ecotourism destination from Yangon-based tourism Agencies. They gained a new perspective from this preliminary research and can now see from the eyes of tourism agencies – yet another stakeholder group for the future mapping of MWKS various competing interest groups.

(1) Myanmar Tour East – Aung Si Yoon – July 20th, 2015

Email: aungsi.yoon@gmail.com

Phone: 09-506-4821

Aung Si Yoon (John)- Myanmar Tour East – First starting telling us that most of his clients go to Bagan, Inle, Mandalay. Only about 20% of the clients do ecotourism – and those are most for trekking up in Chan State, Mount Victoria. Only 5% go 30 days to this huge eco-tourism trekking to Mount Victoria. Most of the tourists are from USA and Thailand. Aung Si Yoon has been working in this
company since last year. Before he was a tour guide – most of the time giving
tours in Yangon. He believes that the tourism industry has a lot of potential, al
though he thinks that the country is not ready to accept all o this tourism due to
heave traffic, low hygiene, bad transportation etc. In his opinion, it’s everyone’s
responsibility to get the country ready, not only blame the government. From very
small change like garbage in the litter – everyone can contribute. Not damaging
the nature – conserve the nature. He also thinks that it is a good idea to give
money to local poor. When asked about local stay, he says that the government
will only allow local stay when there is no other option, no other guest house, and
they will “keep one eye close and one eye open”. He gave an example of how he
would take tourist through the Koloh track to Inle lake – and the people loved to
see the nature and blend in with local people. He also gave another example of his
friend that went to USA for a special training for tour guides programs (Overseas
Adventure Travels – check this) and his friend told him that the best tour guide
(who won the award) was a tour guide from Turket that would take his tourists to
real protests in Turkey, in the middle of the streets and otential risks, but the
tourists absolutely loved this because it was a REAL experience – eventually he
had to stop doing this because the police arrested him – but still – he won the best
tour guide of the year. If it was up to Aung Si Yoon, he said that he would show
the tourist the villages around the pagoadoes where they also do handicrafts,
lacquer work, golden leaf, and request the workshops to ask if tourist can make a
golden leaf products with them or lacquer products to make these table – or at
least learn how to do it with local people. Another experience that Aung Si Yoon
shared with us is that he would buy clothes with foreigners and then go to villages
and share these clothes with the village from the clothes that he bought with the
money that the foreigners would donate – but this is just him as tourist guide –
other tour guides would just put this money in this pocket – so he said this really
depends on the human resource. Some of the negative side of tourism, in his
opinion, is that foreigners come tothis country and since its not their country, they
think they can do whatever they want and get away with what they usually
wouldn’t be allowed to do in their own country. Although, he says that the fact
about this sex tourism growing in Yangon is only a lot of hype and not very true.
Another problem he said is that some of the local people are very shy due to the
language barrier. A big challenge he think s is the safety, barriers by government,
rebellions in some of the border areas (rakkhine). They don’t know how to take
responsibility as citizenship. Think about how to take thinking skills,
responsibility, thinking out of the box, this should be taught in primary schools,
“thinking like math, if someone wants to learn how to apply math, and teacher
just replies, no learn better how to do this problem, how do you expect to learn
better” > this is a direct quote from Aung Si Yoon (very smart young man). He
says that he does his part, and will continue to talk to clients, promote other
things, listen to their interest, give advice to clients on what they should do, talk to
regional managers at different cities.
When asked about MWKS, they said that FREDA is the only area for tourist to stay – send them through FREDA guesthouse. Phyu Phyu Mar then started to talk a bit more about her experience in tourism industry. She went to Malaysia to a workshop lead by Malaysia’s Ministry of Tourism and Sports that was trying to promote home stays. Their strategy was to provide loads so that the village could build good roads, water, and sanitary conditions for tourist to visit. They would give loans to houses that wanted to participate: clean houses, clean kitchen, etc. Then the little kids would take the tourist to the banana plantations and different sites that can help the community all participate in the income tourism. The Japanese tourist especially loved visiting this area because they were very interested in banana plantations – as they have never seen them in their homeland. Japanese would then grow their own banana tree and then would come back in future visits to see their tree grow.

- Then she mentioned **LOIKAW** which apparently is a new tourism site that the Dutch government has been working to develop as community based tourism and they have done this with an MOU with the Ministry of Tourism and Hotels.
- She particularly mentioned how interested she is in education – especially for young children. After Nargis she said she went to rebuild 2 schools in the delta region with an NGO known as Church World Service.
- In her opinion, she thinks that first you need to educate the villagers, create awareness before you implement community based tourism – first you have to introduce what community management is and how it is structured and organized, not just for tourism – but for other forms of livelihoods (such as fisheries, which is only top-down from DOF and tender systems… In my opinion).
- She also recommended to speak to village leaders, school masters, and the elderly people when we visit these villages – since they have more influence and power
- She believes that Myanmar’s best qualities is their friendliness and their hospitality.
- We also discussed how tourist don’t just want to see pagodas after pagodas – so there needs to be a variety of destinations.
- In her experience and knowledge, she said that the government is slowly opening up more locations to tourist and is being more flexible.
- **She says that the primary competition is with IT world, trying to sell packages that include flights and buses from the internet**
- She also thinks that this kind of tourism can promote **cultural immersion** and that when we go the MWKS, we should find out the selling points that can be promoted to tourist through a well designed itinerary
- I told her that one of my ideas was the have students (masters or PhD degree) lead these eco-tours and form something that is more as educational tourism, or edu-
tourism – and they can lead these tours depending on their relative majors. These local students could be accompanied by international masters students as well, so they can benefit from mutual learning experiences, and at the same time education tourist about their current research. This idea doesn’t necessarily have to be limited to eco-tourism, it can be done for history majors, culture majors, anthropology studies etc etc - since Myanmar has so much to offer, from it’s history to politics to environmental to ethnic diversity… this can be something that can appeal many departments and many fields of knowledge.

- She loved this idea – but just reminded me that there are still many areas that are closed off by the government due to internal issues – so government is “protecting” these areas from exposure so that tourist do not witness the “internal conflicts”…. (mining areas for example)

- She asked for us to send her a project report of experience and our findings because she has many connections with the Ministry of Hotels and Tourism and she can help promote this area.

- We also discussed the possibility of working together in future projects with FFI that is promoting community-based tourism, and it would be good for them to have a partner in the tourism agency to promote this as well - she welcomed this idea with great excitement, and just would like to be a bit more educated as to what she can do/prepare in order to work most effectively with FFI.

- She also told about various different stakeholders within the tourism agency: she told us that they are also very well organized – all the tourism companies are part of Myanmar Travel Association – she is an active member of this association as well as Myanmar Tourism Marketing

- I asked her what types of things these associations discuss or do and she replied:
  - They organize travel fairs
  - Trade fairs
  - Initiate marketing plans
  - Attend traveling fairs, such as the one in Beijing – which is the largest in the world known as ITB and WTM in London – she has attended both

- Over-all this lady is extremely educated, very well connected, has over 20 years of experience in the tourism agency, and is definitely the best connection we have met.

Finally, Seven Star Tours advertises MWKS quite nicely on their website, with an interesting list of activities for tourist (Figure.1.3):
Example of a Yangon-based tourism agency’s website advertisement page for Meinmahla Kyun.

Meinmahla Kyun Wildlife Sanctuary

Meinmahla Kyun Wildlife Sanctuary located between 10°05’ N and 95°18’ E in Bogalay Township of Ayeyawaddy Division. It is 52.79 square miles area and established in 1986.

How to access?
Yangon to Bogalay, 98 miles by river launch and Bogalay to Meinmahla Kyun, 12 miles by small motorboat.

What you can see?
Flora and fauna
Mangrove species such as Kanizo, Madonna, Thame, Thayaw, Kambala, Thinhauang, etc. are present.
Otter, sambar, hog deer, wild boar, crab-eating kra, wild dog, turtles and tortoises, estuarine crocodiles, fish, prawn, crab and 34 bird species are know to occur in the area and Ayeyawaddy Dolphin is said to occur occasionally in the area.

Opportunities for Study and Recreation
Study and research on mangrove conservation with the practice of natural regeneration method.
Study on mangrove ecosystem.
Bird watching.
Study on behavior of wildlife including reptiles, mammals and aquatic animals.
Study on the egg-laying of marine turtle at Kadonlay nesting beach: 10 miles away from the sanctuary, during November to January.
Conducting of socio-economic survey on local people at seaside.

CROCODILE SANCTUARY AT BOGALE AND MAIN-MA-HLA ISLAND

A Study of Crocodile nature can be done at Ayeyawaddy Delta area. Bogale and Mein-ma-hla Island are situated at a place where seawater and fresh water meets, which is a superb nature for crocodiles, reptiles and mammals, mangrove ecosystem and shore birds. Take a bus to Bogale and by boat to Byone Hmwe village. Study the nature of Birds, mangrove forest and continue to Main-ma-hla wildlife sanctuary by boats to watch crocodiles and glow worms. Visit to fishing villages and nature of people and their way of living.
Kalayar has a first degree of physics from Mandalay University – her home town is Meikhtila. When we asked her about eco-tourism, the first thing she mentioned was Mt. Popa. When asked about MWKS, she said that the Forest Department does not recommend tourism agencies to send tourist to this area.

-A bit about her background history in the tourism industry: about 18 years ago, she organized a tour to the delta area for a certain mangrove specialist from Zurich, Switzerland (she forgot his name) and he was accompanied by U Ohn, an Environmentalist from Myanmar. Although, she just helped organize this tour since she was taking French lessons – this wasn’t through her agency.

- She has been actively in the tourism agency since 2011 – about 4 years now. Her main business is with British Cycling Tours – they come in huge groups from about 69 cyclist the first year, and 99 cyclist the second year. This cycle tours go from October-March

so if this can be done by cycling through Myanmar, this can also be done for kayaking through artisanal fishing communities in MWKS

- These cycling tours also had to cross various villages and towns that did not allow local stay, and did not have guesthouses – therefore, she said she had to get permission on a case by case situations in areas that had no other options – no guest houses, no hotels. In such circumstances, the government would grant permission “one eye close, one eye open” – kind of situation.

- When we asked her the various steps that need to be taken in order to take tourist to such closed areas, or government restricted areas, she said that first you must contact department of forestry, then local government from that area, than ministry of hotel and tourism, then the village leader of the village that you intend to stay (sometimes equivalent to local government)

- She also told us her tactic when she talks to the village leaders and asks permission from local authorities to bring tourists: she said that she always starts by saying how beautiful their region is, and that foreigners are attracted to this beauty, and by allowing tourist in their area, they can benefit from development = she has strong beliefs that tourism can promote development.

- She also did mention that she takes a level of risks when staying at these local villages – and she explains this to her clients. For example, when she speaks with local authorities, she promises them that the tourists will only go in the routes/places discussed – and that they won’t wonder around the villages or areas that are not permitted – she also promises that these tourists will act responsibly –
so if anything goes wrong, it will fall back on her. This goes the other way as well—she has to explain to her clients that when the travel through these rural parts—villagers might act differently around them—mostly just out of curiosity, but not to be offended or surprised by the differences (such as hygiene, accommodations, etc).

-In her case, she used some of the money that the tourist gave for the cycling tour package to build a clean toilet in the villages that they would stay. She had to lock this toilet and make sure that this was only used for the cyclist.

-She said that the hardest part of this whole process though is to deal with the government, especially when cyclist want to cross over the Rakhine State—since this area has been neglected from the government so there are lower living standards, lower education levels, lack of clothes/food/adequate shelter etc.

-Similarly to Pearl from Seven Star Tours—Kalayar’s advice was to always first educate the people about tourism, and about tourist, by talking to the village leader or the monks of the village monastery.

-She also thinks that we should find young people to talk to in the villages and persuade them about this tourism idea since they have the time and they have energy—and discuss with the elderly since they have influence.

-Her concluding points was that Myanmar people are very adaptable people, if there is no one there to educate them about change—then they will carry on with their own ways—but if there is someone that will share knowledge with them, and train them in certain skills, than they will grasp this new knowledge.

-she also gave us the contact information of her friend that worked in the MWKS region after Nargis—vinlet@gmail.com

(4) Time Travel Myanmar - Tun Naing - Julye 20th, 2015

Email: timetravel@myanmar.com.mm
tunnaingnht@myanmar.com.mm

Tel: +95-1-547-560, 95-9 73150818

This agency provided us with great information. However, when Naung Naung Oo, Chu Nge, and myself went to visit them at the address indicated above, the manager of the tourism agency was sick with the flu, so he could not attend us. Nevertheless, a few weeks later, I received an email with great information which answered all the questions I had previously asked—this email is included in section above.
Conclusion and Follow-up Initiatives:

Myanmar Tour East – Aung Si Yoon – July 20\textsuperscript{th}, 2015

Aung Si Yoon had great ideas and proposed innovative project ideas during our interview. He also connected me with Miss Mie Mie Kyaw – a tremendous contact to have. Due to his generous collaboration and his eager willingness to keep extending connections to this network, I believe that Aung Si Yoon and Myanmar Tour East Company can be a beneficial contribution to this network. Once the full report is complete, I will contact Aung Si Yoon and arrange for a follow up meeting where we can discuss the various potential for community based ecotourism in MWKS.

Miss Mei Mei Kyaw

Met with in Yangon, August 23\textsuperscript{rd} and 24\textsuperscript{th}, and introduced her to FFI staff on August 25\textsuperscript{th}. Miss Mei Mei is a professor from Pathein University has extensive research experience and an impressive CV (already gave to Zau Lunn and Robert Howard.) I sincerely hope to collaborate with Miss Mei Mei Kyaw in future projects that aim to increase collaboration between local academic institutions in order to enable larger and better funded research projects to be successfully undertaken by local scientists.

Soe Moe Aung

Soe Moe Aung is a student from Pathein University who is very interested in eco-tourism and is quite familiar with the tourism agencies in Pathein. I will visit him in Pathein in September, 2015 and conduct more interviews with Pathein-based Tourism Agencies that are promoting MWKS as an ecotourism destination.

Seven Star Tours – Phyu Phyu Mar - July 20\textsuperscript{th}, 2015

Once this research is complete – and we have created a list of potential community-based activities owned and managed by the villagers in MWKS – then I will contact Miss Phyu Phyu Mar from Seven Star Tours and propose to her to join network, and collaborate with us to promote community Based Tourism in MWKS. Due to her various connections with the Ministry of Hotels and Tourism, her international experience in the tourism sector, and her willingness to collaborate, I believe that she can greatly enhance our collaborative efforts.

SST Tourism - Soe Min Aye

Due to his efforts to provide me a detailed itinerary with great site descriptions, SST Tourism should also be considered for future collaboration.
APPENDIX C

OPEN ENDED LIFE AND WORK HISTORY INTERVIEWS

Brief Overview:

In an effort to build the marine science research capacity of local Myanmar Universities, Dr. Sarah Meltzoff, a professor from the University of Miami, came to Mawlamyine University to teach a two-week field course on Social Coastal Ecology. From June 16th-27th, 2015, her local Myanmar students practiced ethnographic fieldwork by visiting artisanal fishing communities in Mon coastal area and conducting dozens of personal interviews based on a multi-level approach. The two best students from this class were selected to conduct ethnographic fieldwork for an International NGO, Flora and Fauna International (FFI). The two best students selected were Naung Naung Oo (NNO), a PhD student in his 4th, and Khin Myo Myo Tint (Chu-Chu), a Masters of Research student.

From July 21st-28th, 2015, NNO and Chu-Chu joined me to conduct ethnographic fieldwork in Meinma-hla Kyun Wildlife Sanctuary (MWKS). The purpose of this fieldwork is to help FFI project managers discover the potential for Community Based Ecotourism by empowering the local communities with knowledge. During these 8 days, we conducted a total of 83 interviews in the 22 villages surrounding MWKS.

This work could not have been done without the limitless assistance provided by FFI’s Field Coordinators, Khin Maung Soe and Thant Zin Tun. We were also grateful to be accompanied by two Forest Department Rangers, Zaw Htoo Aung and Kyaw Kyaw Naing. Finally, a special thank you to Dr. Tint Swe, a retired professor and fisheries expert from Mawlamyine University. Dr. Tint Swe shared with us his extensive knowledge on local fish species, helped us identify and classify various types of fish, patiently explained the area’s traditional fishing methods, and even taught us about Bogalay’s fisheries regulations and environmental laws. Most importantly, Dr. Tint Swe will now be continuing this research collaboration with the Masters of Research student, Chu-Chu, for the next 8 months. Due to this experience, Chu-Chu has decided to redirect the focus of her research and specialize in the fish species of MWKS.

Brief overview of research costs, site description, and local livelihoods:

Table 1.1. Total cost of field research in Meinmahla Kyun Wildlife Sanctuary.

<table>
<thead>
<tr>
<th>Description of Expense Item</th>
<th>Individual</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferry from Yangon port to Dala Port (x2 roundtrip)</td>
<td>2,500 K</td>
<td>5,000 K</td>
</tr>
<tr>
<td>Mini Bus from Dala to Bogalay (x2 roundtrip)</td>
<td>4,000 K</td>
<td>8,000 K</td>
</tr>
<tr>
<td>Fuel for FFI staff boat for 8 days</td>
<td>80,000 K</td>
<td>80,000 K</td>
</tr>
<tr>
<td>Chaung Byo Gyi Home stay (x2 nights)</td>
<td>7,000 K</td>
<td>14,000 K</td>
</tr>
<tr>
<td>Daily stipend for food (x8)</td>
<td>7,000 K</td>
<td>56,000 K</td>
</tr>
<tr>
<td>Pocket money for FREDA guest house staff (My personal decision to pay since we were offered the guest house for free for one night)</td>
<td>10,000 K</td>
<td>10,000 K</td>
</tr>
<tr>
<td>Pocket money for family at Forest Ranger house</td>
<td>15,000 K</td>
<td>15,000 K</td>
</tr>
</tbody>
</table>

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(Personal decision to pay family since they cooked for us and kept our bags safe during our daily excursions)
Pocket money for boat driver 30,000 K 30,000 K
(Personal decision since he was amazingly helpful, kind, and incredibly brave during the storms – and even had to spend nearly 6 hours in the water/rain/storm trying to fix engine)
Donations to monasteries (x3) 5,000 K 15,000 K 233,000 K

**Classification of Environment Observed around MWKS**

i. Mein-ma-hla Kyun Protected Area
ii. Ka-don-ka-ni Protected Area
iii. Pyin-da-yal Protected Area
iv. Mangrove ecosystems
v. Sand dunes and mud flats
vi. Paddy fields

**Classification of Shelter in Villages**

i. Public Storm Shelter – made of cement
ii. School Shelter – made of cement in some villages
iii. Clinic Shelter – made of cement
iv. Local Shelter – huts made of local wood, mangrove species, and shrubs

**Classification of Education in Villages**

i. Unofficial or Informal Primary School – Grade 1 to Grade 5
   2. Local community/villagers collectively contribute to paying a local teacher’s salary
ii. Ba-Ka School – Grade 1 to Grade 5
   3. Monastery education supported by local monks and monasteries from Bogalay Townships
iii. Government Primary School – Grade 1 to Grade 5
   4. Basic Education Primary School (B.E.P.S.)
iv. Government Post Primary School – Grade 1 to Grade 7
v. Government Middle School – Grade 1 to Grade 8
   5. Basic Education Middle School (B.E.M.S.)
vi. Government High School – Grade 1 to Grade 11
   6. Basic Education High School (B.E.H.S.)
Classification of Religion

i. Buddhism
ii. Karen Baptist Convention (KBC)
iii. Nat Spirits
   1. U Shin Gyi
   2. Pin-lae-pyin-maung-hna-ma
   3. 

Classification of Jobs

i. Fishing Sector
   1. Fishermen
   2. Fish buyer
   3. Dried fish vendor
   4. Fisheries Tender
   5. Boat seller
   6. Boat fabricator
   7. Net Seller
   8. Net fabricator

ii. Farming
   9. Farmer
   10. Rice buyer
   11. Fertilizer and chemical seller
   12. Rice mill owner

iii. Animal Husbandry
   13. Cattle
   14. Pig
   15. Chicken
   16. Duck
   17. Water buffalo

iv. Workshop
   18. Mechanics for various boat engines – predominately Honda 6 H.P. engines
   19. Mechanics for farming tools – tractor engines

v. Odd Jobs – “Bouk”
   20. Boat crew member
   21. “coolie man” – transports goods from/to passenger boat and village
   22. Snack-shop vendor
   23. Unofficial lottery selling
   24. Lumberjack
Identification of 27 Local/INGOs both past/present in MWKS and description of their objectives (local perceptions of these local/INGO objectives and impacts are found in the interviews conducted with villagers)

1. Mangrove Empowerment and Livelihood Security (MEALs)
2. Fauna and Flora International (FFI)
3. United Nations Development Program (UNDP)
4. Red Plus
5. Forest Resources Environment Development and conservation Association (FREDA)
6. Swanyee Development Association
7. Ecodev
8. Care Myanmar
9. Veterinary Association
10. Myint Thar
11. Food and Agriculture Organization (FAO)
12. Christian Religion Association (CRA)
13. World Concept
14. Japan International Cooperation Agency (JICA)
15. Mangrove Service Network (MSN)
16. Red Cross
17. Mary Sto
18. Swe Thar Har
20. Environmental Sustainable Food Security Program (ESFSP)
21. Basic Human Need (BHN)
23. Thant Lya Thant
24. Shwe Myanmar
25. Korean Red Cross
26. Korean Lover
27. Mingalar Myanmar

Open Ended Life and Work History Interview Results

Please excuse any grammar errors in the script of the interviews. These interviews were kept in their initial note format in order to keep the validity of the work as well as keeping the text original. The names of the persons interviewed have been replaced by “Name #” for confidentiality reasons towards personally identifiable names.
Village “0” Kadon Kani Village # 0– (non-project village)

1. “Name 0” Leader of Sea Turtle Conservation,

He is from Bogalay and his parents are also from Bogalay. He has one son – who is the 6th grade. His wife is from Mawlamyine Kyun, island near Bogalay Township, which is part of the Department of Fisheries – branch of conservation. There are three “branches/ministries” under the Department of Fisheries: 1. Conservation, 2. Development of villages, and 3. Are fisheries. He said that these ministries do not work together – just work separately on their own projects/objectives.

He has been the leader in this village for 18 years. Before starting the sea turtle conservation initiative, he was the assistant deputy in the village. He started doing sea turtle conservation activities since 1997. The three main types of activities for the sea turtles are: reproduction, education, and environmental conservation. For education, he conducts awareness training to local people and government staff. He also delivers pamphlets and does video portal demonstrations to primary and secondary schools. For the conservation of the natural reproduction of sea turtles, he has 4 main goals: make sure they nest far from people away from plants, not in tidal areas, and far from erosion areas. He also collects some eggs and places them in Styrofoam boxes – which is part of the non-natural reproduction initiative. He also transfers some of the eggs to the protected areas (the names of these areas are on the power-point that he gave us- take photos/scan and add to appendix).

Before 2010, there were many volunteers that would help him with these tasks, but no only staff and members of the conservation ministry help him. So he is trying to persuade the villagers to help him with these tasks – otherwise he cannot do it all alone.

The reason why there were no more volunteers after 2010 is due to a series of fluctuating laws and regulations. Back in 1905 – the DOF supported the protection of sea turtles nesting areas, but in 1990 this law to protect sea turtle nesting grounds was revoked – and the areas were no longer considered protected areas. Since most of the volunteers where fishermen, once this law was revoked, they no longer took care of the sea turtles and instead of spend more time fishing around these newly unprotected areas. Therefore the numbers of volunteers has been slowly decreasing since 1990.

Now in 2010, the local government has the power to decide to protect the sea turtle nesting areas again – however, when he announced to the fishermen that these areas are once again protected areas, the fishermen say that they don’t have time to help him anymore and they must focus on supporting their livelihoods first.

He says that he has invited many NGOs to come and help, including FFI, WCS, BANCA, and FREDA – but none of them have helped. He does want to collaborate with these NGOs in order to raise funds for his sea turtle conservation projects, but he must first get the permission from the local government and DOF – which are hard to obtain. For example, in 1999, WCS and scientists from the US wanted to come visit the Sea Turtle Conservation (STC) and visit the islands, but DOF did not give them permission.
Last year he brought 10 groups to the sea turtle island with the help of Zaw Htoo Aung – the Forestry department (FD) ranger that is with us. Since MOECAF has connection with FFI, they also have connection with tourists, so Zaw Htoo AAung first contacted the tourist, then FFI, then Poh Maw who then organizes tours to sea turtle islands with forestry staff. Pow Maw has also given training workshops to the FD for sea turtle knowledge.

(thoughts) maybe they can involve the tourist in the conservation, help with the transfer of eggs – Poh Maw knows all the information that tourists need so he should be able to contact the tourist directly – instead of it going through various people before it reaches him – this way the tourist can directly help him and donate money to help the sea turtle conservation efforts of patrolling and conservation.

Name 1 says that tourism only really stated last year in 2014, and before then there were only specialists or scientists that visited.

He does educational outreach to 4 schools, brings the nesting Styrofoam boxes to the school and shows them eggs, and also shows the students how to release the turtles in the wild – he does this without funding – only with volunteer help – but since that has decreased since 2010, he cant afford to go to the schools anymore and provide these workshops.

He does expect tourism to increase and he hopes that he will be able to help promote eco-tourism for the conservation of sea turtles.

He doesn’t have good “instruments’ such as boats, so if he wants to get the high level of tourism, he wants to first learn about tourism management and more techniques on conservation and eco-tourism.

He said that Myanmar is the lowest in terms of educational levels out of all the ASEAN countries.

FFI should definitely try and collaborate with Poh Maw and his Sea Turtle Conservation initiative – by linking up with him directly and the 4 schools that he has worked with – engaging the youth immediately – not later on.

***person of contact: Dr. Mya Kyawt > marine sea turtle expert, assistant lecturer at Mawlamyine University – she has also come here two times (in 2005) to see the nesting sites and sea turtles on the islands. Poh Maw knows her, so does NNO and Chu-Chu – contact her later on – maybe she could get students from Mawlamyine university to do research on sea turtles here as well – and these students could help as tour guides for interested tourist > educational tourism.

Village #1- Mee-Laung-Kwin (Burning field)

1. “Name 1” – 49 years old. Hiw wife is “Name 1.0”. They have 5 children. The eldest son is a university student in Yangon studying foreign language- specialty is Korean language. This son is very education about eco-tourism and tourism in Yangon. The second daughter is a student at Ma U Bin University in Delta area (near Bogalay township) and studies Myanmar language. The third daughter is in grade 11 in BEHS. The fourth daughter is in grade 10 also in BES and the fifth son is five years old. Name 2 is the village leader as well as a volunteer in the primary school – he and his wife also volunteer in the primary school since 2002. Name 2 education is grade 11
and his wife too. Not university graduate. His has 180 acres of farm land and has 12 workers. One season he gets 35 tins per acres. His eldest son knows about tourist industry because after Nargis many NGOs came to his house and explained to him what to do in environmental protection. The father also attended many workshops with DOF, FFI, and fisheries, UNDP, in Bogalay and learned about biodiversity. When he came back to the village he showed the villagers what he learned. NNO asked him if he knew about home stay program and yes he knows – but only a little – he knows more about eco-tourism. Before nargis, this village has fish processing mill and the tourist (one or two groups) had come to visit this mill > now the mill is destroyed. This mill was used to make fish sauce and shrimp paste (Myanmar butter).

2. “Name 2” – 55 years old and his wife 56 years old. They have 3 children. Bag net fishery – his wife saw/fixes his net. His education is grade 5, her education is grade 4 (significantly different from other family that had grade 11 education). He has a boat – length is 20 feet, width 3 feet and depth is 1.5 feet. Honda engine 6 horsepower. First two children are married and third are grade 6 students. He catches everyday in Bogalay Karon River (the West), various fish and prawn. If the weather condition is fine gets about 20 vise of a mix of everything. He mainly catches prawn – fresh and dried prawn- his wife prepares dry prawn and sells in Kadon Kani – his wife dries the prawn without using “dye” or any chemical – she is very proud of this work since she doesn’t use any chemicals.

3. “Name 3”, native town is Sar Pay Su (near Bogalay) and he came to this village when he was 20 years ago. In his native town he was a hired person and worked various types of jobs – he transferred to this village because of better economic opportunities. His wife is also from the same native village. His parents in law are fishermen. He is mostly a crab trapper, but also a fishermen, and rice farmer – depending on the season, but he is primarily a crab trapper since he can do that all year long. He was explaining to us that during the months of October and November, the crab females go out to sea with their bellies full of eggs to spawn, and then they come back to the estuarine waters. He started catching crabs at 20 years old. One crab trap out of bamboo is 500 k and 700 K for the iron crab traps. He can catch about 2 or 3 crabs per trap. They buy their crab traps from Kadon Kani. They use eels as crab bait – about 1 vise of eel is 3000 K – they place the traps along the banks of the river. He said that sometimes dog or weasel would eat the eel bait in the crab traps. He has about 30-50 traps and he doesn’t need a license for crab trapping. They place the traps according to the tidal conditions (twice a day). The difference between low and high tide is 3 meters. When there are fewer crabs, they use fewer traps (this could depend on the spring/neap tide conditions, or on certain climate fluctuation- clearly traditional knowledge – but he emphasized that they don’t use crab traps when the conditions are not great – otherwise they risk damaging the traps, and also they risk wasting the eel bait. The woman in the village help them men set up the crab traps by placing the eels in them – and also help with drying the fish and prawn for fish sauce. He says that the best crab trapping is from August to October – he can get about 30 crabs a day. During the worst seasons, sometimes he gets 0 crabs a day.
Female with eggs are the most profitable ones – when he gets females with eggs he exports them for about 1500 K to 2000 K depending on the weight – he exports to crab buyer in Kadon Kani who then sells in to Yangon. He sells all his crabs to Kadon kani crab buyer, and they eat fish and prawn locally. He is also a bag-net fisherman, which he needs to apply for a license in order to do this – he pays 15000 K per year for this license. He only fishes for tiny prawns and tiny gobies that they use to make fish sauce. 1 viise of tiny prawns and gobies can get him about 1,200 K – he sells this to Kadon Kani.

There are about 20 fishermen in this village, also fishermen from other villages come here to fish – called “migrant fishermen”

All the fishermen also catch crab.

This village was not part of FFI’s crab fattening project – the villages that were selected by FFI for crab fattening are: “Lawine, Gway Chaung Gyi, and Chaung Byo Gyi.

Over the 20 years that he has been crab trapping, he says that there are now fewer crabs due to more crab trappers and climate change. Extremely high temperature in hot season and many storms during the rainy season.

Both his sisters died during Nargis, but He survived by staying in “the box of the boat”. He says they didn’t know the strength of the storm of Nargis, but they are used to big storms like this so they didn’t think anything of it. But even if they had known about the storm, he says that they couldn’t afford to move anyways.

He has 4 sons and 3 daughters – 7 children – the youngest is 1 years old, and the eldest is 27 years old. His two eldest sons (27, and 20) work in Yangon at shoe factory, and the other works in a bean frying factory – also in Yangon. His three eldest sons stopped their education at grade 6. They let to Yangon about 3 years ago, before moving they were also fishermen with their father – but now they work in Yangon to bring money back to the family – twice a year.

His third job- rice farmer- during the growing months of July and June and harvesting time begins in November. Farming bring s him the most money. Also, his boss owns his house and land (where we conducted this interview) – so farming is the main livelihood that helps support his family. He gets 100,000 K for the growing season (from June to July/August) and 120,000 for the harvesting season. Each season is about 2-3 months.

When asked about eco-tourism, at first he did not know what it was – but when we explained he said that he would love to participate and take tourists out to go crab trapping and fishing with him. His wife knew a bit more about eco-tourism:

Wife – she said she had seen tourists come and stay at the monetary in kadon kani in January 2015 – she also said that there is a beach during the hot season near Kadon Kani that is very beautiful and she would love to take tourists there- she also said she could show foreigners about traditional cooking – she seemed very excited about this idea.

Village #2- Kan-Seik: “this village means Fortune Jetty
1. “Name 4” – 33 years old and his wife is 43 years old. They only have one child who is grade 7, 12 years old. Name 4 is a crab trapper. He has 50 traps – bamboo crap traps. He gets 3,500 K daily – sometimes he get K 19,000 in one day – just a very lucky day. He has been a crab trapper for 20 years. His wife sells the salad – green tea leaf salad, bamboo shoot salad. This family also has 4 acres of paddy field – after crab trapping they go the farm. (end of background information) (ecotourism) — do you know eco-tourism? NO. first he has no idea – then NNO explained to him what is NGO and eco-tourism. He explained the differences between the NGO and tourist – that tourist come and see your home, your business, share knowledge, explained about home stay - his answer is very simple. He says that he welcomes them. Why would you welcome tourist NNO ask? He said tourists are very beautiful – their skin is white. (NGO) When asked about NGO? He said NO. so NNO explained about NGO, explained to him that NGO come and see your village for their plan and their project. NGO work together with local people – but after their plan is over, they go back to their home – but that’s not tourist – tourist come forever, many different tourist – many different culture. If you have clean bathroom, clean home, if you plant mangroves around your home – tourist would be interested. NNO also explained about ecotourism, ecology, home stay program, - home stay program, very simple – they live with you. But they say no no, I have very little house, no bathroom, tourist will not want to come here – but NNO explained, no problem, you can show the tourist how to crab trap, how to fish, how to cook with you and they will pay you for that, and with that money you can fix up your bathroom, fix up your house – and you can also sell other things when they stay – you can see coffee, tea, green tea leaf salad, your wife can wash their clothes. The reasons that they don’t want is that their house is dirty, very little, no bathroom.

2. “Name 5” (48), and wife is (48). He is a fishermen and farmer. He only has one bag net and one boat. He has 12 acre of paddy field. He catches only dwarf catfish with bag-net, and long line hook. He has 150 hooks, all in one rope. One vise of dwarf catfish is 2500K. From paddy field, he can get 1 tin for 3500 K. He can get 1 vise of dwarf catfish for 2500 daily – he catches this in Kadon Kani River. They sell their fish to buyer in Kadon Kani. In good weather condition he can catch 10-20 vise each day (in rainy season). He also has duck husbandry – 150 ducks – and sells for one egg, 90 K – he sells the eggs locally and to kadon kani. During Nargis he lost two bag nets. He pays 250,000 K for one bag net – he pays this to DOF. They have 7 children. The eldest son is married, he works in bag-net fishery. Second daughter lives in Yangon and has a small shop. The third son is a farmer, in this village. The fourth daughter works in farming in this village. The fifth daughter is grade 5 student. The 6th son is grade 4. And the youngest daughter is grade 1. They attend Chyaung Byo Gyi primary school. They have lived in Kan- Seik village for about 30 years. This family also cut mangroves Nypa Leave (cuts during the day time near the village) – used to make roof and shelter (sells to Bogalay) and cuts during the night at MKWS mangrove wood for firewood (sells this locally- one packet –
which has 5 to 10 poles- for 200-500K)- the third son does this at night, and cuts it illegally at MKWS (before he told this truth he asked NNO if he was policy or DF, once felt safe, he told the truth.) He sells one stand (four feet for 50-80 K.

(Ecotourism) do you know tourism knowledge? He says he has never seen tourist – he has only seen foreigners with NGOs- so he mixed up the two, tourism and NGO, thinking it’s the same. So NNO explained. U Hla Win Naing asked NNO why tourist would come to this village? NNO explained that they come to this village because they want to see monetary, fishing gear, drying prawns, local stay, look at paddy field. NNO told him that foreigners really like dried prawns so he can sell it to them and get a lot of money.

3. “Name 6” (42) and his wife (44) – their native land is Bogalay – moved here for better business. They stay in Kan Seik village for over 10 years. They have two children – older son is Grade 11 passed from Bogalay BEHS #1. The second is daughter, grade 3 – in BEHS (some high schools have from grade 1 to grade 11).

Before Nargis, their family sold vegetables and had a small shop. After Nargis – in 2009 – now he works as a Buyer – he buys crabs, fish, and prawn. Why do you change your job before and after nargis? He said that before nargis his family was very poor, and after nargis, some NGO gave his family a load to start micro-financing – so he changes his job as buyer – The NGO was Sein Lan – in English this means Greening Land) - so this was a local NGO – based in Pathein. There are about 30 crab trappers that sell to him. There are about 6 fishermen that sell to him, 7 prawn trappers that sell to him – daily – so this is a good business. Two times per week he sells crab, fish, and prawn to Bogalay – He gets 200,00 each time – so in one week he makes 400,000 K. He supports all he fishermen with food, boat, and money and also diesel. (this was a rich man). Sometimes he sells his fish to Yangon – Hlaing –Tha-Yar: Fishing Industry. He has about 7 years experience as a buyer, but has lived in this village over ten years. 4 years as a seller (small shop and vegetable) and 7 years as a buyer (total of 11 years).

(Eco-tourism) he doesn’t know about eco-tourism, but in 2010 he saw two scientists concern with crabs – and they came to see him work – they interview to him about the crab. He said that some tourist (who were actually scientists) came to see him to ask questions about the crab fishery and the crab business – he thought that these two people were tourist. NNO asked how U Tint Lain felt about sharing his knowledge about his crab business and U Tint Lwin said he was very happy to share his knowledge and wanted to take photographs with them.

4. “Name 7” (53) and his wife is (53) they have seven children – they have lived in this village for over 30 years. All their children work in fishery. But he is a farmer with 5 acres, and his two sons (number 5 and 3) work together in farming with him. One acre for 40 tins. One tin for 4000 K. The species his plants in Khon Ni Ma – local name – this means that the outer seed coat is red color (direct translation). Kohn-Ni (outer seed coat is red) and Ma means girl (so little red seed lady.) All children are married. The third and fifth son work together with him and the other children are either in Yangon or other village. Sells the rice to Bogalay. The 7th child (son) works in Meinmahla Kyun, his name is Ko Aung
Win – he works at one of the forest department camps – camp name: Kyaung Htauk (me and Chu Chu shared the little house where there is all the pictures.) Kop Aung Win has little knowledge about tourist and eco-tourism – and Kop Aung Win told his father not to cut the wood.

5. “Name 8” (38 years old) and her husband 43 years old. NNO interviewed the woman – they have 5 children. First is 21 years old, and he is a crab trapper- 2nd daughter is 18 years old and is general worker in the village, the third son is 14 years old and is grade 4 student, fourth daughter is 8 years old and grade 2 student, and the last son is 8 years old kindergarten. This village is their native village. They only have Ba Win fishing (poles and carp) no fishing license for this. This net is 1200 feet length, the height is 15 ft, they catch the fish near the river bank – in Bogalay Kadon river (as the western people call it) they catch various size of fish and prawn and their daily income is 6,000 to 20,000 K > and they sell to Kadon Kani – her and her husband. The mesh size of Basin net is 1.5 mesh sizes. Bawin material is not carp!!! It is made out of nylon. Catching about 4.5 vises a day is normal – this is the average catch. Before they were cutting the roots of mangrove woods for firewood – and they got a warning from the forest department so now they use the outer seed coat of the rice - the chaff – they use this for fire now (try and look up more information on this) – so they collect the outer seed coat from the rice mill in Bogalay – they have to buy this – this is the shell of the grain – and then they use this for fire.

*****this could be a micro-financing idea – to get rice mills in the villages so that they can get outer seed coats of the rice – and to make fire** otherwise it would be wasted – so this can be a renewable resource

***** also think about the coconut****

***also introduce the idea of coconut trees*** before nargis there was many coconut trees > so this is fertile land* (ecotourism) at first she had no idea what ecotourism was but then NNO explained. Her idea was the sell the tourist Life Jackets (definitely include this in the report… too funny) – but she would also welcome tourist.

**difference between western and eater** (difference between western and eastern – western side is much more welcoming to tourism idea.) also eastern is a little rude and western is more polite – and western is little knowledge, low education, but polite.

6. “Name 9” (64 years old) and her husband is (64) – NNO interviewed the woman. She dries shrimp with just only a little chemical for color. They have 8 children – two passed away in Nargis. So now she has 6 children- but they all live in the village. All her children are married - some are fishery, some are farmer, some are general worker. They live this village for about 30 years – she transferred from Bogalay when she was married because her husband was from this village. Now they work in long line hooks. They have 50 hooks on their long-line – the hooks are made out of tin. She sells the fish to Bogalay and the dried shrimp also
sell to Bogalay. Her husband catches the fish day and night in Bogalay Kadon River with his son. They have one boat – their daily income is 10,000 to 60,000 K. This daily income combines the entire family. DOF + middle man + Name 9.0 (tender) and “Name 9” – they pay 20,000 K per year to the middle man (negotiator, not a tender) and 200,000 K to the DOF for the fishing license. They have no idea what the tender system is, but they have this middle man – and this middle man represents this family – so the middle man negotiates with the tender and with DOF and with fish buyers and Bogalay - this is really corrupt because this middle man can sometimes lie and benefit from these families that lack the education and awareness.

7. “Name 10” – rice farmer – native village is Mya Thein Tan near Bogalay township. 57 years old, rice farmer, owns about 50 acres of paddy fields. He has three ‘hired persons’ that help him operate his farm. Before he moved to this town, he has animal husbandry of duck and chicken – but in 1998 he chose to sell his entire animal and buy land here because he was very interested in farming. He has one son and three daughters – the eldest son is 27 and helps him work n the far. The eldest daughter is 33 and the third child is 17 – and is currently in his second year in cooperative university in Yangon. Third daughter is 12 years old and is in grade 7.

He can make 50 tins per acre- which is about 56 pounds per acre per year – each tin sells for 5000 K. he sells it to the best price rice buyer in Bogalay. There are about 40 rice farmers in this village, 50% of the people in the village are rice farmers and the other half is a fisherman. Five people own 50 acres or more in the village and this is considered the most amount – other own about ten or fifteen acres, or 7 acres.

He has to pay 350 K per acre each year to the government for revenue cost. When you own land, but don’t harvest anything, than the land is under the FD but once you start harvesting, then the land is under the Agriculture Department and that’s when you have to pay 350 per year. This all started in 2013, two years ago – when the FD released his land so now he pays to the department of agriculture (even if he doesn’t plant) – so until two years ago, al the land belonged to FD and now all the land, other than the protected area, belongs to agriculture department. From 1998-2013 the land was under FD – he would also harvest rice paddy but he was not the owner – now as of 2013, he can be the owner of the land – but has to go through a series of forms until he reaches form 7. The reason that the land was handed over to the agriculture department was due to population growth and food security issues. The benefits of being the owner is that now he can give a few acres to his son if he wants to or use the land as he wants but must pay 350 K per acre per year.

This form of payment is done by interest rates – if your land is considered grade 1 land than you can pay the government 0.7%, but if your land is considered grade 2 than you must pay 1.5% to the cooperative association, which is the ministry of the local village. His land is considered grade 2 land since its not stable due to the flood zones and storms that constantly occur in this area – therefore he has no choice but to pay the cooperate 1.5% . also, to be considered grade 1 level you
must apply to form 7 – so this is not only based on qualification process but also quality process – the length of the process is probably built in order to give the farmers time to increase the quality of their land. He is now at level 6 in the process, so pretty soon he will be able to have form 7.

He attended the FFI eco-tourism workshops in Bogalay townships – he thinks this is good for everything and everyone and thinks that it will help create awareness, increase education, and help his villages economic incomes. He also attended the FFI workshop for the protecting of mangroves and protecting the environment – all of these workshops invite the village leaders and hope that the village leaders will come back to their village and share the newly acquired information. He thinks that villagers can participate in environmental conservation, he thinks ecotourism can bring money then villagers will be able to reduce pressure on environment.

8. “Name 11” (36) and husband is (37) they have one child that is two years old – they have been in this village for about 20 years. The women and husband work together in fisheries – she rows the boat – and he puts the long line with 150 hooks for dwarf cat-fish. Daily they catch about 2-5 vise – they sell the small fish in the village and the large fish she goes with her husband to sell in Bogalay. They have their own boat. For the large fish they sell I vise for 8000 K, for the small fish, for one vise they sell I vise for 2000 K. They store in ice box for 4-5 days in their house and then they go to Bogalay – so they go one time a week. ***find out ice price later in interview***

(Ecotourism) they did have an idea of what eco-tourism is. They asked NNO three questions – why do tourist come here? They come here to MKWS because this is very beautiful, so the tourist likes the beautiful forest, many fishes, many prawns, and many boats. They also ask if there are any boats in Belgium for example? NNO said yes but the boats are made of steal and iron, but here the boats are made of local wood and she likes very much. What do tourists do? They look for some tradition – “Shi-byu” – this is a little monk ceremony, they want to see the festivals (water festival) they want to see Shi Byu ceremony, they also want to see traditional music, your livelihood. After explaining they start to understand. She also asked NNO about me (roxane), is your friend afraid of the mud? NNO said no, not afraid of the mud – she loves your livelihood, your daily systems, what you do, what you love.

Village #3 : Chaung-bye-gyi “very rich creek” chaung=creek

1. “Name 12” – chairman of the village – 39 years old, and he is the first chairman of this village – before they usually referred to the other village of Karin Chaung Gyi to represent all the villages that he now represents as being the chairman. Since July 2014 he was chosen by the villagers to be the chairman- one chairman governs 10 villages – some of these villages are not included in FFI project villages since they are too small and actually considered as part of one big district. The villages that are under his rule are: Bye Ya Gone, Ma Pwe Tan, Gway Chaung Gyi, Mee Laung Kwin, Kan Sek, Chaung Byae Gyi, Lay Gwa, Pauk Sein
Kya, Zee Phyu, and Lay Lone Wel. There are actually 50 + villages around MWKS, but FFI only have chose 22 for their eco-tourism project. There are 6 groups, or 6 chairmen, in total to govern these 50+ villages. These chairman meet twice a month in Bogalay. They discuss about education, health, transportation, development, fishing, farming. He said that the two main livelihoods are fishing and farming – crab trapping is included in the fishing sector.

An example of some of the problems that he has to deal with is: for example, a fishermen doesn’t want to pay for the license and uses illegal fishing gears – so he reports this to department of fisheries during these meetings. The government gives many chances to fishermen to catch crab, prawns, and fish – so when the fishermen don’t obey the law – they must punish them (his words). He will first go to the fishermen and try to discuss with him and solve the problem by warning them, but if the problem keeps going on, then he has to report them to the dof. Some fishermen was using electric shock and others was using poison called Endosulfan – to kill the fish – (picture of this – add to appendix as well) – this fishermen was from Mawlamyine Kyun township – he was punished for 6 months in jail. He also explained to us how they poison the fish – they put the poison in a bag mixed with water, punch small holes and then slowly drift and wait for the fish to float up and then they scoop them up.

When it comes to farmers, he says that the problems are more about this new application process for form 7. Farmers in most villages don’t own their land, and need more investments, so they get loans from associations with wither 1.5 or .7. the land from rich owners, if the rich man believes you, then they loan you money 0 for example, you give your brother a piece of land and a couple years later he doesn’t give it back – this is an increasing problem because FD is now no longer in charge and agriculture is in charge – so people that let others borrow their land are in trouble because the ones that are borrowing the land are trying to claim ownership of it now that they have the right to.

So the process is to file a complaint to the department of administrators in bogalay (he showed us a letter of this) and then the department sends them back a letter with a list of recommendations of how to solve the problem. Then he tries to solve the problem again based on these recommendations, but if the farmers are still not cooperating then he has to file back a complaint to the chief of administrators. He says that this is a very tedious process and that they need more enforcement in the village – it is too much of a task for one man to handle. If something happens in the village, like fights or bigger problems, they have no way of controlling or punishing – they can only rely on Bogalay police which is nearly a days journey – too far to have an impact.

When asked about eco-tourism, he thinks that his village could benefit from ecotourism since they are close to a road that leads to bogalay – so tourist could access their village easily. He thinks that villagers need to grow season fruits to attract the tourist. His other idea was to make t-shirts with MKWS and sell it tourist (okay…)but he said that villagers cannot afford this investment to make t-shirts – so the better idea is to plant season fruits. He wants to use the money from eco-tourism to buy more supplies for the children at the local schools and increase the education level for the villagers.
2. “Name 13” (38) and his wife is (35). They have two children. The oldest daughter is grade 1 and is 10 years old and the second son is 5 years old. He transferred to this village 5 years ago and now he is a crab trapper. He has 100 bamboo traps – he catches about 4 crabs in one bamboo trap. His daily income is from 3000-8000 K. He has one boat, and he catches near the village in the mangroves and paddy fields. His boat is 9 feet length, the width is 2 feet and depth 1.5 feet., no engine on boat. He buys eels for crab food – one vise is for 3500 K, sometimes 4000 K – he buys these eels at Kaonde Kani. He uses one vise for two days. He catches the crab twice a day. His wife sells the small crabs to the village and they sell the big crabs to kadone kani. His parents died during Nargis, so he transferred to this village. His native village was Poe Laung Village – near Bogalay Township – he was a collie – carrier man – working odd jobs in his previous village. (eco-tourism) He knows Khin Maung Soe – and FFI and how to use the stove, and how to reduce the fuel – he knows very well. He has seen NGOs come with FFI – but doesn’t remember the name of these NGOs – but he received mosquito nets and crab traps from these NGOs. He said that he would take tourist to go crab trapping with him.

3. “Name 14” (60) his wife is 50. His native town is Kyan Ngo. He married her in Kyan Ngo and then transferred to this village, since that was the native town of his wife. In wood as a wood-cutter in his previous town, and now he works as a crab trapper. His wife is a vendor – she sells vegetables and fruits. His wife’s native town is Chaung-bye-gyi. They have 5 children, one of them passed away in Nargis. The last four children all live together with him. They are all crab trappers. The eldest son passed away in Nargis, but he had two children that survived – so U Soe Myint takes care of his two grandchildren. The second son is 20 years old, the third daughter 18 years old, and the fourth daughter 17 years old, and the last one son 14 years old – the two daughters sells the crab and help their mother sell vegetables and the two sons work with him to catch crabs. He has his own boat – the length s 6 feet, width is 1.5, and depth is 1 foot – no engine. His boat is constructed Kyan-na wood. He said that there are over 100 crab trappers in this village – so he has a lot of competition. He sells the crab to buyer in Chaung-bye-gyi village (his village) he receives some support from the buyer every year (food, money, etc). The buyer name is U Nay Myo. (eco-tourism) he has no idea about eco-tourism. He only knows NGOs that have supported him. (NNO explained to him ecotourism, NGO, home stay program).

4. “Name 15” (30) and his wife (28) and they have four children. He is a fisherman. This is his native town. He has been a fisherman for about 10 years. The first is son, he is 10 years old, he is in grade 4, now he stopped education and helps his father fisher. Second daughter is 8 years old, grade 3. The third daughter is 6 years old and she is grade 1. The youngest son is four years old. U Ko Ko Zaw, only has one Ba-Win net – length is 200 feet, the height is 12 feet, and the mesh seize is 1.5 inches – and he catches various sizes of fish and prawn. He catches 2-3 vise daily, so his daily income is 3000-8000 K. He sells his fish to Kadone Kani.
– U Shwe Win- this buyer comes to the village sometimes to buy as well. U Ko Ko Zaw had to take a loan from U Shwe Win to buy the net and buy net – the net costs 250,000 and the boat cost 150,000.

(eco-tourism) He has never seen tourist before, I was the first one that he has seen. But he has seen NGO. NNO asked him if he wants to change another job – if you get a lot of money, would you like to change from being fishermen to tourism. He said, that he couldn’t speak English so that he wouldn’t be able to. But NNO said no worries, the tourist will come with translator/tour guide, so they can help. So he said that if he has help with then yes he would welcome.

5. “Name 16” (29) and her native land is Kun-thee-chaung (beetle fruit) Village. Her husband is (34) years old. His native land is Tha-khin-ma-gyi near Bogalay Township. They married about 16 years ago. She and her husband are crab trappers. Their daily income is 2500-6000 K (together). They have four children. The eldest daughter is 8 years old, the second daughter is 6 years old, the third son is 4 years old, and the youngest son is 1.5 years old. They transferred to this village about 8 years ago, for their business. Before they came to this village they worked odd jobs – they met in Bogalay. First and second daughter attend the primary school at this village – both are grade 1 student. They have their own boat – the boat is 6 feet length and the width is 1 feet length and the depth is 1 foot – no engine. There are seven crab buyers in this village (chaung-byo-gyi). She sells the crab to U Nay Myo. They also had to take a loan from U Nay Myo for crab traps, crab food (eel). They have 80 crab traps of bamboo.

(ecotourism) – she at first has no idea what this is – but she knows about conservation – she knows not to cut wood. NNO asked her why she doesn’t cut the mangrove trees? She replied that if she cuts the mangrove trees, than the crabs will die – she knows this because she learned it from FFI workshop. She knows very well U Khim Maung Soe – she said that he is very patient with her in explaining.

6. “Name 17” (the crab buyer). He is 30 years old. His native town is Poe-ti-kwe Village – near Kadone Kani. His native land is Ka-don-Ka-ni. His wife is a house wife – they have four children – the first one is son – he is 19 years old, grade 11(in Kadone Kani school – basic high school) > now he left school and lives in Yangon – he is a merchant – especially crab seller – so father and son work together. He buys from ten crab trappers – and he exports to Hlain-tha-yar and Shwe-Lin-ban Fishing industry in Yangon. He also sells to his son. The second and third children are twin daughters and they are 15 (this is normal, most 11th graders are 15) – now they are grade 11 – and they are at boarding school in kadon kani. The fourth one is 10 years old and he is at grade 6 in chaung byo gyi village. He only collects crab. He was a farmer in his native land, helping his parents since his parents were farmers for rice and seasonal fruits.

His wife is Daw Khin Mar Oo (30). When they were 21 years old, they married and they lived in Kan –Seik village – then they transferred to Chaung byo gyi two years ago. U Nay Myo was a crab buyer in Kan –Seik as well. He transferred because of his children’s education. NNO asked him why he only collects crab?
He answered because there is a high demand for crabs – many restaurants in Yangon buys crabs daily – so he buys locally and then sells to Yangon by himself (he travels to Yangon himself). He exports once every two days – about three times a week. He gives loans to ten crab trappers that he buys from – about 30,000 to 80,000 K, sometimes he gives 130,000 K to crab trappers for a loan. (eco-tourism) He knows about environmental conservation – in Ken Seik village he planted mangrove trees with his parents for fire wood and for shelter (so not for conservation) – he also has idea of environmental conservation, but little idea for tourism – and NGO

*****for future it would be interesting/necessary to find out the average amount of time it takes for fishermen/crab trappers/farmers to pay back their loan.****

Classification of Crabs:
1. Female A – 150 grams = 500 K
2. Male A – 200 grams = 1100 K
3. Male B – 150 grams = 400 K
4. “John” (full big crabs) = 1 kg = 2300 K
5. “General” (<1kg of big and small/incomplete/broken arm crabs) = 1500K

********species name of boat in western and eastern side*****
1.) Kyun (teak) : Tectona grandis (dominant in central dry zone – Mandalay region, Megwe region…) – best quality
2.) Pyin-kado (timber) : Xylia dolabriformis (found all over Myanmar)
3.) To-ma-lan (mangrove species) : Dalbergia oliveri (dominant in estuarine area – Ayerwady delta, near the coastal zone)
4.) Kya-na (mangrove species) : Xylocarpus moluccensis – this is the cheapest wood to use for boats

DAY 3, Thursday JULY 23RD, 2015

Village #4 : Gway-chaung-gyi – same meaning as before

1. “Name 18” – 28 years old – this is his native village. His wife and him have three children – 5 years old, 3 years old, and 1 year old – 2 daughters and one son, who is the eldest. He is a crab catcher (definitely the poorest village so far) – if he doesn’t catch the crab during low tide with the crab traps then he uses a hook to catch the crab, he puts these hooks inside the crab holes and uses this to catch with the arms of the crab (picture of this hook – add here). He uses the crab traps made out of bamboo, since he cannot afford the iron one. If the crab holes are too deep, he digs the crab holes and the uses the hook. He doesn’t need to use the crab food (eel) with this hook – so it’s cheaper for him to catch them with hooks. He looks around for the crab footprints to make sure that these are crab holes. He sells all his crabs to the crab buyer of the village – U.K.Aye – the house that we had the interview in. D.A.Than is the crab buyer’s wife who also participates
in this business. He sells the crab depending on the weight of the crab – 1 vise goes for about 3000 K, which are about 8 crabs. The crab buyer also has 3 acres of land and has people working for him – a total of 6 hired person to work for him – and he is from Hay Maun, a town near bogalay township – he came to this village 25 years ago with his parents to start a new life here. After the interview, the village leader showed us the nursery of mangroves that FFI and DF had donated to his village, and in exchange he donated 1 acre of his land to plant mangroves through community forestry. Ironic to see how the poorest village is the one that was the first to donate their land for mangrove plantation.

**important to note – chu chu felt uncomfortable asking them why they came to this village because the forest ranger and fiji field coordinators, who are much more knowledgeable than us about these villagers, told us that a lot of these families are x-convicts from other parts of Myanmar, and have moved to these areas to start over – or because they had no other choice- this is quite an important piece of information to keep in mind moving forward**

The crab buyer then sells to the main crab buyer in Kadon Kani (we really need to meet him, but unfortunately only were able to meet with the main crab trap maker in August on the follow up field trip – this is something that chu chu will be researching in her 8 month research though – really understand the value chain of the people from the west – especially – since they seem to be caught in more of a middle man poverty cycle trap than the east who have been aided by more NGOs such as the FAO project. The crab buyer gets a commission depending on the amount of crab that he sells to kadon kani – so sometimes he comes back with more money and other times he gets no commission- this depends on the quality of the crab as well – for example if some of the crabs are dead when they are sold, or missing a few arms – etc – must be sold alive – as we saw in the market.

**the crab trapper** the main person we started to interview before the local crab buyer came into the interview seen (and who is also the village leader) – doesn’t actually get money for the crab that he sells to U.K.Aye – instead of getting money he gets the equivalent of 3000 K in food or other necessities that him and his family need. The crab buyer/village leader U.K.Aye, buys the food and other necessary goods from Kadon Kani or Bogalay for nearly the whole village – he basically support the whole village. There are 1200 people in this village – there are about 100 crab catchers out of those 1200 – if the villagers reach Kadon Kani or Bogalay (with the passenger boat) then they can buy food for themselves, otherwise they come to this house (village leaders house – also have picture, this is the extremely poor one where there were a lot of villagers watching the interview, and the leader also showed us a hand made nypa-leaf mat that he would sell to tourist if they are interested.)

Some crab trappers will go to kadon kani themselves to sell crab and then with that money buy more crab traps – the cost of the passenger boat is 1500 K there and back for the local villagers.

U.K. Aye only lends money to the crab trappers in the village, when fishermen come to fish along the river, they have to pay the tender of the area – only one person is a tender along this river – this tender is fro kadon kani and he comes to collect the fish from the fishermen – he usually comes every during the high tide,
and when he doesn’t come the fishermen sell the fish at kadon kani or bogalay.
H.A.Kyaw is the name of the tender – he is a new tender as of last year. 4,000,000 K per year that the fishermen must pay to the tender to fish along this river.
When asked about tourism – he (U.K.Aye- who started to dominate the interview bit by bit) said that he also attended the FFI workshops – they had told him about environmental protection – he knows how to protect the environment and told the other villagers in their meetings about this knowledge when he came back from the workshop. As mentioned above, he said that he donated 3 acres of his land (3 or 1) to FFI and the villagers will plant the mangroves in form of community forestry (I have footage of this mangrove nursery and plantation – the video before the sign that says “Myanmar union for agriculture” –
FFI provided 20,000 mangrove seeds to the village for them to plant in the 3 acres of land – which we saw. He says that if tourist come to this village he would like to show them their community forestry efforts for mangrove reforestation – he said that he could take them by foot or by a boat tour – as they like – and he also thinks that eco-tourism can bring his village more income.
FFI workshop also advised the villagers to make traditional crafts to sell to tourists- this village’s idea was that they can make mats out of the shrub called “tabot” – some villagers can also build boats – they mostly use timber and teak to build these boats.
All the wood that we saw in the house we interviewed was mangrove wood, and they use the wood to cook – the crab catcher that we first interviewed had initially received one of the stoves that FFI had donated, but he said that his children broke it so it no longer works.
The crab trapper also participated in the community forestry efforts – he planted about 50 trees – Avicenna species.

2. “Name 19” (45) years old and his wife is (42) and they have 6 children. The first son is 16 years old and he is his crab trapper in this village. The second son is 8 years old, grade 1 student. The third daughter is 7 years old grade 2. Fourth son is 6 years old, grade 1. The fifth child 4 years old. And the sixth child is a daughter that is 2 years old. They moved to this village 8 years ago. Previously, Name 19 and his wife moved a lot to different villages around MKWS. In the passed he was a general worker so his family stayed in villages for about 5 months, months, little amounts of time – so he transferred to wherever he could find work. Now he works as a crab trapper – he has a long line hook, and also is a carpenter. He has three jobs – (this is similar to the other general worker that was much poorer before Nargis and then was able to get money from NGOs to start a little business of crab trappers/long line fishermen/etc). In his long line he has 150 hooks. The long line net is about 400 feet long and the length of the hook is about 7 feet (about 2.5 meters) (there is no mesh size in the long line – just a long line with the hooks that hang from it – the hooks start to hang at about 2/3 of the water depth – so if the water is 15 meters, the hook line is at 10 meters. The price of a new net is about 400,000. He catches mainly dwarf catfish. He catches 1-3 vise daily. He sells the bigger fish at kadone Kani and some of the smaller ones in the local village. He sells the smaller fish locally, which are then used for prawn food. He
sells the bigger fish for 1 vise = 4500 K (kadone kani) and the smaller fish for 1500 per vise (local).

He has 150 tin crab traps. He gets about 8000K for crab trapping daily. He does all of this work (fishing and crab trapping) with his son, he doesn’t hire anyone. And his wife sells the small fish locally.

He only has one boat without engine – the length is about 9 feet, 2 feet width and 1.5 depths. His boat is made out of Ta-ma-lan (mangrove wood) and his boat was about 130,000 kyat.

(eco-tourism) He says he needs support from NGO for electricity, money, fuel – he said that if he has television and radio because if he has these he can get a lot of information such as weather information – the price of fish – the price of rice – so he wants this from the support of NGO. He has also seen tourist in his village – he confused NGO and tourist – since he said that tourist are NGOs – NNO explained him the differences.

*****Name 19 and his wife can make the mats – one mat for 3000 K – “Thin Paung” this is a type of mangrove shrub that they use to make mats. He sells these mats to Kadone Kani.

3. “Name 20” (60) years old and his wife is (40) they have four children. The first son is 14 years old – he left school at grade 4 to support his parent’s business, the second son is 10 years old and the third daughter is 4 years old and the fourth daughter is 2 years old. Before Nargis they lived in ka-don-ka-ni - and after Nargis they transferred to this village. Name 20 is a crab trapper – he has 18 bamboo traps. The wife is a vendor and sells moping, Myanmar traditional snacks. She sells mohinga and bain mole in the morning and at night she sells seasonal fruits and vegetables. His daily income is 3000 K for crab trapping and the wife money is 8000 - 15000 from selling to different vendors. Where does she buy the snacks and mohinga? She buys all this stuff from Kadon kani and brings it back to the village to sell - and sells for twice the original price to villages – which is how she makes so much money.

Together they make about 18000 K. He sells the crabs locally (chu chu and I interviewed the house of the crab buyer). Sometimes he sells to Kadon kani. They trap the crab near mangrove swamps and paddy fields. He uses crab food like eels – one vise for 4000 K – and he uses 1 vise for three days. He buys the crab food in Kadone Kani.

(eco-tourism) He has seen NGOs and got support from NGO for crab trapping, he doesn’t remember the name of the NGO - but the NGO gave money to the village leader to distribute to different crab trappers – this NGO came in 2012 (3 years ago). His eldest son knows very well environmental conservation because he attended the workshop and seminar in this village – this was the FFI seminar that taught about bird watching and bird watching. He also attended the workshop about natural disaster, crocodile watching, etc. The son even knew the name of the birds spawn bill and sand piper. He also knew that these birds feed on benthos (worms) and benthic community. He also knows that the mangroves provide a habitat for the crabs – so if he cuts down the mangroves he destroys the habitat for crabs. NNO asked him, what would happen if they cut down the mangroves. He
said, that if they cut down the mangroves, they wont have crabs, and he wont have money. He also knows Khaung Muang Soe – he said that he is very helpful and active for FFI.

When he and his wife were in Kadone kani they were working in farming – but they had to sell their farms (poor village), and transfer to this village after Margi’s

This village has no electricity so in the past they cut down mangrove tree for fuel, but now they collect the drift wood from the river –
This village also has scarcity of water – so in the summer they go to other villages for water. So he wants to make an underground water system with the support of NGO
(do you know tourist) he mixed tourist and NGO and NNO explained differences.

*** he had an idea though – he wants to own a passenger boat that would bring foreigners from bogey to this village *** so he think she needs to support from NGO to buy this passenger boat >>> we can explain that there is no need to buy a new boat – otherwise this will just keep adding to more pollution and more troubles.

**this is a current pattern seen, after nargis many farmers had to sell their land since the land was all destroyed due to the storm – and so they had to move or start another business**

***question – where did he have all the money to start all this business from being a traveler general worker?***

***also – find out the price of the hooks from these long lines ***

***also – try and contact the different NGOs that were active during/after Nargis and compare the information that they give (if they give progress reports) so that we can see who received the most money from these NGOs***

4. “Name 21” (38) years old and his wife (35) they married 20 years ago and they have four children. They have been living in this village for 25 years. He is a fisherman and works especially with Ba Win – all the children are students at Bogalay – and they live with his mother. He catches the fish along the river bank and near his village. The length of his Ba Win is 1320 feet and the height is 8 feet. (every 6 feet they use a pole). He goes at low tide to collect various types of prawn. In 15 days he gets about 32,000 – 65,000 (depending on the weather condition) – so he counts his income bi-monthly (twice a month). He has his own boat, 9 feet – width is two feet – depth s 1.5 feet – no engine, and made by teak wood. – he doesn’t own his own ba win net – he borrows this net from his buyer- his name is H.A.K from Set San (compare this with another interview – Chu Chu remembers this name). He has to pay him to borrow this net (we don’t know how much). So he is saving his money so he can eventually buy a new ba win net for 200,000 K. Every new ba win net lasts about 3 years – but needs repairs two times per month – because some of the crabs and rats bite the net. In the passed he
had a ba win net but its broken now and he doesn’t have enough money to buy his own so he has to borrow this net temporarily from buyer. He was interviewed in the passed about fuel and mangrove cutting – this was 2 years ago (2013) so this must have been FFI.

******He also sells the food for shrimp which is chipping rice and coconut which are mixed together for two days and then sold to cast net fishermen. The ratio is 5:3 – five coconuts ( only use the white part of the coconut – not the shell or the water) for three cans of chipping rice (the size of My Boy milk can) chipping rice = is a grain of rice chopped up into many pieces. After two days of mixing the chipping rice with white coconut, they then mix with mud to form small balls. They sell 8 cans (same size of My Boy) for 500 K. This method is only for cast-net fishermen. And the small fish (also used for prawn) is for long line. Only long line, cast net, eel traps (small fish and small shrimp), and crab traps need food for catching – other fishing methods don’t need.

NNO asked him why doesn’t he use a cast net – instead of just ba win – he said that cast net fishermen only get little money.

Foreigners interviewed him – he also attended the workshop by FFI and how to use MKWS stove. He also has seen other NGOs but don’t remember the names – but he remembers that these NGOs shared the knowledge of not cutting mangrove trees – so he knows well not to cut down the mangrove trees in this area. (ecotourism) he only has little knowledge on this. His only point of view regarding ecotourism is that he will get money from this.

His two sisters passed away in Nargis, and he lives together with his parents.

****find the distance between river bank and the net of the Ba Win (where NNO has a question mark****

****they can start using all the parts of the coconut – also start selling the water of the coconuts, shell for carbon filters, and the white part for the shrimp.****

VILLAGE #5 : Ma-pway-tan : “sleeping girl village”

1. “Name 22” – a fishermen – has been in this village for 8 years – before he was in town near Bogalay called Bad Yai Chaung = means “church” in English. After nargis he transferred to this village. This is the interview with the fishermen whose wife was breast feeding during interview and both of them are voluntary nurses for the village). From his house, you could see a nearby island called Byone Mwe Island – which he used to fish around, and his house was actually on the island. Although, as the catch got smaller and smaller, he transferred to this village – which is pretty much across the river – very close to where he is now. But in this area there is a tender system – and he only can sell his fish to this tender – tender is from Ba Yai Chaung village – also his previous native village. They knew her from the previous village, and have known her for a very long time – she was also a fish buyer/tender in their native village. She charges 120,000 K per year per bag net – if they cannot afford to pay, then they have to
give their fish to her – if they can afford the net fee, then they can choose to sell their fish to whoever they want. Each tender lot usually has about 10-15 nets – he is the owner of only one of these nets (some fishermen have more than one bag net).

The cost for a new bag net is about 700,000 K – but it can last them 5 years. He couldn’t afford the tending costs, so he now can only sell to Daw Tint Myint. He mainly only catches prawn – for the big prawns, 0.15 vise can be 3000 K – very expensive because the big prawns are exported to China and Thailand. For 1 vise of the medium size shrimp, he gets about 3000 K – these are sold locally. He fishes/collects from his bag net two times a day. The maximum amount that he can make a day, and this is very rare he says, is about 20,000 K – this is usually the spring tide.

In this area there are 4-5 days that have very high tides – called the spring tides – and is about a total of 10 days per month – this is when the best catch occurs for most fishermen.

For the rest of the month, during the neap tides- which last about 6-7 days (total of 20 days a month) the tides are much lower and the catch is not as good. So he can only fish about 10 days a month during the spring tides, and the other 20 days he spends repairing the nets and working other jobs – he is also a hired person for rice farming. He works for his wife’s eldest sister – who owns land. He borrows 7 acres of this land to harvest rice, if he gets 100 tin from this land during the harvesting season – he gets to keep two thirds and has to give one third back to his wife’s sister. He sells the rice in Bogalay, about 4000 K for one tin - but this price is not stable and highly fluctuates depending on the year he says.

He has one baby girl, Phoo, who is 11 month old (picture of her) and has another daughter in grade 8 who goes to BEHS #2 (basic.education.high.school) in Bogalay – and lives with her uncle.

His wife is a volunteer nurse for the village. He says that he gets more money from fishing because farming needs more investment and can be very risky if the harvesting isn’t good.

He has seen many foreigners coming with NGOs after Nargis – and has also attended the FFI workshops – he attended the workshop in February 2015 and in may 2014 – he was chosen to go to these workshops because he was the village leader at that time. He also attended a workshop on bird watching in December 2014.

****He says “if FFI wants to protect MWKS they need villages around MWKS to help. He said that if they get enough money from eco-tourism than the won’t cut down the mangroves.” Very well said (in my opinion).

He thinks that ecotourism is a good plan – before attending the workshops he had no knowledge of eco-tourism, or how to get benefits from incoming tourists, but now he has a general understanding.

He also thinks that this village needs better transportation to increase economic income so that the tourist can arrive here – and also says that this village needs electricity in order to relieve mangrove wood for cooking.
FFI invites leaders to go to workshops, and the leader chose him to go with him to attend these workshops since he is one of the most educated people in the village. And before 2014, he was the leader, so he automatically attended the workshops. Each village has a meeting once a month, and so during these meetings his shares the information from these workshops to the villagers – he said that the villagers also thought ecotourism was a good idea. He said that some people here could make beautiful furniture by using various different kinds of wood, timber, teak, and a hardwood known as Wyllie dola brefomis. If a tourist offers money to these people than they will make the furniture – but otherwise this is not a continuous or active thing – only on demand do they make furniture. There are about 3 people in the village specialized in this. The price would depend on the kind of wood that is being used. 70% of the villagers are fishermen. This village could seriously benefit from the FAO project that was implemented on the East side.

2. **“Name 23”** (42) His native town is Bo-ga-lay. His wife is (40 years old), also comes from Bo-ga-lay. They are both farmers. He transferred to this village 20 years ago – he was a fisherman in Bogalay and when he transferred he became a farmer. He got little money as fishermen in Bogalay – so he decided to transfer for better economic opportunity. At first he started with 5 acres in ma-pway-tan village. And now he has about 50 acres. One acre produces 60 tin – 1 tin for 6000 K (this is to sell for food to local buyers or local people) – after harvesting, they can keep the germ seeds and can sell these for 10,000 K (so this sell this to other farmers with the intention to sell) – this species is > Khun-Ni-Ma (red seed lady species) – this species is very resistant to bad weather condition – it can survive in salt/brackish water and can survive in flooding zones so he chooses this species. They have two children – the first son, 22 years old, his education is grade 11 – he failed grade 11 twice – now he works as a farmer with his father. The second daughter is 11 years old and is at grade 7 and Bo-ga-lay with her uncle from mother side. She is at BEHS #1.

His wife sells a small shop from their house. His wife gets 20,000 K daily from her shop – she sells all kinds of goods – she gets all of this from Bogalay from passenger boat – she sells just a little more than what she buys for (buys for 100, sells for 150) He also has 6 buffalo to cultivate the paddy field. He also has one tractor. He has five workers. He pays 1 tin of rice and 30,000 K for one worker per month. He hires workers for both planting and harvesting time.

He used to cut the wood from mangrove forest in the passed, but now he buys charcoal – from kadon kani.

After Nargis, various NGO came to this village and he got one tractor from this NGO (UNDP) but he sold the tractor and bought a new one.

He sells the rice to Bogalay.

He is the owner of this land and has form 7. He is the official owner – and his land is not concerned with Forest Department – all under Agriculture. (eco-tourism) He would welcome the home stay program because he has clean toilet and clean living room and bedroom so he can receive bedroom. (look up NNO pictures)
***The price of farm land – 200,000 K for one acre. ***
*** ask if the price of the land per acre is more/less on the east compared to the west **
*** ask department of forestry how much land has been converted to rice land**
***also ask how much land post-nargis has been planted (add up all NGOs) to see how much has been planted in terms of mangroves***

Village #6- Kone-tain-pauk (West) “Dry Hot Land Village” (with traditional music)

1. “Name 24” – 35 years old. He is the leader of this village since 8 months. His native town is Kha Yu Chaung village. He came here 12 years ago, he was a farmer in his native town and now also a farmer. He learned how to farm from his younger brother. He works on his cousins land. They can produce about 40-50 tins per acres – so he pays back 14 tins to pay back his cousin. He has 15 acres (that he borrows from his cousin). He starts growing in June and harvests in January. His cousin his shop keeper and land owner. He has one younger brother and one younger sister. His parents are in Kha Yu Chaung village, also farmers. His wife is from a small village near bogalay. She works together with him in the farming business. When they need money, they borrow from the rich man – for example, when they need money for pesticides and other farming-related investment costs. This rich man’s name is U.M.L. – he gives 5% interest. Last year he had enough money to start his farming but this year he needed to borrow money because he now has 15 acres instead of 3 acres (which is what he had last year). He said that he increased the amount of acres because he wants to develop his life. He first discussed with his family and cousin and then he got more land. Now he needs to hire more people to help him with his land to plant, so he hires 5 people per acre – same 5 people work all 15 acres – gives them 4000 K per day when they work, since these are hired workers, they also take crab trapping when they are not working for him on his farm. Last year he worked with his wife because he had 3 acres, and no she still helps him, but they clearly need more help. When he harvest, he gives 30,000 K per acre to his hired people – for every acre that they harvest. It takes about 4 days to harvest one acre. During the harvesting season he hires more people since its more labor intensive – he hires about 5-10 people per acre for harvest. His younger brother works various jobs; fishing, crab, farming. His sister is a general worker in Yangon – she carries the bricks for construction sites and sells vegetables and meat/fish. He has four children, ages 12, 6, 4, 1. Two oldest are daughters, third is boy is the youngest is a girl. There are a total of 1,300 acres in this village of paddy fields. There is no community forestry in his village. The previous village leaders of the village attended the workshop of FFI bathe didn’t so he doesn’t know about the details of
what they learned in this workshop. Apparently the leaders did not share the knowledge with the rest of the villagers about these workshops.

He didn’t know about eco-tourism, but he thinks that various areas of this village can be developed with the help of ecotourism – for example, this village only has a primary school up to grade 5 so he hopes that education will rise in this village if eco-tourism increases.

When the tourist come to this village, the government needs to invest more in these villages and help with electricity and education, so he hopes that by having more tourist, the government will pay more attention to these villages (which they apparently have been neglecting for quite some time) – he thinks that foreigners will bring an incentive for the government to help develop these villages.

He wants to improve transportation to make it more accessible to tourist, also he wants to add animal husbandry to his livelihood and extend his agriculture business.

He says that villagers will not have time to make souvenirs since they are busy working as arming and fishing and can’t have time to do souvenirs also – we explained that making souvenirs is not the point… etc

He says that if someone teaches them a new alternative livelihood than they want to learn, but right now they have no money to invest in new livelihoods.

This village also has traditional music – he thinks that tourist would like this!

We only found out about this information at the very end – after talking about eco-tourism and livelihood based tourism etc - so it’s hard to get the villagers to say what they would think could attract tourists, but after long conversations and asking better in-depth questions, they come up with the ideas themselves – such as this traditional music, the matt making, the furniture making, the buffalo riding, etc… this is why surveys don’t work – you wouldn’t be able to get these thoughts and ideas based on a series of questions and stats.

2. “Name 25” (30 years old) her native town is Bogalay. Her husband is (35 years old) also from Bogalay. Both have grade 8 education. They have two children, (11 years old) grade 5 in BEHS #1. The second child is 1 year old. They moved to this village after Nargis (about 7 years ago). They married in Kyun Ngo Village, and then they moved to this village. They are fishermen – only one bag net. Husband catches the fish near the village and the wife sells the fish and prawn locally in the village. Their business in the Kyun Ngo Village failed, so they had to sell their bag net and move to Kone-tain-pauk village. Now the wife sells rice noodle (mohinga) every morning and the husband is a general worker. Her daily income is 2500K ~ sometimes she gets 6000K. Her husband’s daily income is also about 2500 K daily. She has her own boat. The length of the boat is 6 feet, width is 1.5 ft and depth is 1 and no engine. They don’t cut the wood because they have a solar panel that they can use for energy. They also have a diesel stove so they do not use charcoal. In 2009, FRED A built 150 cement houses in this village – and also they got fresh water. FRED A donated these fresh water containers. Every five houses they have a fresh water reserve – made out of tin. FRED A gave them the solar panel as well. They have the boat even though they don’t fish
because they can rent it out to be people who need it— and make a little extra money. She also got the diesel stove from FREDA.

*the other water containers that we saw in-front of our house in chaung byo gym are made out of wood and then a liquid glaze over it – not tin **

(ecotourism) she has seen many NGOs especially FFI and FREDA – FFI support MKWS stove, FFI share the knowledge of how to protect the crocodile, and they also share pamphlets. She also has seen Care Myanmar that supports medical support to this, she also received many medicines from these NGOs. Her and her husband traveled to Bogalay to attend both workshops FFI workshops – 2013 on the stoves and in 2014 for the crocodile and bird watching. So she is aware of eco-tourism and environmental conservation – and knows well NGO projects. She always helps the NGO projects in the village.

***NGOs many times only go into areas and expect people to share their mentality – and what they ask from these villagers is unfair – they must first increase their standards of living to build the capacity for them to be able to conserve the environment***

3. “Name 26” (39) years old native land Bogalay. Wife (40) and her native land is also Bogalay. They have no children. They have been in this village for 24 years. (He was very welcoming to NNO – even offered him green tea leaf salad.) Both of their parents are fish buyers in Bogalay. He is a fisherman and owns 5 bag nets. He catches various kinds of fish and prawn – has three own boats. The first boat length is 18 feet, the width is 3feet, the depth is 2feet = this engine has 7.5 hp. He uses Honda engine. The second boat is 9feet long, 2 feet wide, and 1.5 depth, and no engine. And the third boat is 12 feet long, 2 feet width and 1.5 depth and 4 hp engine. He gets between 5-30 vise per day. He sells these fish to Bogalay – to his parents. His daily income is about 25,000 K. His repairs his bag net once a month. He has a tender in Bogalay named D.Y.H. (negotiator between FAO and MKWS) in Kone-tann-pack area, and he pays 400,000 K per year – for all the Bag Nets (refer to diagram that shows the protected area close to MKWS and the tender system). Every April he pays the Tender. He sells some of his fish to the Tender and some to his parents. Three bag nets to his tender, and two bag nets to his parents – so the majority still goes to the tender.

He buys fuel by himself. He buys 4 gallons of diesel for 12,000 K in Bogalay. The price for ice is one pound for 400K – buys also in Bogalay and sometimes Kadone Kani. He uses about 10 pounds of ice a day. He goes everyday to Bogalay. He has four general workers, he pays 70,000 K per worker per month. In total he pays his workers 1,500,000 K per season (this is 1500$) ~ and one season is about 4 months.

He goes himself to Bogalay to transport the fish. The mouth of the bag net is 420 feet width and the total length is 450 feet. The cost of a new bag net is 680,000K (680$) > he repairs these once a month (usually
lasts about 3 to 4 years). He repairs the net together with his workers, and his wife sometimes helps him.

He pays the DOF for license ____ (ecotourism) he has no idea about environmental conservation and eco-tourism but NNO explained to him and shared the knowledge and the explained to him the difference between NGO and tourist - he is only knowledgeable about his business.

4. “Name 27” (60) years old and his native village is Pyin-boe-gyi. His wife is (51) and her native village is Da-none-chaung, he was a farmer and general worker in this village. They have two children. The first son is (30 years old), married, and is a general worker. The second son is also already married, he is 27 years old, and also a general worker. They all live in the village. They came to this village about 30 years ago. He and his wife work as duck husbandry. They have 110 ducks. He gets about 50 eggs daily. One egg for 70-80 K. Sells to Kadone Kani and bog lay. He feeds the duck small fish – gobie fish, chopped up in small little pieces – some times they feed the ducks vegetables, some powder made out of chipping rice that they buy in Bogalay. His two sons catch the gobie fish near the mangrove swamps – so he doesn’t have to buy the gobie fish – he just gets them from his son. Along with his duck husbandry he is a hired person- works on other peoples farm. (he started the duck husbandry about 10 years ago) During nargis they lost a lot of their ducks. UNDP supported him after Nargis – they gave him one food basket. As a hired worker he gets 50,000 K for one month as a hired person. His wife feeds the duck everyday- helps with the duck husbandry. (ecotourism) he has some idea of NGO – many NGO have come to this village – they came with a plan but they did not execute the plan – plan with no action (plan without action) – UNDP and FFI deliver information, deliver stove, but these stoves were limited – his family didn’t get these stoves – his family didn’t get one. In his mind all that the NGO do is talk but they don’t do any action. His opinion of NGO – he doesn’t like them. Some of the NGO deliver pamphlets and posters and then go back to Bogalay and Yangon and without action ***(this is very interesting since NNO was alone, and could get the truth from these people – as ChuChu and I were also accompanied with forest department or FFI staff so sometimes.)

He thinks that FFI are biased, because FFI selected the families that would receive the stoves. When NNO explained him about tourism, he said that he didn’t like tourist.

Village # 7: Ah-pyin-ma-yan village name means : Ah-pin= outside, ma-yan = name of a very sour fruit “Outside Sour Fruit Village” – this village I interviewed with NNO – this village was pretty hidden inside various creeks and had heavy vegetation.

1. “Name 28”, 51 years old, his native village is Tint Phyu Village. His wife’s name is 55 years old – her native village is Da-no-chaung village. He is the village leader. He has two children, one is – 31 years old, worked in farming and is
married. Second is – 28 years old, lives with her parents and is single. Both daughters live in this village. His main business is farming. He has 80 acres of paddy. He came here over 20 years ago because he had no farming work in his native land. He has 5 workers that help him plant and harvest. He pays them 300,000 K per season (may-October during the planting season/growing season). He also works with his workers. The harvesting season is from November-December.

He can make 50 tin per 1 acre – 1 tin for 7000 K. This is standard quality, he sells all the rice to Bogalay. This is an organic farm, so he uses no fertilizers. He also has 40 ducks in his animal husbandry. His wife has a shop and her daily income is about 7000 K – the shop is in the house that we are interviewing.

Over 30% of the villagers are crab trapping, others are involved in long line fishing, Nipa leaf cutting for roof making. There are 4 people in this village that are really good at making the roofs out of Napa leaf. He also owns 5 buffalos for farming and one tractor trailer (that makes sense that he only has 5 people for 80 acres now – since he also has water buffalos and tractor!)

Last year, he said that 3 “tourist” came to stay for socio-economic surveys, and they asked him questions about mangrove forests, crab fishery, farming, animal husbandry, household statistics of village etc. This shows again the confusion between tourists and NGO workers or researchers.

He says that he warmly welcomes NGO and foreigners because they support food, fishing, farming, and help fishermen with fishing nets. NGO called ACF helped with these various things (look up NGO ACF).

Myanmar Red Cross also came here so support food and shelter after Nargis. Green Peace project (same as the one in Bilu island) also came here > further details in the interviews with U Koh Koh that Naung Naung Oo has from his final assignment for the social ecology course in June. Green peace project came in 2010 to help with drinking water by helping with pumping water system. 2010 Red Cross society built 20 houses in this village (his daughters house is one of these houses – they were all built with local materials)

He plants 5 acres of mangrove trees for fuel and shelter over 2 years ago – species Heritiera formos – which has very sour fruit and the wood is very good for charcoal (given the name of this village).

He got the mangrove seeds from collecting the seeds near the mangrove forests himself – he didn’t receive these seeds from anyone.

Last year, FFI planted 1 acre of mangroves near their primary school – villagers, students, and FFI all planted together. FFI and FD take mangrove seeds from this village also – which he provides to them. Some villagers collect the seeds to give to FFI, which is just voluntarily done.

He always treats FFI and FD with rice and coffee, they have a good relationship. Mangrove planting, road building, house building and other rural development projects – he says he welcomes all of them and also welcomes the home stay. He welcomes everyone to do this type of work.

In 2010, he went to a small seminar and training course on how to protect from natural disaster, plant mangrove trees, how to use water resources – this was help
by red cross society, DOF, in boggle township, along with UNDP – there are about 50 people from this village that attended the course. Despite being the village leader for 18 years, he has not been to the FFI workshops, however he sent another person to go to the 2013 FFI workshops which was the stove related workshops – this person came back and shared the knowledge with him about not to cut mangrove wood – he didn’t receive a stove though.

Before nargis, village had about 100 households, now they only have 60. There are about 40 students in their primary schools and two teachers. Grades 1-3 are in the morning session from 8 am to 12 and grade 4-6 are in the evening from 12-5pm. The two teachers are very patient with the students. He likes the idea of having tourist come and study livelihoods or participate in community based tourism, and he would think it’s a good idea for his village to participate.

He likes the home stay projects because he can receive a lot of money from the tourist. When the three people came for the soc-mon, he got 60,000 for one week – he said he also offered them a lot of coffee and that foreigners drink a lot of coffee!

2. “Name 29” (45) His education is monastery education, and his native village is mawlamyine Kyun. His wife is 49 years old. She also is from Bogalay. After Nargis they transfer to this village. They have no children. Before he transferred this village – he worked in a crab hatchery – and lost all of his crabs during Nargis. But he knows very well how to feed them and produce them – he was very good at this job – but now he is a general worker in this village. He is now a crab trapper and has 50 bamboo traps. He uses eels and small fish for crab food. He pays 3000 K for one vise eels and 200 K for one vise of small fish (big price difference). He sells his crabs to Pa-daekaw and Nga-poke-thin-lann village. Every 15 days he gets 70,000-80,000 K. When he sells to the crabs, he classifies three levels:
   a. Pae < 1kg = 1000K, 0.1 vise = 800 K, one female without eggs = 400
   b. John, = a crab between 100-200 grams, 1 vise = 2500K
   c. Joe-gyi = > 200 gram per crab = for one crab this size is 700K (biggest)

He decided to transfer to this village because his brother is a monk in this village and also due to the loss of his village. He is also a hired person in farming. In the planting times he gets 4000K per day. In the harvesting time he gets different amounts of money – depending on how much he can harvest. He also has a small boat, without engine. Him or his wife walk to the other villages to sell the crabs.

(NGO) He got a loan from UNDP and pays 2.5 % interest to UNDP every 15 days. Doesn’t know how much the initial loan was. Doesn’t know when he took the loan. He uses this load to buy crab traps. He has also seen the NGO for medical care (doesn’t know the name of this). He also remembers another NGO that came to teach bout the health.

He said that he has no education so he can only read Myanmar language.
(ecotourism) he thinks that foreigners can stay for a short time is okay, but not for a long time – he also said that this would be a problem without translations. He thinks that if the foreigners stay in his home – he cannot afford money for a new house but he would welcome foreigners to his house.

He has not attended any NGO workshops, but due to the post-experience of Nargis he knows not to cut down mangrove trees.

The leader of this village chose the most educated people to go to the workshop – but these people didn’t share the knowledge, so he doesn’t know about this information – but he wants to have more development in this village. If the ecotourism increase in this village, he wants to sell the dried goods. He is a Buddhist, he doesn’t like to kill other animals, and so he would rather sell dried goods.

If he gets more money from tourism he wants to start again a crab hatchery because he knows a lot about this business. He knows very well – if he gets the small crabs he knows the maturing age of the crabs – he also knows how much to feed the crabs in a day.

Day 4 - Friday, July 24th, 2015

Village # 8 Nga-poke-thin-tann (Croaker fish village- meaning)- interview conducted outside on the dock, very poor village – very bad condition primary school- same village where we saw the octopus and squids in the bag

1. “Name 30” – 66 years old – village leader. His native village is Tom Tay but he has been here since 1981. His parents are also from Tom Tay. He is a farmer, with 6 children, and has 10 acres. His wife sells traditional noodle, mohinga. His children are ages 41 – soldier, 38- shop keeper, 36-crab trapper, 20-farmer (daughter) and the other three eldest are sons – his two youngest children died in nargis and his grand daughters and grandsons also died in nargis.

Now he works farming with his third child, – who is also a crab trapper. They start planting in June and harvest in December. He can get about 70 tin per acre if the weather is good and each tin sells for about 4000 K – he sells to bogaly. If the weather is bad (such as salt water floods his land) then he looses everything – if he cant produce any rice, than he fishes – he has a small boat without engine – doesn’t let other people borrow his boat if he doesn’t use it – everyone uses the boat for storms and for transportation, and every household has their own small boat – so he doesn’t need to let others borrow his. He uses the drift net technique. He is also a crab buyer. There is no tender system in this village – everyone can fish here for free, around one or two miles, no engine boats – three people use bag net but most people use drift net and catch mullet, big prawns – but not the small or medium prawn because the mesh size of his net is too big. He catches mostly croaker, sometimes he can catch big prawns. For 0.3 vise of the big prawn he can get about 3500-5000 K if the prawns are scarce in the area than the price goes up – also he gets higher price because he sells it directly to bogalay – no tender system or fish buyer in this village.
During the cold season (onv –feb) he gets about 10 or 8 thousand per day for fishing and during the rainy season only gets about 3 thousand per day or less. (difference between drift net and bag net – bag net fishermen get more during the rainy season).

There is no fishing association or support for fisheries in this village. They get farming and fishing loads from UNDP with 1.02% interest. He chose people to attend the FFI workshop – he called two people from the village to attend the workshop, the most educated people from the village. He also chooses other people to attend the workshops held by the FD and health workshops.

The village leader plants mangroves and knows how important they are due to the tragedy of losing his children due to nargis. Everyone in the village helps to plant – every house has planted about 5-20 plants, DOF gives young plants, about 3,000 baby plants and distributes to households.

He wants to promote this village and get better school because during the rainy season – due to bad roofing of the school – the children can’t learn. (we have video of this primary school and him showing us the mangroves he planted - adds here).

He thinks that ecotourism can help promote this village and make better houses and education. The school was built by the villagers – he also wants good teachers from the bogalay township but he can’t afford their salaries of the teachers so they only have some woman in the village that teach – and the village comes together to pay them. The government has not sent teachers to this village.

He also wants good transportation so that foreigners can visit, but he doesn’t want to show the poverty of his village to the foreigners (this is important and is discussed later).

2. “Name 31” (70) years and his native time is Mawlamyine Kyun township. His wife (56) she is from Bogalay village. She came to this village about 24 years ago. They had three sons but they all passed away in Nargis – so now they have no children. They are farmers. They have 14 acres, and they work themselves – no hired persons. They sell their rice to kadone-kani. Before Nargis, they had two drift gill net, and had their own boat – the length was 15feet, width 2.5 feet, and 2 feet depth and 5hp engine – Honda engine. During Nargis, all the nets and boats were lost. Now they work as farmers, they have 14 acres, one acre they get 20 tin (much less than the other farmer). The rice species they use is Kauk-Hnan (this local name, it resist high floods). One tin for 7000K. (before Nargis they were both fishermen and farmers, and now they are only farmers).

This village has planted over 200 mangrove plants for fuel and shelter. (NGO) Local NGO from Yangon- Shwe-pauk-kan (maybe 2009 or 2010)> this is the local NGO deliver the mangrove seeds to every house. All the planting Yangon NGO was voluntary planting. Now the plants are over two feet height.

This village has about 15 acres of mangrove nursery plants. FREDA and FFI also came to this village with foreigners to share the knowledge on how to protect the mangrove forest in relation to their ecosystems- the habitats for crocodiles, crabs, and birds, and stove (2013-2014). He attended this workshop – and his wife too.
Now they adopted a child from the wife’s sister. His name is Ko Ko. Ko Ko has seen the tourist and NGO – he has one boat, dimensions are 12 feet length, 2 feet length, 1.5 depth and 6 hp – Honda. He is 22 years old. He has brought NGO foreigners to FREDA guesthouse on his boat – so he got money from bringing the tourist to the boat. He wants a larger boat so he can bring tourist and NGO- he wants a passenger boat. Sometimes he brought tourists (or NGO?) near the FREDA guesthouse to look at crocodiles. (he has a lot of experience). He has done this three times. In this village, FREDA has supported food and fuel after Nargis. 
(ecotourism) Name 31 buys the germ feeds for 10,000 from other farmer of Kaukhnan. He has little idea of environmental conservation and eco-tourism. They plant the mangrove trees for environmental conservation – and tourist comes and see the mangrove trees. He wants to do community forestry near this village – so he wants to save money to buy land for community forestry – (ASK FFI OR FORESTRY DEPARTMENT IF THEY COULD DONATE LAND TO THIS FAMILY TO PLANT MANGROVE TREE). They want to plant these trees so they can protect from storms – they also want fresh water, electricity, and clinic. NNO asked him what they want? They said they want their children back. Before nargis they also had 8 buffalos – but they all died to nargis. Other NGOs also came here to build schools and houses, but the didn’t support their family.

**go back and ask the mesh size of the bag nets of other interviews if he knows**

***Try to interview more information on department of forestry and department of fisheries next interview – talk to more people in bogalay – department of administrators in bogalay – dof – more rangers – the department in bogalay.****

****good comparison – from east has been more influenced with NGO than the west – also since they have been more influenced of NGO – they say the words that NGO have taught them***

Thant Zin Tun (FFI Staff bald) he says that FFI guidelines on paper are different than what they actually do. For example, diesel they say that they use 10 gallons, but in real they use 5 gallons.

3. “Name 32” (31) years old native land is Bogalay. His wife is (30), she comes from Pain-nae-chaung village near Bogalay Township. He has five children. Both of their education is grade 7. The first daughter is (16 years) she stopped education at grade 6 and now she lives together with her parents and helps her parents. The second daughter is (10) grade 3. The third son is (8years) and grade 2. The fourth daughter is (7 years old) grade 1, and she is four years old. Only one son and 4 daughters. They have been in this village for 30 years. Name 32 started fishing since his childhood – basically has been in this village all his life. He has
only one drift gill net and the length of the net is 300 feet – the height is 18 feet and has no boat. He borrows a boat from his buyer. His buyer gives him a loan. The buyer gave him a loan of about 200,000 K per fishing season. He catches hearing with his drift gill net – which is the season of Sept-Feb (6 months = 200,000 K). They sell all of the hearing fish to buyer in Bogalay – his name is U Maung Myint. He sells two times a week to his buyer. Out of hearing fish season he catches croaker fish. His daily income is about 3000 K from croaker. His is also a crab trapper – from this he gets about 5000 K. He gets about 5000-8000 K for hearing. Sometimes he gets 30,000 K (not daily, but sometimes). But he has no crab trap – he borrows the crab traps from the same buyer – so all the crabs and all the croaker and all the hearing goes to U Maung Myint (massive monopoly). He catches the fish in kadon kani Bogey River – and sometimes catches the crab in MKWS at night (so not to get caught). He has a croaker net – this net is 96 feet long, height is 6 feet long – mesh size is 3 inches. He thinks he has a good business: crab, croaker, and hearing. (ecotourism) he has idea for eco-tourism but doesn’t have idea for environmental conservation. He would always welcome tourist because he can get money from tourism industry – he thinks that his village can become developed with eco-tourism. He knows very well FFI – he has heard about the stove, planting mangrove tree, but has no idea about environment conservation. He knows that tourism will come to see mangrove plants, crab, and crocodile and fishing methods. He can explain to tourist how to catch the fish and get money doing this. (NGO) his point of view on government and NGOs – he think some are good, some are bad – some NGOs have many plans but have no action at bottom level – community level. They don’t emphasize on the community level, they only emphasize on the top level.

4. “Name 33” (37) years old and wife is (41). Their native land is this village. They have three children. The first son is 11 years old and is a little monk. He now lives in Yangon, he studies Buddha literature. The second son is nine years old – he is also a monk and lives in village monastery. And the third daughter (8 years old) and attends primary school at this village also – grade 1. He is a fishermen and his wife is a fish seller. He has three bag net – one bag net for 500,000 K. We don’t know how much he pays for the license. The length is 105 feet and the mouth width is 22 feet. In the past he was a general worker – now he has 4 years experience in bag net fishery. He catches various kinds of fish and prawn – his 150,000 K for one season. He sells all the fish to Bogalay. He has two buyers in Bogalay – one is U.M.M. name and the other is U.H. Toe; both are from Bogalay. He takes a loan from these two buyers. U.HToe is the middle man (tender) but also the buyer. Name 33 pays 200,000 K U.H.Toe per year. He gives 40% of his catch to each buyer. And he keeps 20 % of his catch he can sell locally. He also plants mangrove (3 species): Avicenna, sonnertia, ceriop (three species of mangroves) Ceriop is the best species to make charcoal. He went to take the seeds from Byome-Hmwe Island – where the FREDA guesthouse is – and took the germ seeds from FREDA – FREDA donated these seeds for free. He has
about 150 plants – The plants are now over 1 foot tall – he plants these plants roadsides. This was voluntary planting – FREDAG gave the seeds and then he planted with the community – he planted along his compound (around his house) and along the road sides. The wife sells the small fish to local village and neighboring village daily. She sends her money to her son in Yangon. She makes about 4000 K daily. (eco-tourism) he has no idea what eco-tourism is – but NNO explained.

Village # 9 Pa-dai-kaw (Spicy Root Village)

they use this root in Rakkhine traditional mohinga – and also in Thai traditional soup (tum-yam)

(this is the village that had the really welcoming shop keeper that wanted to promote home stay – and also very organized)

1. “Name 34” – 56 years old, his native village is Ma Gee village. His wife’s is 52 years old. He has 6 children, son 32 fishermen, son 28 fishermen, daughter 20 married to crab trapper, daughter 16 house keeping single and lives at home, daughter 14 is in grade 6. He is a farmer. Has 2 brothers who are in duck animal husbandry and his sister helps sell the duck eggs to this village and to bogalay. He came here 30 years ago with his wife and his parents – his parents were also farmers. He has 16 acres- he has 6-7 people working for him during the growing season – and pays them 50,000 K per acre.

The process of rice farming:
First he spread the seeds and then he pulls the young plants, pulls the branches out of the ground, he pays 700 K per 100 branches > he grows different species. The maturing stage for these different species are different – some species takes 3 months to harvest and others take 5 months. The names of the three species he plants are

-Bay kyat – this sells for the most – he has 3 acres of this type – 8000/tin
-Kauk Gyi – medium quality – has 5 acres of this type – 5-6000/tin
-Nan Kan – lowest quality – has 8 acres of this species - 4000/tin

he sells all his rice to bogalay – but the merchants comes to the village to collect the rice, there are three main merchants: Ko Myat Soe, Aung Aung Tun, Ma Kin Mati – they all give the same price that he would get at bogalay so it’s a fair deal. He pays 250 K per acre to FD and 2-3000 K to the department of agriculture each year – the last two years he doesn’t pay to FD due to the switch of who owns the land as explained in previous interview. He doesn’t have to pay 2-3000 K to agriculture department until he actually becomes the owner of the land by obtaining form 7 – so now, during this transition period of FD ownership and agriculture department – he doesn’t have to pay either.

The last 6 years he face bad harvesting so he had to borrow money from the rice buyers – so now he has to pay back with rice from his harvest. He has already paid back all the money though.

There are about 77 other farmers and the rest are fishing or crab trapping.
There are 3 carpenters in this village that make boats for other villages as well, but they have to bring the wood that they want the boats to be made out of and then the carpenters will make it.

Prices for 18 feet boat is 500,000 K for teak and timber (best quality)
Prices for the cheap wood – local name “mango” is 200,000 K – they mostly use this type of wood since it’s the cheapest.

There are two people that can mend boat machines and other machines for farming – rare to find mechanics – so this village is lucky.

He wants to help in ecotourism and give tours and also participate, he also knows that the shop keeper of the village (next interview) wants to build a house for home stays for villagers.

2. “Name 35” – shop keeper – contact number (confidential off-report) – she doesn’t know which house the foreigners wants or what kind of things they like, but if she knows than she could build for them – we explained to her that the home stay idea is for villagers to stay with locals in their homes and there is no need to build a separate home – and her home is very nice with clean toilet, so I think this is a good idea for her to participate. Foreigners need to discuss with department of administrators in Bogalay in order to discuss a nightly price that is standardized if the home stay program is to be actually implemented.

3. “Name 36” (30 years old) native town is Ma-ju Village. His wife is (27) she comes from Shwe-bo-su village near Bogalay Township. They have 5 children. The eldest daughter is 15 years old) her education grade 3. The second son is 10 years old and his education is grade 2. The third daughter is (8 years old) grade 1. The fourth son is (6 years old). The fifth daughter is 4 years old. They came to this village 25 years ago. He was first a farmer and now he is a crab trapper. Now he works both as farmer and crab trapper. He owns 10 acres. 1 acre for about 60 tins - 1 tin for 5500 K. The species name is Khun-ni-ma. They work the land himself, him and his wife works in the farm land – they have no workers. They sell the rice to bogalay. He has 70 crab bamboo traps. He catches about 20 crabs per day. He catches crab near MKWS and sells to crab buyer U.T.Mar (crab buyer) – local crab buyer, lives in this same village. And U.T. Mar exports the crab to Yangon to the Shwe-Lin-Ban Fishery Industry located in Hlaing Tha Yar Township. He has his own boat. Length is 6 feet long, 1.5 width, 1 foot deep – no engine. He cuts wood from MKWS and sells the wood to local villages. He gets 1500-5000 K from wood cutting, daily. He goes at night to cut the wood – because he knows that other people have been in trouble. Other villagers know that he cuts the wood at night – but they don’t report him. First time warning and second time they go to jail. He only chooses the small trees to cut so that he can survive from Forestry department. This village only has one monetary, and one primary school. This primary school only has one teacher and the other is a volunteer teacher. Local people pay the salary of the volunteer teacher to support her.

His wife sells smoked fish locally and to other villages (croaker) > sometimes she gets the fish from her husband and sometimes she gets the fish from other
fishermen. She sells one smoked small fish for 500 K. She buys one vise of medium sized croaker from local fishermen for 3000 K (and sometimes she gets it from her husband for free.) Her daily income is nearly 5000 K. She sells her fish at the Nypa Juice Shop (a nypa tree) alcohol, which fishermen drink to get drunk – one pot the size of a rice bowl is 200K. (eco-tourism) he has seen NGO and tourist but he has not had direct contact with the tourist. He has idea about environmental conservation – he knows very well the value of the mangrove forest but he continues to cut because of his business. NNO asked him, do you want to try to plant new mangrove plants? He said that if he had young plants (nursery) than he would want to plant. (NGO) In this village, NGO support food and environmental awareness – but they did not bring any plants to plant mangrove trees. (ecotourism) they have no idea about eco-tourism, but he said that he is interested in the potential that eco-tourism can bring – he wants to open a guesthouse if he gets a lot of money. NNO explained to him all the various ways.

4. “Name 37” (56 years old) this village is his native land. And his wife is (58) and her native land is this village also. They have two children, the first son is (22) and he is a Ba-win fishermen. The second son is (16) years old and he is a crab trapper. The parents and the children all have monastery education – very polite family. NNO met the entire family member and they are very polite. Son and father are fishermen – he has two ba-win net, one is 450 feet length and the other is 8 feet height. The other one is 750 feet length and 8feet height. They catch near MKWS Island. Every 15 days he gets 3-8 vise. His wife sells the small fish to local villages- this price varies. And the marketable size he sells to fish buyer – he sells thread fin and big prawn. One vise of marketable size thread fish, is 10,000 K and one vise of marketable size of big prawn is 10,000 K. and 1 vise of medium various size fish is 6000K. They sell various types of fish and prawn to Bogalay buyer- name is Ko Aung Tun. They take a loan from this buyer for food and net. They sell twice a month to Bogalay. To buy a new ba win net the cost is 150,000K – they collect fish and prawn at low tide. They cut mangrove wood for fuel near MKWS – sometimes they collect the drift wood in Bogalay River. His wife sells the drift wood to local village. They have never been in trouble – they are not scared to cut the wood because the forestry department stays in Bogalay. The eldest son works together with his father – but the second son is a crab trapper – he owns 50 tin traps – and his daily income is about 6000 K. He uses small fish and eel – 1 vise for 4000 K from kadone kanji (he buys from kadone kanji). He uses one vise for 2-3 days. They also have on boat that is 9feet length, 2 feet with and 1.5 depth – and 4 hp engine – Honda. (ecotourism) the second son has an idea for home stay – he wants to try to translate for foreigners – he wants to try to learn English but he has no education – so he wants to be educated. ***first one to say that he wants education. He can say “how are you” “what is your name” – NNO encourage him to keep learning.
need to interview the Shwe-Lin-Ban Fishery Industry located in Hlaing Tha Yar Township

5. “Name 38” (51) native town is Bogalay he passed grade 11 education. His wife is (52) also from Bogalay, her education is grade 9. They transferred to this village 15 years ago. They have three children. The eldest son (grade 9 education) is 30 years old, and is already married, and is a crab buyer in this village. Second son (education grade 9) sells fresh and dried products (perfume, medicine, soap, towel, flashlight, vegetables, soy beans, seasonal fruit, bamboo shoot, cabbage, carrot, eggplant etc.) He buys from kadon kanji or bogalay and sells in this village- he is also married and his wife is a teacher at post-primary school in this village– she is the head mistress of post-primary school. The third son is (17 years old) single and lives with his parent. He doesn’t work, his education passed grade 11. Name 39 is member of Village Development Committee – there are over 300 households in this village. Most of the villagers work in farming, fishery, and wood cutting. There are 250 fishermen (over 100 of these fishermen are in the LCA association, but the others don’t join.) NNO asked why other fishermen/farmers didn’t join this association, and he answered that some of them didn’t like this procedure so they didn’t join. So the fishermen that didn’t join this association still have tenders. 20% of the 250 fishermen are bagennet fishermen (others are long line, or driftnet… but dominant is bag net). In this village – over 250 boats. Some fishermen only have one boat, others have one or two boats. Village only has one post-primary school. In 2015 – there is a total of 187 students. There are 8 teachers. Village only has one clinic. This clinic was built by UNDP. This clinic has one nurse and one assistant. They have 8 fire-fighters (fire brigade work there). They also have 8 military men. This village has Livestock and Cooperative Association. The representative of the farmers is U.S.Tint. is the president of all three of these (fishing, farming, general) and Name 39 is a committee member of this association. There are three representatives : one for fisheries, farming, and general worker. Name 39 is the representative of the fishery: so he supports the fishing net, repairing the fishing boats, some of the problems in fisheries. And U.T.O. is the representative of the farming: and he takes care of fertilizer, germ seeds (etc), and U.H.M. is the representative of the general workers. The villagers vote them all.

This association took a 100,000 K loan at 1.5% rate from UNDP – UNDP and local government. They use this money to help the fishermen, farmers, and general workers with various types of needs. They already paid back the loan within 6 months. This association also overlooks the tender system – this association acts like the middle man between various departments (dof, agriculture, department of forestry, ngos) = LCA = Livestock and Cooperative Association. This association has new representatives every two years by voting system. He has been voted for three times. This association has been active since 2010 (after nargis).

(NGO) many NGOs were in this area, FFI, UNDP, Swan-yee > all these NGOs have joined this association (LCA) to support the villagers for fishing net, water reserves, underground water system (swanyee), solar pane (UNDP), stove (FFI) –
they work several times in this village and do various different workshops in this area. Some of the NGO have 2-3 foreigners that come to this village – and stay about 2-3 days and stayed in the primary school. This association is trying to build a radio tower for better communication – new project that they are working on. They support the management of various things. The department of fisheries and forest department have a seminar in this village many times: department of forestry shared the knowledge of how to protect the wildlife sanctuary – how to protect/plant the mangrove trees/ show nursery area of mangroves. Department fisheries : they shared the knowledge about closed/open season and rules and regulation. This person interviewed and this association attended every seminar. (eco-tourism) he doesn’t know much about eco-tourism but knows a lot about the different NGOs- and he is the first person that knows about the difference between the NGOs and tourist. He welcomes the home stay program because this village has solar panel, they have clean roads, good transportation, and in the near future they will have good communication and good tower – so he invites more and more tourist. Sometimes foreign and international NGO come to this village and MKWS to come see the crocodile.

NNO liked this person – he told him true situations and true stories – NNO felt that this person was very honest –

***this is the first village that is so organized – maybe ask why/how they are so organized. **********

6. “Name 39” (30) the wife is (30) they only have one child – their son is (5 years old). Before Nargis, he worked with his parents as a farmer – his parents owned over 80 acres – after Nargis he married with his wife. This is his native town. Now he is a crab buyer. He buys various types of crabs:
   a. John – 1 crab = 65 grams
   b. Pae – 1 crab < 100 grams
   c. Male A – 1 crab >150 grams
   d. Female A – 1 crab = 150 grams
   e. Male B – 1 crab = 250 grams
   f. Female B < 200 grams
The price depends on Yangon market – so he did give any examples of prices. We can check on the newspaper (for price market).
His monthly income is 300,000 K. He buys from over 100 crab trappers daily. His wife has a small rice mill – during one harvesting season she gets about 500,000 K per grinding the rice. Many farmers come to hear from many villages to grind her rice.
In 2012, she made 120,000 K in one harvesting season (very low = this was a bad harvesting season). Farming is her main business and crab trapping is her husbands main business.
(ecotourism) In 2013 four tourist came to her rice mill to take photographs of her rice mill ***** and also took photographs of crab trapping and fishing net.
They visited her home – these were only tourist, not NGO workers. Her husband has no idea of what eco-tourism is or environmental conservation but she does. She said that her kitchen is very clean – NNO observation – he thinks that her kitchen is very clean – a lot of light. So in NNO opinion, this is very good and very clean.

Why was this a bad harvesting?

How does he export to Yangon? Ice? Passenger boat? Wife?

Village #10 Ah-pvin-boke-chaung (Village of the Fatty Creek) Boke=fatty

****this was the one that was the “monk” and owns a lot of mangroves*** we first interviewed the village leader – very poor – photo of chuchu and I on desktop interviewing him

1. “Name 40”, 44 years old, and his wife is 52 years old – he is the village leader. All his children died in Nargis. His native village is Lin Da Chaung. He came to this village with his parents over 25 years ago – his father died during nargis also – but his mother survived. His parents were fire wood buyers/sells of mangrove shrub. He has an education of 6th grade level. He has one older sister and two younger sisters – his eldest sister died in nargis, on of his younger sisters is a famer and the other is a crab trapper. He has been leader is September 2014. he is currently a farmer and has 10 acres of land. Before this he owned a small shop/restaurant (two years ago) but he had to stop because he didn’t make any money with this small shop/restaurant, so he sold everything he had and started farming. He was also more interested in the farming business. He borrowed money from a rich man in the village - U,M.M., with 6 % interest – he pays back in the form of rice. He can get 5000 k per tin. He produces 30 tins per acre of Kauk Gyi species and he gets 5000 K per tine. He has 5 acres of Kauk Gyi species and the other 5 acres are Bay Kyar species, which he can make 5800 per tin. Him and his family eat the cheaper one, Kauk Gyi. There is a difference of 15 days between the 2 species maturing stages/harvesting starts at different times. They hire 2 people to help him for the planting season, and pays 4500-5000 K per day during planting season. For the harvesting season he hires 5 people – and pays 50,00 K per 2 acres. When they harvest the rice, they have to give the majority to the rich man. This year they could only keep 100 tins from their harvest, and over 200 for the rich man. Last year they got over 30 tines per acre – which was a good year. With the 100 tins that they have left, they can sell it for 6000 K per tin – they usually sell 60 out of the 100 and keep 40 for them to eat. They actually sell those 60 tins to the rich man also, since he gives them the best price – they say he is a good partner.

His sister is a crab catcher throughout the year – no other job. She uses 20 bamboo traps a day. There are 50 crab trappers in the village, some are also fishermen – fishermen also have simple 18 foot mango wood boats with no
engine. They buy their boats from kadon kani. This family has a boat with engine that they use for transportation, and he shares this boat with other villagers for no fee. The other sister who also farms has 20 acres. His other sister, who is also a farmer, has 20 acres of land. There is no farmer association in this village, they only work independently.

One of the villagers (who both NNO and I interviewed) plants species of mangroves – local name of species that he plants is Byu Shwe Wah species. This person has many acres of land so he can chose what to grow, and not only have to plant rice. Apparently he has 2000 acres of land! When other villagers see him plant these mangroves, they also want to plant mangroves because they know how important they are for protection and for their livelihoods, but they need to plant rice to feed their families. Name 41 plants mangrove trees on the land that is not good for rice planting.

He said that he doesn’t plant mangroves otherwise he wouldn’t be able to see his own house – a bit rude of a comment – just wanted to emphasize the point that feeding his family is more important.

His wife likes the idea of ecotourism and said that she would sell foreigners little foods and traditional snacks, teach them how to make fish sauce, pealing of the bamboo shoot (this is also where the video of the woman peeling the bamboo shoot was taken) and making green tea leaf salad. She thinks that tourism will help this village and will help improve transportation and help build a better monastery so that they can have more monks that live in this village – right now this village only has one monk – interesting how she first thinks about monks and directing development first towards the monasteries so more monks could be here…

2. “Name 41” (54) – contact number –(confidential-off report0- comes from Bogalay and his wife is (51 years old) she also comes from Bogalay. They moved to this village over 26 years ago. They have five children. Eldest daughter, 28 years old, married, same village. Second daughter is 25 years old, same village. Third is son, 18 first year student at U-Bin University (located in U-Bin district near Mawlamyine Kyun township) – he doesn’t know exactly his major. The fourth son is 15 years old and is in grade 9 in Boagalay BEHS #1 – he lives with his mom (the wife Daw Soe Mar Lwin lives in Bogalay). The last one, the daughter, is 10 years old – grade 4 – and also in this village. His main business is farming – over 22 years of experience. He has 600 acre – he has many workers. He pays workers 1 tin and 50,000 K monthly, and at the end of the year he gives a bonus of 200,000 K (this bonus varies, maybe.) He has 8 tractors. He says he never uses chemicals. He only does organic farming. He doesn’t cut mangrove trees. He has 30 acres of community forestry – he paid workers to help him plant these species- for mangroves – Avicenna and Bugaris species- over 100,000 plants. He cut the dried branch from his forest for fuel. He knows very well the FFI, UNDP, red cross society, knows many NGOs (eco-tourism) doesn’t know anything about the tourism industry. He said that he loves the environment so he plants the mangrove trees. He started planting in 2010 – community forest (personal forest) plot number 32 – this management
plan has the objectives, locations, environmental parameters, topography, and soil type, number of plants in this area. In 2010 he plant 6 acres, within 5 years (each year he planted 6 more) so now he has a total of 30 acres. Also in this plan he has elevation, gemming seeds, clearing the grass and shrubs and weeds so that he can plant mangroves (from protection for fire) he also has transportation charges – fees per worker (100,000K per year).

He is also interested in welcoming tourist to visit his forest. (this was NNO interview with him – we also interview him) the information we got:

Aung Kway Myint, man with 2000 acres, wrote a management plant for the DOF (city department, not meinmahla kyun department) since his land is part of the kadon kani forest reserve. His plantation of mangroves is over 30 acres. The purpose is for firewood, poles for local people – his 5 year plan started in 2010 and went until 2014, planting 6 acres of mangroves each year – he now stopped because he ran out of money – so he has a total of 30 acres of mangrove trees. We explained to him that ecotourism could help him with the investment of mangrove plantation – since his management plan is to cut the mangroves in 2020 – he can still show the tourist around his mangrove forest in the next 5 years and maybe this can incentivize him to keep planting more and maybe keep a small % of his reserve instead of cutting it all in 2020. He really liked this idea and wants to participate. He said that he first became interested in planting mangroves when he spent time as a monk during the water festival and started to really appreciate the birds and butterflies and all other animals that live around these ecosystems.

He came to this village in 1898 and started as a small shop keeper –but this was very unstable business and people couldn’t pay him, so they would pay him with fish or crab or rice and then we would sell that to bogalay – with this investment he was able to buy land, but FD ranger with us thinks that he actually cut down mangrove forest and the reserve and claimed it as his land – apparently a lot of people do that – anyways, according to Aung Kway Myint, he is interested in mangroves because he saw how important they were after nargis (along with his monk experience). he also wants to plant mangroves because a certain Dr. Maung Maung Than who visited this village told him how important mangroves are, and if he doesn’t plant mangroves, than he will suffer from storms. Dr. Maung Maung Than is apparently a mangrove expert from FD.

2. “Name 42” (his house is one of NNO pictures on the river with the red and blue sign that sees Than Lwin River) (34 years old) comes from Ma-Gway region-Saw Township. (near Uh Khim Maung Soe knows very well) His wife (28). She comes from Nant –San Township from northern Shan state. Both are graduated from university – he graduated from Pathein University , History major – and she graduated from Taung-Gyi University and her major was history. Previously he was in Saw Township and then moved to Bogalay when he was about 20 years old – then he married his wife in Bogalay – then he moved to this village in 2012. They have only one child (son) His child is 2 months old. Now he is a crab buyer. 8 crab trappers sell to him regularly, sometimes up to 20 trappers sell o him: he buys various sizes
Female (best) 150 grams – 2000 K
Female (normal) 100-150 grams
Male > 250g
Male > 150g
Male > 100 gram
Pae < 100 gram (general)

Price depends on the price set in Bogalay. Sometimes they transport to Yangon. He doesn’t transport by ice – he just transports by bamboo basket. He sells three times a week to Bogalay. (once every two days). Every two days he gets between 9000-30,000 K.

His wife sells various kinds of snacks in the village locally (vegetables, potatoes, onions, vegetable oil, fish in cans like sardines and anchovies, cup noodle) various kinds of material – she buys from Bogalay and sells locally. Her daily income is 20,000 K.

(ecotourism) They are both very educated and understood very well when NNO explained to him various types of things of eco-tourism. They have a clean living room and clean bathroom – have very clean toilet – so they welcome home stay program.

3.) “Name 43” (30 years old) this village is his native land. His wife is (25 years old). She comes from Poe-Lay village near Bogalay Township. He has two children – the eldest daughter is 7 years old and she is grade 1. The second daughter is 3 years old. He is a crab trapper and she is a general worker at the village.

Sometimes she cuts nepa leaf, sometimes she works as farming, and sometimes she sells small fish to local villagers. Her daily income is 2000 sometimes 3500 sometimes 4000 K – her income is not stable. He is a crab trapper and has 50 crab trappers, and his daily income is 4000 K. He sells all of the crab to U.Zaw.O – the person he previously interview – they are very friendly with each other. His crab traps are made of bamboo. He has his own boat, 6 feet length, 1.5 widths, and 1 feet depth – no engine. He catches the crab near the mangrove forest and the paddy field. He cut the mangrove trees for fire wood – near the village (not MKWS). He took a load from U.Zaw.O – about 50,000 K at no interest – and U.Zaw.O supports him with eels or small fish.

(ecotourism) they both know very well about environmental conservation because they attended the seminar in bogalay that was held by department of forestry and FFI - they know very well that mangrove forest provide a habitat for various types of fish, prawn, and crabs.

He explained that this village has no fish buyer – most of the people here are farmers, some are ba-win, some are crab buyers, some are crab trapping – no long line hook fishermen, only few bag net fishermen. So they only have a few fish to sell – and they sell to Pa-dai-kaw village.

There are no tourists to visit this village but some of the international and local ngo have come to this village after Nargis so he has seen foreigners. He has experience in eco-tourism because FREDA and department of forestry educated
him about the tourist industry. He welcomes tourist – he also has an idea, that transportation and communication get better than tourism will increase – he said that transportation is very important for tourism industry and that some of the boats are not safe! *****

VILLAGE # 11 – A Nout (west) La-wine (full moon) village – **BUFFALO RIDING**

**Full Moon- la win village – NNO said that some of the people here took money for NGO to plant mangroves, but didn’t end up planting.**

**ALSO – SOME OF THE CRAB FISHERMEN AND FISHERMEN THAT CATCH NEAR MKWS SAY THAT THEY HAVE TO PAY THE FOREST DEPARTMENT 4000 K TO FISH THERE… BUT THAT IS NOT TRUE – NNO FOUND OUT THAT THEY HAVE TO ACTUALLY PAY 8000 AND THE RANGERS TAKE THE MONEY**

1. “Name 44”, 45 years – contact number – (confidential-off report) -old and his wife is 49 years old, he is both a fishermen and a farmer. He is from Kwin Sa Khan village and came here in 1990. He has 2 children, 1 boy who is 23 years old and got married, he helps him with his farming – has grade 11 education, and 1 daughter who is 17 years old and is now in grade 11 in BEHS #2 in Bogalay. He has 26 acres of land and 2 people that he hires during the growing time and 8 people during harvesting. During the growing tie he pays his workers 50,000 K per month and 1 tin a month to his workers and 8000 K for extra general things such as food or necessary living things – this he only gives to his two stable workers – then during harvesting time, when he needs more people, he pays them 40,000 K per 2 acres. he has 2 brothers, one is 48 and is a general worker and the other is 38 and is fishing and farming – has 14 acres. he plants three species of rice. He has 9 acres of Bay Kyar (grandfather species), makes 60 tin per acre and can sell for about 6000 K per tin. He has five acres of Kauk Gyi and makes about 65 tin per acre and can sell 4500 per tin. And has 12 acres of Bay Kyar (young species- so two different species of the same name – they harvest at different times) – he can make about 70 tin per acre of the young bay kyra and sells about 6000 K per tin as well.

Sells his rice to bogalay to two different rice buyers : U Kway Kway who owns a shop called MMT, and UTS, whose rice shop name is AZBU. He had to borrow money the last two years from both rice buyers, a total of 1,500,000 K – but he already paid back. When he borrowed 100,000 (for example) he has to pay back 160,000 (that’s a huge interest rate) but this isn’t monthly, it’s just a fix cost per year – and he paid it back with rice. He gave about 700 tins to the rich man to pay back.

In 2013 he also started to invest in fishing – he did this because he needs to support his daughter who is pursuing higher education (high school) in bogalay, and needs to pay for boarding and her pocket money. He also had to borrow money from UKK (rice buyer) in order to buy three boats which cost him 1,000,000 K, and 5 fishing nets which cost him 2,700,00 K and he hires three people to help him fish which cost him 80,000 K per month. He borrowed from a
total of 8,000,000 from UKK—so now every time that he sells his prawns, he can only sell it to the rice buyer for half price of the real prawn value in order to slowly pay back his debt. He thinks this will take another two years to pay back the loan. But he still thinks that fishing is more economic since there is no interest rate. U Kway Kway is also the tender of these waters—clearly this person has a big monopoly on various businesses for this village.
The best fishing season for him are during the rainy season, especially June—since these are all bag net fishing. The worst months are Feb to May. He can make about 10,000 per bag net per day during the good season.
His only contact with foreigners are the ones that come with NGOs—and he also confuses them with tourists—this needs to change—foreigners are not only NGO workers—but can also bring different forms of development aid through sustainable growth of tourism.

He actually went to Nepal in 2014 with FD, MERN, FFF who funded this trip and he studied how to conserve the forest and how to get income from eco-tourism—so he has very good knowledge on this. He saw how elephants in Nepal attract tourist. FFF, a branch of MERN, funded his trip—they picked two people out of 16 villages—8 from east and 8 from the west side of MWKS) they picked him because he worked really hard previously in the San Yee Development Foundation from 2011-2013 in the animal husbandry project especially for water buffalo—he would make sure that they were all healthy. Than Zin Tun (FFI field coordinator) also worked in this project with him so they knew each other.

Also two or three people can play the flute in this village—traditional bamboo flute—find out the name.

He attended the FFI workshop in Bogalay in 2013, after this workshop he went to Ti La Wa in Yangon to study animal husbandry, especially crab, soft shell crab—something that might become a big business in MWKS soon. He also went to the other workshop of FFI about stoves in 2013 and to protect the forest—total of three FFI workshops that he attended. He wants to participate in eco-tourism and show tourist the environment around this village—

He also started with 6 water buffalos and now he has 14 (part of the animal husbandry project that he started with San Yee). He said that he would take tourist to visit his water buffalos and also give them rides on water buffalo.

During the hotel season the water buffalo all stay together—and could also give them baths like we saw in Bilu Island.

Other farmers pay him 40 tins of rice for 2 water buffalos. 8 buffalos can work and the others are babies.

He could also educate tourists about water buffalos, what they eat, how he takes care of them etc.

He has also had a foreigner stay at his house—so he is familiar with home stay and accommodating foreigners—this guy was a German guy, Mr. Pleft, a technician with Myanmar Heart NGO that came to fix the fresh water ponds in his village.
2. “Name 45” (32 years old) he is a member of the village administration (secretary) – this is his native village. His wife is (33 years old) and comes from east la-wine. He has two children – the eldest son passed away in Nargis. So now he only has one child – she is 6 years old (grade 1). The wife is a housewife and he is a farmer – a hired worker for farming (does not own his own land). He borrows the land (20 acres) from other people and then works for this – after harvesting he gives 17 tins to the owner. One acre makes 50 tins – he gives 17 tins to owner for each acre. The other person that he borrows from, he gives 50% tin to him, and 50% for himself. The price for 1 tin is 6000-8000 K and he sells to Bogalay. He plants the species Khun-ni-ma. This village only has one monastery and one primary school – this village has fire brigade and village Red Cross association – that provide medicine and military men – they protect the village year round – they are villagers themselves. There are 70 students and three teachers. The whole village has three water resources – Myanmar Heart NGO and Soe-Pyay local NGO, and Achinowa NGO from Japan support these – they all support the fresh water reserves. There is no shelter house in the village. During the last four years he works with together with Myanmar Heart and Soe-Pyay and they collect the data of how many people are in this village. (NGO) FFI support stove and nursery garden in this village in 2013. Also support the crab fishery. In this village there are two buyers for crab, two buyers for prawn, and two buyers for fish. These buyers sell to Bogalay and Yangon. (eco-tourism) little idea about ecotourism, he asked NNO what it was because he didn’t understand. But he wanted to know what it was. So NNO shared the knowledge etc. he would like to welcome tourist but doesn’t like them because he mixes them with NGO – and he thinks that some NGO do not have good results – so he doesn’t like NGO… but NNO explain to him the differences. Some villagers like NGO some villagers don’t like NGO. He said tourists are okay.

3. “Name 46” (47 years old) native village is Kan –thee-chaung – her husband passed away in Nargis. She has 8 children, but now she has three children, five of them died in Nargis. The eldest son is he is 17 years old, he is crab trapper in this village, and he has monastery education. The second is son and the third is daughter. The eldest son has 50 crab traps- he catches 50 crabs daily, so his daily income is about 5000 – 6000 K. She has a small boat without engine – she doesn’t know the dimensions, but its just a little boat that she can row herself, and she goes near the mangrove forest and collects drift wood to sell locally. Her daily income is very variable, sometimes she gets 1000 K sometimes 2000 K. After Nargis she received 180,000K from some NGO. She has seen NGO and volunteers and local government/organizations and has had experience to attend workshop and seminar in this village. She knows khin maung soe – and has received FFI stove – also she has volunteer to collect mangrove seeds near MKWS Island. (ecotourism) she has no idea about eco-tourism but she does know about environmental conservation – and how to protect from natural disaster. Very poor.
Day 5, Saturday, July 25th, 2015

VILLAGE #12: PYIN-BOE-GYI (PYIN=FLOOR, BOE-GYI=EXPENSIVE) EXPENSIVE FLOOR VILLAGE
(village with UNDP bridge- we saw the bag net fishermen) most beautiful village in my opinion – due to the lovely entrance through the creek

1. “Name 47”, 49 years old, leader of the village. His wife’s name is 40 years old. They have three children: first daughter is 14 years old and is in grade 10 at Bogalay BEHS #1, the second daughter is 11 years old and is in grade 6 in BEPS – basic education primary school, in this village. Third son is 6 years old and is in grade 2 in BEPS of this village also. He has two brothers and one sister – he is the eldest of the four. Both of his brothers are farmers and his sister’s husband is also a farmer – they all live in this village. He became the leader of this village and four other villages since 2011 (chairman like the one we met in chaung byo gyi). He doesn’t want to keep being the leader of this village because there are too many problems and it keeps him away from his farming. But he doesn’t have the choice, if the people choose him, he has to be leader. Also very interesting. He says that he always has to travel to the other four villages to solve problems so he doesn’t have time to take care of his farm. Some problems are: teachers wanting to get paid a higher salary, ownership of farm land like the other village we spoke to, there are also farmers that fight with fishermen because some farmers will close the outlets of their small streams that leak into the river and catch little gobies and prawn which shouldn’t be allowed because that takes away from possible catch that fishermen could get, and these farmers don’t pay the license to fish, so fishermen are angry and complain. He tries to solve these problems by explain to the farmers why they shouldn’t block these streams, if the farmers keep doing this then he has to go to the department of administrators in bogalay and they risk getting punished and this becomes an even bigger problem.

There are animal husbandry especially pig and duck – more ducks, one garden has about 150-200 ducks, some people catch hearing fish and croaker outside this small little creak and stream – some others go and catch in the Bogalay river to catch other species. This village is mainly farmers though, with 60% farmers, 20% Fisher, and 20% general workers. So this village should be included in the villages for tourists to visit the forestry and farming part of MWKS, others can be focused more on the fishing.

There are only a few crab catchers (so leave this for other villages also) the general workers are usually crab catchers in between their odd jobs.

There is a tender system in the village for the creek (not for the big bogalay river). The tender is from Bogalay, name is U.M. Zaw – this tender uses a middle man that comes and collects the fees from the fishermen that want to fish along this river. This middle person is also a farmer in this area – lives in
nearby village – his name is U.Htay – he is basically the second tender of U.M.Zaw. So here is the hierarchy that we can later artistically draw –

DOF > U.MZaw > U.Htay > Fishermen

People that fish around the creek is just a small amount, very artisanal fishing, the 20% of fishermen fish mainly on Bogalay River and sell to this village, the women do the selling. Wives of these fishermen are the ones who sell and the other woman are also general workers. When the fishermen sell a lot, they sell to the bogalay market – since it’s worth making the trip up there. The huge net that we saw here (that were basically the entire length of the road – have video footage, must include) are bought in Bogalay, but are fixed locally. They are only 3 people that use bag nets in this village > only work in this during the hot season, during other season they work as general workers or in animal husbandry. There is no farming in the hot season according to him. So I guess this means harvesting ends quickly here?

All villagers are not really general workers, they just change according to the season – so a better term for this would be seasonal workers – which is beautiful – just like eating with the seasonal available foods (that ted talk, you can draw a connection to) people who live directly connected to their environment also change their jobs according to the seasons – that’s how life should be – not this monotonous robotic cycle that lives completely disconnected from nature.

There are crab trappers and they use bamboo traps. The ranger that was with us, kway kway, asked the leader if this crab trappers go into protected area of MWKS to catch crabs and the leader said he didn’t know. The leader has 45 acres of farm land and has 3 people that are stable workers. he pays them 300,000 K for 4 months during the growing time. He gives 30,000 K per acre to non-regular workers during harvesting – this is also a common trend that we see – the regular workers are the ones that plant growing and harvesting and the workers of harvesting are usually migrant workers and just temp. hired people. He hasn’t attended any FFI or DOF workshops but he chooses educated people from his village to attend them who he knows can come back and share the information.

He did attend an FAO workshops and department of fishery workshop (odd since fishing is so slim here)

He made a meeting in the storm shelter for the village to hear about these trainings. He went around the village with load speakers to invite anyone to these meetings that might be interested.

Stove training, bird watching training, training villagers to show foreigners different habitats, all these types of training that he sends his most educated villagers to, and then tries to distribute and share the knowledge by holding these village meetings – but he doesn’t think that this village has any
attractions for foreigners. But if the tourists were interested regardless, then he would be happy to show them around their different livelihoods. He does think that his village is different than others because you can only access by passing through this little creek and this already shows so much nature and quite/peacefulness – very very true – most beautiful village in my opinion.

(Thoughts)
This is a typical example of locals needing to be psychologically empowered to be proud of their village – here I am thinking that this is the most beautiful village so far, and the leader doesn’t think that this can appeal to any tourist – must make them proud and realize how beautiful these villages really are! Maybe by showing them highly industrialized cities of the western world and creepy movies like the conservation movies that we see about mass industries – maybe if we should them those movies, they would understand what the outside world is like, what a machine it has become, and how precious their livelihoods truly are.

Anyways, the leader said that his only worry is that the villagers wouldn’t know how to make income from tourism, but after many years or time they can adapt – also villagers can come with guides, or hopefully with students like chuchu that are doing research – thereby promoting this form of educational tourism. And these students can be the transient people between the tourist and the villagers – or people like the student in pathein, or the young guy from Myanmar east company – target young students that are learning about tourism also, or environmental impacts, or zoology, forestry – reach out to them and ask them if they want to participate in this type of a network where they can act as a guide for tourist while they do their research, so that they can gain field based experience of their research interest by being paid by tourist as a guide as well – this way students can benefit, and not only these forest rangers that pocket all the money from tourism. The rangers can be part of this as well, but students should be included.

****take the cycling concept from the Kalayar tourism agency, and apply it to kayaking – these cyclist go around basically entire countries and visit the rural livelihoods that would otherwise not be accessible by big tour buses – these villages are not accessible due to a lack of transportation – but instead of cycling, this can be done by promoting 5-10 day kayaking tours to big kayaking companies in Europe, Australia, New Zealand, united states – these kayakers could kayak down the west and east side of MWKS passing through the sanctuary in the middle and camping in the ranger stations, and the rest of the time doing local home stays at the villages – each village being promoted for a different special something – this can be advertised as kayaking through Myanmar’s artisanal fishing and farming communities****

2. “Name 48” (49) years old and husband is (58) – this village is very clean NNO observation. They have three children. The son that is (22 years old) is a
farmer. The second son is 25 years old and is bag net fishermen and the third son is Maung Nay Myo Aung he is 12 years old and is grade 9 and lives with uncle on the father side in Yangon. The oldest son lives in the same village. In the passed the husband and wife worked as farmer – but now they work as bag-net fishery. His eldest son still works as a farmer. This is their native village. They change from farmer to fishermen because they think they can get more money by fishing – they changed at 2011 (could be because of FAO fishery) he has 4 years experience in bag net fishery – he has two bag nets and two boats – total of three boats, 2 fishing boats and one passenger boats. She can’t remember exactly the length of the fishing boat. The passenger boat goes from bogalay to this village. This boat does the trip daily. One passenger needs to pay 2000 K for one way – to go both ways you need 4000 K. From Da-min-naung village (further north_ the whole trip is about 5000 K (which is very far away – so this is a suitable price) but this the other price of this passenger boat is too pricey (NNO thinks). He catches various fishes and prawns – he catches one vise to 30 vise per day – very lucky to catch 30 vise – generally he only gets about 8 or 7 vise daily. She said that during nargis – the entire village was destroyed except one monastery and one house. After nargis, the villagers and local people and NGO, department of forestry plant the mangrove trees in both western and eastern pyin boe gyi at the same time – so now the you can see more mangroves since they have grown a lot. One vise of shrimp/prawn is 4000 K – she sells to bogalay at buyer (the best buyer – different buyers – due to the FAO presence). He pays 100,000 to FAO per year, for two bag nets. Her husband catches various kinds of on pyin-boe-gyi creek – with the bag net. He gets little amounts of fish now because farmers are using the chemicals in their farms and these chemicals flow from these paddy fields into the creek and kill a lot of these fish. Most of the villagers are farmers, shop keepers, ba-win, so not many are bag net fishermen. In this village there were no crab trappers. There is one clinic, one primary school, one monastery, and one storm shelter (built by UNDP). Many NGOs came to this village to share knowledge on how to cure diseases from dirty water and also for health – and dengue fever – CARE Myanmar was one of these NGOs. Many NGOs donated to this village, food, clothes, water. The wife gets drinking water from the lake near the monastery. (ecotourism) she doesn’t know not to cut mangrove trees- she buys wood for fuel. She got the FFI stove – she has experience about tourism – she sells some fish to tourist (don’t know when) – she has no idea about the home stay program – after NNO explained, she said that she would welcome tourist because she can get daily income from this program. She can sell fish curry to tourist and prawn salad. She said that she wants more electricity and doctors for her health. Now there is no doctor in this village – only nurse. The bag net costs about 400,000 K – the length is 105 feet, the width is 80 feet of the bag net.

What is the name of the fishing ground? The name of the fishing ground is the name of the village. Operated by FAO
Ask the price of these boats? 1000 dollars for the passenger boat.

2. “Name 49” (67 Yrs), Grade (7) + wife is (62 Yrs), Grade (3)
   Their native land is Pyin-boe-gyi Village, his parents and parents in law are farmers, and they have 6 children, their main business is farming and net selling and preparing. They possessed (50) acres of paddy fields near the village and one acre produced (45 Tin), one tin for (9000 Kyat). They sold at Bogalay and local village for germinating seeds. They have no workers and worked together with their sons and daughters. They sold fishing net local villages a new one and second hand. Depend on the various types and kinds of nets they got a lot of monthly income. He plants the Khun-ni-ma and paw-kyat species. After harvesting, wife stored outer seed coat of rice for fuel. So this family does not cut the mangrove and other woody plants for fuel. This couple has good idea for environmental protection and ecotourism. Their points of view are “We have clean toilet, neat and tidy bed room, living room and kitchen. So we will happy to invite tourists for home stayed and village stayed, he can explain and demonstrate about farming and net making and preparing the old one”.

1) First daughter (42 Yrs) + ♂ (Shopkeeper) Pyin-boe-gyi, education is Grade 5
2) Second son (39 Yrs) + ♀ (Farming) Pyin-boe-lay, his education is Grade 6
3) Third son36 Yrs) + ♀ (Farming) Pyin-boe-gyi, education is Grade 4
4) Fourth son (33 Yrs) + ♀ (Farming) Pyin-boe-gyi, his education is Grade 4
5) Fifth daughter (30 Yrs) + ♂ (net seller) Pyin-boe-gyi, her education is Grade 4
6) Sixth son (27 Yrs) & single (Farming) Pyin-boe-gyi, his education is Grade 4

VILLAGE #13 – KANT-MALAR-CHAUNG (LIMITED AREA CREEK VILLAGE)

Apparently this village is notorious for illegal fishing and crabbing and cutting mangrove wood in MKWS (FFI source – Than Zin Zun? – young one)

1. “Name 50” – 32 year old – village leader and his wife is, 29 years old. They have three children, three daughters ages 12, 8, 5 grades 6, 3, 1. His education is grade 9 and his wife’s education is grade 5. His parents were fishermen, but no longer. He is a fishermen and uses drift net. His father stopped fishing at 48 years old due to their age and health. He started fishing 8 years ago. Before he didn’t work – he just started working when he got married.
   The length of his drift fishing net is 1000 ft and the width/mouth is 7 feet. The mesh size is one inch. The length of boat is 18 feet length 4 feet wide and 2.5-3 feet deep. Honda engine of 6.5 HP. They buy their nets in Sat San 9the big village on the north east side which is the equivalent of Kadon Kani in terms of importance for fish landing and big ports for the west side.
They use different kinds of fishing nets according to the season. In the rainy season they use a plastic net that they buy new one each season because you can’t fix it when it breaks and it wears and tears to easily. It’s about 250,000 K for the 1000 ft plastic fishing net and this comes with the plastic floating balls attached to it. The mesh size for the plastic nets is 1 inch.

After the rainy season, they change to another kind of fishing net – this is made with cotton and is 500,000 K – but you can use it up to 4 years and you can fix it. These are the nets we saw being fixed by the local men when first coming to the village (on tape also – this village also in the FAO projects – add video or picture here). The fishing net for hot season has mesh size of 3 inches. They use different nets according to different season:

Rainy: May – Sept: 1000 feet long, 7 feet wide, 1 inch mesh size, made of plastic, 250,000 K for new one – targets mostly threadfin fish.

Hot: Feb-April: 600 feet length 6 feet wide, 1.5 inch mesh size – made out of cotton or nylon, mostly targets croaker fish – this net they buy second hand from offshore fishing boats for K150,000 since they cant afford to buy new ones – so they just buy second hand and then fix it after buying.

Cold: Oct-January: 600 feet length and 18 feet wide: 3 inch mesh size – made out of cotton and nylon- targets mostly hearing and big prawn, puffer, mullets and rays, 500,000 for a new one but can last up to 4 years.

The hot and cold seasons are the most income for fishing.

He buys his boat from Mawlamyine Kyun. There are a few houses there that sell boats. His boat cost about 110,00 K but this was 7 years ago so he is sure that the boat prices now are much more expensive. Some boat shops in Bogalay, but its cheaper to buy in Mawlamyine Kyun.

His boat is made of Taung Sagaing – evergreen forest wood. If he needs to fix his engine, then he goes the Sat San since there is a mechanic there.

Before FAO, there was a tender system. There were three tenders: U.T.Than (from sat san), D.T.T. (from Sat san) and he forgot the name of the third tender. Three years ago they would sell their fish to three main fish buyer in Sat San village: K.Phoe, O.U. Kyin and KT. Htun.

Now they sell to fish buyers from this local village: U.T.A. and D.W.W. – because they can get more money from these local buyers.

Prices during different seasons:

Rainy Season:
Threadfin 1 vise = 4000 K male threadfin and 1 vise = 8000 K female

Cold season:
Hearing 1 vise= 1 fish = 30,000 K
0.8 v- 1.0 vise = 20,000 – 25,000 K
0.5 vise – 0.8 (not including 0.8, less than) vise = 12,000 K

Hot season:
Croaker: 0.01 vise 200 K
   0.15 vise 300 K
Big Prawn: over 0.15 vise = 4300 K less than 0.15 vise between 2000-3000K
Rays: dried rays and they don’t sell locally

***all this information was for drift net fishing – not bag net fishing ** which there is no tender system and they only have to buy their license from DOF. They pay 5000 K for one fishing net to DOF – so they pay 15,000 each year since they have three different nets depending on the three seasons. They drift their nets nearly one mile down south the river and then drift back up north – for hearing they catch more fish going S to N, but during low tide they catch more going north to south. They do this four times a day, total of 7 hours. This requires 1 liter of petroleum, which is 1000 K

8 years ago, about 20-25 fishermen and there are only about 15 fishermen because the investment to fish is increasing but the catch is decreasing. 8 years ago he could catch 8 vise a day and now only about 3 to 4 vise – which is the max.
most bag nets are in the shallow water and he mainly fishes in the deeper water with drift net, so there is not much conflict between the two types of fishing/fishermen.

For the bag net fishermen – kyat-pa-sat (tiger mouth) – this was the big FAO project on tender system. Bag net always creates problems with villagers so FAO came to help. Fishermen sell their price for less (7000) when selling to tender instead of 10,000, which they could get in bogalay market. Also they would cheat on the weight so if they had one vise, the tender would only weight 0.8 vise. Also, there isn’t just one tender, there are levels of tenders, all these middle man profited in some way or another and left the fishermen with very little. FAO now made it so that the bag-net fishermen can directly sell for the market price.
There are currently 40 FAO members in this village, 10 of them are bag net fishermen. 70-80% of these members are fishermen, some prawn, some crab trappers, but FAO members are people who are interested in joining this project – they must pay 500 K a year to participate. This also creates a type of fishing coop, which is unique to Myanmar’s coastal waters (as we have observed so far). These 40 members know which are the best fishing spots, the best fishing areas, all benefits from being part of FAO project (similar to being part of certain
committees like the ICCAT and things like… same concept – use this as an example when presenting).
The village chooses 9 members to be the head of the committee – they are the ones that solve the problems and set the price of each fishing ground. Villagers elect these 9 members and they don’t necessarily have to be fishermen, they are re-elected yearly.
The most expensive fishing ground is 100,000 K – there are 2 of these types of fishing grounds. The second category is 80,000 K – five of these fishing grounds. Third type is 65,000 K – 6 of these fishing grounds. These fishing grounds are spread out throughout the different villages on the east coast (double check the exact numbers and price with FAO document).
This village has 2 fishing grounds – one fishing ground has 7 bag nets and the other fishing ground has 6 bag nets – total of 13 bag nets – so if there are 10 bag net fishermen in this village, one or two of them must own more than one bag net.

2. “Name 51” (54) and his wife is (51) his education is grade 4 and her education is monastery education. His native town is Kha-yan-thone-kwa in Yangon region. And her native town is this village. They moved to this village over 30 years ago. They have 6 children. The eldest daughter is 32 years old and is already married and she lives in this village, works as a general worker. The second son is 29 years old and is already married and is a bag net fisherman. The third passed away in Nargis. The fourth son is (26 years old) he lives in Yangon and works in a beauty salon. The fifth daughter is (15) grade 10 and the boarding school in Set-San. And the 6th son is 11 years old and he is grade 6 and also is a boarding school in set San. Name 52 a fish buyer and bag net fishermen also. He has his own boat and five bag nets. The length of this bag net is over 100 feet and the mouth is about 10 feed width. One net is 400,000 K. He is also a buyer so he collects from other fishermen to sell from Bogalay. 8 fishermen sell to him. From April – October – he catches a lot of fish and prawn in the eastern part of Bogalay River. Kant-Malar-Chuang has 13 bag nets including him. FAO and department of fisheries work together (new tender system) and they also take care of the license. He pays FAO and dep of fisheries 300,000-400,000 per year per bag net, this also includes the license (with an interest rate of 10 percent). This village also has Green Peace project (like Bilu Island). This project supports the fishing nets, fishing boats, crab trappers etc. They also support chicken, pig, hen for animal husbandry. The primary school teachers are paid by Myanmar Heart NGO and UNDP – they also support underground water system. (ecotourism) he knows very well eco-tourism because he has seen many NGO? (perhaps confusion between the two) NNO explained him the differences and he would welcome tourist - he knows the officer of department of fisheries in Bogalay – his name is UT Htike – this is the officer of the department of fishery in Bogalay. IN this village, here are about 40 fishermen – 13 bag nets – so the other fishermen do long line, drift net, ba win, crab trappers.
After nargis, FAO support all the 176 households in this village – and gave one baby pig and 15 ducks to each household.
What is the length of his boat? 12 feet long, 2 feet width, 1.5 depth and 4 hp engine Honda. Boat is made by teak. He sells to buyers in bogalay and Yangon – but he sells o the best price.
How much is license? This is included in the bag net price.

3. “Name 52” (32 Yrs), her native land is Kant-ma-lar-chaung Village, her education is Ba-ka level. Her husband is (34 Yrs), his native land is Za-lun Village, and his education is Ba-ka level. She lived in this village since 2000; previously she lived in Za-lun Village. She moved Kant-ma-lar-chaung Village because of her parents called for her business. She is a general worker. Her husband is a crab trapper. He has 50 crab traps; he bought small fish and shrimp for crab food in local village. He sold the crabs to crab buyer at the village. He took a loan from buyer U Than Maung who gave 250000 Kyat per year. Her daily income is about 4000 Kyat and her husband got 2500-4000 Kyat daily. She has four children; 1) (12 Yrs), Grade (6); 2) (8 Yrs), Grade (2); 3) (5 Yrs), Grade (1); 4) (5 Yrs), Grade (1) [they are twin]. After Nagris, she got a lot of supporting from different NGOs, local and central government. She has seen many foreigners together with NGOS. She cut the mangrove for fuel and selling as firewood. She has small boat (6 × 1.5 × 1) made with timber and without engine. She has no idea for environmental conservation and ecotourism. After my knowledge sharing, she told me “I want to sell food and snack to tourists because I can get a lot of money”.

4. “Name 53” (54 Yrs), her native land is Kant-ma-lar-chaung Village, her education is Grade 6 and her husband is (49 Yrs), his native land is Dala, near Yangon, his education is Ba-ka level and now he is a monk lives in Yangon. She has five children, 1) (34 Yrs) + ♂ (crab trapper) Kant-ma-lar-chaung, her education is Grade (4); 2) (32 Yrs) + ♂ (crab trapper) Kant-ma-lar-chaung, his education is Grade (3); 3) (28 Yrs) + ♂ (housewife) Yangon, her education is Grade (5); 4) Ma Nandar Win (22 Yrs) (general worker) Yangon, her education is Grade (7); 5) (21 Yrs), (crab trapper), Kant-ma-lar-chaung, his education is Grade (8). She has small shop sold different kinds of dry and fresh goods. She bought required goods from Bogalay and Ka-don-ka-ni. She got 2000-3500 Kyat from this shop. She possessed (100) crab traps and selling to crab buyer at Bogalay. Her sons trapped the crab from Mein Ma Hla Kyun and around the village. Her sons have temporary license for crab fishing at Mein Ma Hla Kyun, one trapper for 8000 Kyat paid to Department of Forestry every year. She got 4000-6000 Kyat from crab selling. She used fish for crab food, one vise for 2500 Kyat’s. She has small boat (9 × 2 × 1.5) made with timber and without engine. She cut mangrove from Mein Ma Hla Kyun for fuel. Her son has an idea for ecotourism. His point of view is “This is good news for me because I would like to take many tourists my taxi boat around the island and show the mangrove and crocodiles. I can get daily income from tourism but I can’t speak English. If this business is okay for this region I want to try speaking class at Bogalay”.
5. “Name 54” (35 Yrs), his native land is Pyin-boe-gyi Village, his education is Grade (2), and his wife is (51 Yrs), her native land is Kant-ma-lar-chaung Village and her education is Grade (3). In the past, they lived with their uncle at Bogalay and moved this village after Nagris for business. He worked as a general worker at fish buyer in Bogalay. Now he has one drift gill net especially catch herring fish. His experience is about 8 years. The dimension of the net is length = 300 ft, height = 24 ft, inner mesh size is 3 inches; outer mesh size is 18 inches. The new drift gill net is about 400000 Kyat. He has own boat (12 × 2 × 1.5) made with mangrove wood and 4 hp Honda engine. The new boat for this size is 130000 Kyat without engine. He caught herring fish from September to February. One fishing season he got about 500000 Kyat. He paid 80000 Kyat for net license within one season. He has 2 crews, one crew for 25000 Kyat per month. He has five children, 1) (18 Yrs), his education is Grade (8), general worker, live in Yangon; 2) (15 Yrs), her education is Grade (5), now she helped her parents at fishing, 3) (15 Yrs), her education is Grade (6), she lives in Yangon with her aunty from mother side and works at cold storage plant. 4) (13 Yrs), Grade (4) at Kant-ma-lar-chaung Village, 5) (11 Yrs), Grade (2) at Kant-ma-lar-chaung Village. He has idea for Environmental conservation but no idea for ecotourism. He has experienced for Environmental protection from NGOs workshops and seminars. He knows cause and effect of deforestation but he cut the mangrove for fuel.

VILLAGE #14 : Aung-CHAN-THA- (near Set San) AUNG=FAMOUS, AND CHAN-THA= WEALTHY (WEALTHY AND FAMOUS VILLAGE)

1. “Name 55”, 44 years old and his wife also 44 years old. They have three children, the daughter is married and lives in Yangon as a general worker, and she is 20. The second daughter is 16 and is in grade school and the third son is 9 years old and is in grade 5. Both of their native town is Oak Kyut, near Bogalay Township. His parents are also general workers in this village. They both have an education of grade 5, him and his wife. He was a farmer in his native village but he couldn’t afford to keep farming so he moved here. He has been here for 18 years. He is a fisherman and a general worker, and farmer. He has one boat with no engine, 24ft length, 4 feet wide and 2.5 feet depth. He only uses long-lining so he catches small dwarf catfish and other various kinds of small fish. He uses small shrimp to catch these fish on his long line hook. The length of his long line is about 500 feet. He goes two times a day fishing and uses about 1000 K worth of shrimp for bat each day.
During the hot season he makes about 4000 to 5000 K worth of small catfish – during the rainy season he catches very few catfish and mostly local name species known as “Nga-zin-yine”.

During the cold season he catches mostly “Nga-khu” local name species.

He sets his long-line and bait (small shrimp) and then he fishes for about 30 minutes away from the village – each trip is about 6 hours, does this twice a day, morning and night.

His income is very irregular during the rainy season, some days he makes nothing, max about 2-3000 K – same for cold season, very unstable income.

He has eight brothers and sisters, 4 younger sisters and 3 younger brothers – but his 4 younger sisters died in margins. He is the eldest.

One of his younger brothers is a farmer in Hoe Twin village and has 18 acres, and the other brother is a general worker in Pyar Chaung Kyi.

He says that there is no tender system in this village, they only pay for a bag net feed to DOF. He doesn’t pay for a license for his long line hooks though.

Hearing net, ba win net, pike net, all don’t require licenses. The pike net is mostly for prawns and small fish.

His wife sells his fish around this village. He said there is no one that goes to the protected areas to go illegal fishing or collecting crabs, people here only go along the river bank and close to the village.

When asked about environmental protection/conservation, he said that he doesn’t really know much about it but he has seen that FD planted about 4 acres of mangroves and villagers participated in this planting – but they were paid 3000 K per day to plant. So this is a type of community forestry – yes – but not voluntary, nor was it an incentive of the community – it was more the FD asking the villagers to participate. Another 2 acres were planted in the north of the village – the four previous acres were planted in the south.

This village is divided into two parts – he says that in his part, no one has heard of the FFI workshops but he has heard about it from the second part of the village that attended the workshop in Bogalay – but he doesn’t know what it was about.

He knows to protect the environment because FD and he also knows about the stoves, he heard about the stoves from the person who attended to workshop and they taught him how to use it.

When we explained eco-tourism and the development it could offer – he would want to expand his fishing and save more money so his wife could open up a small shop. He would so take foreigners with him to go fishing if they wanted.

NNO explains the ba-win fishing – it is used mostly in this region – not in Mon State. It is a net that is parallel to coast – during the low tide, the fishermen insert the bamboo poles at the bottom, when the second low tides comes, they come back to collect the trapped fish – they only collect one time a day – the water levels get so low that the fish barely have any oxygen so its easy to scoop them up with hand (video of this during second trip in august- you can add here.)

Depending on the length of the net, they need at least 40 bamboo poles.
2. “Name 56” – he is 26 years old – his education is grade 5 – he comes from Boglay. His wife is 26 years old – her education is grade 5, and she comes from Set-san village. They moved to this village over 7 years ago after Nargis. They have two children: the first daughter is 6 years old in grade 2. The second son is three years old. He owns one ba-win pike (pike=net). The length is 1000 feet and the height is 12 feet. They set the net at high tide and collect at low tide twice a day – he collects various kinds of fish and prawn at about 3 to 6 vise daily (the price per vise depends on fish species – threadfin is the one that gets the most amount of money, and anchovies is the cheapest fish) – and he sells to Set san to fish buyer, and the smaller fish he sells to the small neighboring houses in the village. His daily income is 5000-6000 K, sometimes more. A new ba-win pike is 140,000 – he repairs his ba win twice a month. This village only has one primary school, over 100 students and four teachers. His wife sells the small fish locally, and sometimes she sells other vegetables to the village. (ecotourism) he has no idea about ecotourism but he knows about environmental conservation – because he attend the seminar in his village – from the department of forestry – and he also knows how mangroves protect from natural disasters. NNO shared the knowledge on eco-tourism and he would welcome tourist. He had an idea – which was to increase the living standards and cleanliness of house – he also thinks he needs a fan (very simple idea).

2. “Name 57” (48 Yrs), her native land is Mya Tha Village, her education is Grade (3) and her husband is 51 Yrs, his native land is Mya-Tha Village, his education is Grade (4). They stayed at about 10 years. She has nine children;
1) (32 Yrs) + ♂ (general worker) Mya-tha Village, her education is Grade (5)
2) (28 Yrs) + ♂ (general worker) Mya-tha Village, her education is Grade (2)
3) (27 Yrs) + ♂ (fishing) Set-san Village, her education is Grade (3)
4) (24 Yrs), (crab trapper) Aung-chan-tha Village, his education is Grade (3)
5) (22 Yrs), (crab trapper) Aung-chan-tha Village, his education is Grade (4)
6) (19 Yrs), (crab trapper) Aung-chan-tha Village, his education is Grade (4)
7) (16 Yrs), (general worker) Aung-chan-tha Village, his education is Grade (3)
8) (13 Yrs), Aung-chan-tha Village, Grade (4)
9) (8 Yrs), Aung-chan-tha Village, Grade (2)

Her fourth, fifth and sixth sons are crab trappers in the mangrove forest near the Mein Ma Hla Kyun by 150 crab traps daily with their own small boat (9 × 2 × 1.5) made with timber and without engine. They sold crab to crab buyers UZT and UMZ at this village. Their daily income is 5000-8000 Kyat. They bought crab food from Ka-don-ka-ni, one vise for 3500 Kyat. They have no identity card for crab fishing. They also cut mangrove for fuel. She has no idea for ecotourism but know well environmental conservation. She got many knowledge and experience, how to protect the mangrove and land from NGOs seminars. After my explanations about the ecotourism, she told me that “she heard information from
her daughters; tourists prefer crab and also she would like to sell crab curry to tourists”.

3. “Name 58” (46 Yrs) and his wife is (55 Yrs). Their native land is Aung-chantha Village and they have no education. He has four children (3 children are passed away during Nagris). 1) (20 Yrs), crab trapper at this village, his education is Grade (5). He has own boat (12 × 2 × 1.5) made with timber and 5 hp Honda engine. He is a crab buyer. His standard crab sizes are: John (100 gm), Cho (150 gm), Male special (250 gm), Female special (150 gm) and general (80-90 gm) etc. He gave the loan to eight crab trappers, one trapper for 200, 000 Kyat every year. He collects the crabs every day and then he sold to Bogalay and Yangon. His monthly income is 300, 000 Kyat. His wife sold the small crab at local villages. He doesn’t cut the mangrove and used diesel stove for cooking. He attended the how to make the mein ma hla kyun stove organized by FFI in 2013. After Nagris, he received many supporting from local NGOs. He has idea for ecotourism, his point out of view is “he can offer food and house to tourists and explain his business if they want”.

Village # 15 - kone-tann-pauk (east) (DRY LAND VILLAGE) KONE TANN=DRY LAND – GOOD TRANSPORTATION VILLAGE

1. “Name 59” – leader of the village. He is 52 years old and his wife is 47 years old. He has an education of grade 5 and his wife has an education of grade 6. He has 4 children. The first is 26 years old, he is a small buyer of fish and prawn and also has an education of grade 5. His second daughter is 23 years old, her husband is a bag net fishermen. She had an education of grade 4. His third son is 21 years old and is a bag net fishermen, his education level is grade 7. His fourth son is 13 and is a student in grade 7. This village has post-primary school – When they take the exam, and pass, then they go to A Si Gyi village for the high school. His native town is A Shaye Pyar, Bogalay Tonwship. He came here over 20 years ago. He became leader in September 2014. Parents are from bogalay and sold firewood. He has 4 brothers and sisters. The elder sister died. The second brother works in animal husbandry of duck and chicken in this village. And his youngest sister works on buying and selling iron in Bogalay. He is a fisherman – the length of his boat is 18 feet, the width is 5 feet, depth is 2 feet, the length of his bag net is 90 feet, and the mouth is 60 feet wide. The front part of the net is 1 inch mesh size, middle is 0.6 inch, and at the very end its 0.2 inches. Mesh sizes of the three different sections of bag net. The poles that he uses are 8 feet end the depth of the water is 18 feet. He usually catches small shrimp and big prawn and sometimes puffer and crab but most cat fish and eel. He also catches small fish with the local name of yay-kwingar, which they don’t sell and eat locally in the village.
During the rainy season, which is the best for him because he gets medium size prawns, hot and cold season are bad and equally bad for income. They don’t catch during the neap tide.

During the rainy season he gets 16,000 K per day and during the hot and cold season he can get a max of 7000 K.

Prices of his catch:
4 inch prawn – 1 vise = 10,000 K
1.6-2.0 inches – 1 vise – he gets 4000 K
less than 1.6 Inc – 1 vise – 3,000
smallest prawn – 1 vise – 2,000

he sells these fish to his son, who collects around the village, and then his son sells to the brother of the fish buyer – he sells to the brother because the brother lives in bogalay and the fish buyer lives in Yangon. The fish buyers name is Ko.T.W and his wife is MP. Pote – but they sell to the brother in Bogalay, whose name is Ma Wah – he chooses to sell to him because he offers the highest price.

There are 20 bag net fishermen in this village – they do have the FAO + DOF tender system project here too. There are 33 total fishermen, but 13 of them are drift net or crab trappers.

There are three fishing grounds here:
-A Shaye Kone Tan Pauk – has 9 bag nets
-De Doke Kyun “lower ege” – 3 bag nets
-De Doke Kyun “upper edge” – 8 bag nets – he fishers here and he has two bag nets.

These fishing ground are 90,000 K per year – which includes the license for their bag net, so he has two bag nets so he pays 180,000 per year.

This project started in 2011 and he joined in 2013. Before this there was a tender system and the tender was in Bogalay – he had to pay this tender more than 180,000 (don’t know exact price) so he says that the FAO tender system is cheaper.

Before he joined the FAO project, he cut down mangrove trees for wood in MWKS and people from Bogalay and other townships bough from him, but FD caught him so he stopped. He got a warning, but he knows 4 other people from this village that do this also and still do it.

When he was selling wood, the price list is as follows:
6 feet poles = 150 to 400 K each. He would make between 1000 to 4000 K per day with cutting wood in MWKS. He did this for three years, first time he got a warning – the second time the FD kept is wood. Since he only cut down small shrubs though, he didn’t get in too much trouble, but he knows others that cut down big trees and have gotten 1-1.5 years of jail.

In his opinion he thinks that if he and the villagers cut down the mangroves, than the forest will be depleted and his future generations will not be able to see these forest. He also says its important for the birds, crocodiles, other spawning species of fish and their importance of breeding grounds. He also knows all this because of various organizations that have come to this village:
MEALS- protect MWKS
FFI – stove, bird watching, crab hatchery training
UNDP- road
Red Plus (?)
FREDA – reduce carbon use
Swan yee Development Association – for saving money micro-financing small loads for business.
Nobody from this village went to the latest FFI workshop on eco-tourism, but he had sent the most educated person from this village to go to the stove training workshop and then they came back and taught the rest of the village about information learned.
When asked about ecotourism, the leader didn’t know about this but a person next to him (during interview) knows about eco-tourism and said that he would like to take tourists around and show them the village. Then chuchu explained more about ecotourism, and the villager said that it’s best for tourist to come in the cold season or hot season.
His idea was to sell Nepa fruit to foreigners, and sell with crab or boil.
He said that local stay would not be suitable during the rainy season since most houses are leaky roofs. There is a person here that grows 12 acres of mangroves > Kyaw Stan – and he hired villagers to grow with him for 3000 K a day. The earlier years, Meals tried to plant and give baby mangrove plants but it was not a success – there were 30 members in the MEAls project but no successful because some members cut plants to grow paddy fields – only a few mangrove trees remain.
He says that there is no community forestry.

2. “Name 60” - she is 32 years old (NNO thinks that she is very intelligent and very polite) her education is grade 8 – she comes from Poe Laung Gyi Village – her husband is (42) his education is grade 5, he comes from Mya-Tha village – she moved to this village 25 years ago together with her parents. Her parents are fishermen – especially in drift gill net – hearing fish. She has one child – and her daughter is Ma May Ywat War (yellow leaf, war=yello, ywat=leaf) – she is six years old and is in grade 1. Now her and her husband catch hearing with drift net in bog lay east river – the length of the drift gill net is 600 feet – for a new net the price is 400,000 K. Her daily income is 4,000K sometimes 15,000, sometimes 18,000. They have a boat of 14 feet length 3 feet width and 1.5 depth – 6 hp Honda engine. They catch the hearing fish and sell to bogalay – themselves. They go two times a week to sell to bogalay. 1 hearing fish of marketable size (35 grams) this is the smallest marketable size is 35 grams – some can get as big as 2 vise – they sell to the best buyer (different buyers.) At the end of the season they rebuild the net and rebuild the boat themselves – hearing fish only they sell.
They use about 3 bottles (water bottles of about 1 liter) each bottle is 3500 K so they use about 10,000 K a day for fuel.
They also have tender system – FAO and dep of fisheries together – there are about 10 -15 gill net fishermen. They pay 9000K per year for license, and they
pay 200,000 for the tender (but the tender is FAO and dep of fishery)******FAO and DOF organize four groups: bag net fishermen, drift gill net fishermen, farmers, and general workers**** FAO gives 100,000 loan to each of these people from these different groups – the interest is 2 percent (fix this, the one that says 10 percent – I think he meant 2). Her and her husband were able to pay back in 8 months.

(ecotourism) Swan- Yee spread awareness of eco-tourism and environmental conservation in 2013 in this village and she attended the seminar. They teach her how to protect the mangrove habitats, crab, fish, and prawn, important to keep mangrove forest – and then the tourist will come to see these – and so tourism industry will increase as they protect the environment and this will promote more economic opportunities. She had an idea for tourism industry. NNO asked her what her idea was? She told him that she wants to open a guesthouse – because she thinks that her toilet is a little dirty – but her living room is suitable.

3. “Name 61” (54) he comes from Ah-mar and his wife is (52) also comes from Ah-mar – they live together and moved to this village since 2005. They have three children – the first son is (30) and he is already married and works as a bag net fishermen. He lives together with his village in Ga-yat-gyi (near turtle island). The second son is (28 years old) he is already married and works as fishing in long line hooks. The third one is (24) and she is single, and now works as farming from her grandparents – in this village. Name 62 has 2 bag nets and one long line hook – the mouth length is 100 feet and the length is about 200 feet. His long line has 200 hooks – and the length is about 200 feet, and the hooks hang from 6 feet. He has 60 ducks. For one fishing season, he gets about 150,000 K for both long line hook and bag net hook combined. Every three months 80,000 K for selling duck eggs. He has no workers, because his second son helps him. His wife also helps him. He uses mangrove fruit for fish food > for the long line

Refer to the diagram that NNO drew about the different baits that they use for different seasons. For a new long line hook its about 680,000 K.

He mainly catches dwarf cat fish, one vise for 1500 K > he sells to Bogalay. He also joins the tender system with FAO and DOF – he pays 300,000 for the fishing ground : the name of the village (for bag net ) and he pays 250,000 for the long line hook. The long line hook is in a different fishing ground than the bag net. The bag nets are closer to the shore and the long line hook net is in deeper water (further from the shore) (doesn’t now the name of the fishing ground for the long-line hook)

** need to find out the different fishing ground between the long line hooks and the bag net fishery******

before being a fishermen he was a merchant between bogalay to ah-mar (fresh and dried products) – we don’t know exactly when he started fishing –
(NGO/ecotourism) he has received net and loan from FAO to start fishing – his family also has an FFI stove and he has four young plants of mangroves that he plants around his house. Each house got four plants. The department of forestry shared knowledge with him on how to protect the mangroves – he attended the seminars from FD. (eco-tourism) no idea - but when NNO explained - he confuses the tourist with ngo – but these tourist only stay for a short time, just a few hours, he wants ngo to stay in his village to continue to develop.

4. “Name 62” (27 Yrs), his native land is Ka-don-ka-ni Village and his education is Grade (9). His wife is (19 Yrs), her native land is Nyaung-tan Village and her education is Grade (6) passed. They stayed this village since 2009, after Nagris. He has two sons, 1) (4 Yrs) and 2) (4 months). He is a crab trapper and caught the crab from near the paddy fields and Mein Ma Hla Kyun. He has no identity card for crab fishing. After Nagris, he received 30 tin crab traps from ‘Care Myanmar’ and now he has 70 tin and bamboo crab traps. He gets 35-40 crabs daily. He has small boat (6 × 1.5 × 1) made with timber and without engine. He sold his crab to Set-san Village. His daily income is about 9000 Kyat. He used pat-kaung or mud skippers for crab food but sometimes he bought crab food from Set-san, one vise for 2000 Kyat’s. Local NGO, Swan-yae gave the loan in this village, one person for 200, 000 by 2% interest. He is one of the committee members of this NGO and also discusses other members for progress of their committee. He has an idea for environmental conservation, “I don’t cut the mangrove because these forests provide food, fuel, shelter, etc and the law also protects the mangrove forest. His wife buys the firewood from Set-san and I collected drift wood during the raining season”. His point of views of ecotourism are “he gets electricity and pure water resources someday he can receive home stayed and village stayed programs”.

5. “Name 63” (40 Yrs), his native land is Bogalay and his wife is (36 Yrs), her native land is Pyin-boe-gyi Village. They moved this village last 15 years ago. They have no education. They have two children, 1) (13 Yrs), Grade (6) at Bogalay BEHS No (1) and 2) (10Yrs), Grade (5) at Bogalay BEHS No (1), they stay together with their grand-parents from father side. Name 64 is a farmer. He has 50 acres and one acre gets 40 tins and one tin for 8000 Kyat. He selected the Khun-mi-ma, Bay-kyar and Ma-naw species for his paddy fields. He sold to Bogalay for his rice. He has three workers and one worker for 25000 Kyat per month. During the planting and harvesting season, he needs many workers. After Nagris, he received many supporting and techniques from local government and NGOs such seeds, tractor, engine and fuel. He cut the mangrove for fuel. He has no idea for ecotourism and environmental conservation but I explained between the NGOs and tourists. His point of view is simple “he want to speak English”.
This is the interview with the chubby guy that I have picture with under the snack shop – super nice guy – include here.

1. “Name 64”, 21 years old, grade 10 education at A Si Gyi and his wife is 22 years old, grade 7 education. Pone Ta Yeik is his native village near Sat San village. They have one baby girl that is one year old. He has five brothers and sisters including him. Eldest sister is 26 and has duck husbandry in this village. The brother is 23 and lives in Yangon and works in telecommunication. Other brother is 18 years old and is a shop keeper in this village, especially dried goods. The fourth brother is the youngest and is 3 years old – lives with his parents. His parents are the leaders of the village.

He is a bag net fisherman. The length of his boat is 21 feet, 4 feet wide, depth is 3 feet and he owns two bag nets, he started fishing in 2013 and before then he didn’t do anything. He decided toss tart fishing after he got married. His father is the tender of the small creek here but FAO is the main tender for the river side. He is the only on that fishes in the creek, he owns one bag net and ones one small bag net that he uses in the creak. The small bag net is 75 long and the mouth is 90 feet wide. With mesh size 1.6 inch in the front 1 inch in the middle and 0.6 in at the end. His big bag net is 150 feet, the width is 150 feet also. From the small bag net he gets mostly sea bass and small shrimp and medium size prawn, dwarf cat fish and various kinds of small fish. From the big bag net he gets medium size prawn, croaker, cat fish, dwarf catfish, anchovies.

This village has three fishing grounds:
1. Yaw Chaung – 10 bag nets
2. Da Min Naung – 8 bag nets
3. Kwin Thar Yar – they didn’t catch in this one because there are too many waves.

****They pay 70,000 K for one bag net including the license to the FAO plus DOF tender system. There are nine people in this village that are in the committee. They give the money to the committee and then they bring it to Kan Baw Za bank in Bogalay (KBZ bank) see everyone here. ***this is important since this is how they manage their money – first time we hear about details like this.

Before the FAO project there was also another tender in this village, but he wasn’t fishing at that time so he doesn’t know.

The FAO project is trying to stop overfishing he says – they said that before this, their old tender would allow them to fish as they like, with no limit and during whichever season. They decided to join this project because if they didn’t join then they wouldn’t be allowed to fish in the FAO set fishing grounds. But under these rules they can’t fish from April to July due to weather also and FAO rules – but now they work as general workers or crab catcher.
Some fishermen go to other wares during the closing time, and these areas are under another tender person – this is know as Pa Ti Creek – only one fishermen from this village continues to fish in this creek during the closed season (while we were there) but they don’t judge him, they don’t think anything special of this.

The FAO project limits only one bag net per person – which he thinks is a disadvantage of the FAO system (although in other village we saw fishermen with more than one bag net?) before FAO they could only sell to one person so this is the disadvantage of the old system. The main advantage of FAO is that they can sell to whomever they want now, he sells to the best price, mostly in Bogalay and Yangon. They get fresh fish and fresh prawns and their wives and kids dry the fish and prawns, they don’t use any chemicals to dry the fish and prawns.

Technique of drying:
They first boil shrimps with salt (not the fish) then they dry fish with the sun. they sell the swim bladders of croakers:
Price
1 vise for dried shrimp is 18,000
1 vise for dry croaker is 3,500
1 vise for anchovies – 800-1000
swim bladder 1 vise – 70,000

KPS is the fish buyer comes from Bogalay to buy the dried fish and prawn – he calls ahead and tells how much he needs, his father also brings them to Bogalay to sell. They get more money than the older tender system doing this. They still see the shrimp and prawn stock decreasing though but they hope that in 5 or 10 years they will see more again.

They have also seen other NGOs:
FREDA
Ecodev
Care Myanmar
MEALs
FFI
UNDP
Veterinary Association
He learned about the stove, crab, and bird watching. They chose HS students or people that were interested in this workshop and then they came back to teach other villagers. He attended the FFI eco-tourism workshop. He then made a meeting to tell villagers how to get incomes from foreigners, he said local house must be prepared for tourist and if the foreigner want to see the farming they can also show them around and the villagers can also sell food to foreigners and get more income. 10 people do duck husbandry, between 100-500 ducks.

This village also has Ta Saung Mone – traditional music. Which they play during their three different festivals in March, November, and April. The marul festival is called Ta Boung festival and the water festival in April is called
Thin Gyan – don’t know the name of November festival, must find out. 6 people in this village play the traditional instruments, which are flute, bamboo clap, and a drum that is made out of rubber and the skin of cow and water buffalo.

They have 1,200 mangrove plants in 3 acre – they used to have 7 acres and now only 3 because of erosion of the bans.

This was planted with FREDA in 1909 and with villagers. They know to plant mangroves to protect from small and big storms; they also will plant so that they can use the small branches for fuel wood.

Mangroves have many aerial roots so it’s difficult to plant them near working farms and paddy fields- but if they plant them far farm farming then he thinks this is possible.

He says only a few people use the small branches from mangroves of MwKS, but only the small branches that naturally fall from the wind or other cases like that. During this time from April to July, they farm or do small farming or cast net in small artisanal fishing methods, or crab trapping – they go near the river banks or channels by the A Mar township road. They eat this locally for their families.

2. “Name 65” (41 years old) his wife is (43) he comes from Pain-nae-chaung village and she comes from Aye-yar village. He only has one child. She is 12 years old. She is grade 7 student. She attends post-primary school in this village. He came to this village about 12 years ago – before he was a general worker in his previous village, his wife too. Now he is a bag-net fisherman in Bogalay River. He catches various kinds of fish and prawns, and sells to buyers in this village and bogalay (sells to best buyers). In his village there are 16 bag net fishermen, and 50 crab trappers. FAO and DOF are the tender and license – all 16 bag nets fish in the Yway Chaung Fishing ground – the license for the boat and tender = 450,000 K per year. His boat is 9feet, 2 width, and 1.5 4 hp Honda engine – timber wood. His daily income is about 5000 to 8000 kyat. His wife is a house wife and sometimes she helps her husband to repair the net. He owns two bag nets, the length of the bag net is 150feet and the mouth is 90 feet. The price for a new bag net is 500,000 K – one net lasts about 3 or 4 years. He used to cut wood from Dei-doke island and Meinmhla Kyun – at night – and he still does this – he knows its illegal but he still does it. During the whole fishing season he gets 600,000-700,000 kyat. (eco-tourism&ngo) Ecodev, FFI, Coopera Zone, DOF, and FAO. The person he knows from ecodev is U Tin Myo Win. Another NGO, OIKOS institute – all of these NGOs came to this village to support various things (duck, pig, crab traps, fishing net, boat, etc). He knows very well the value of mangrove forest but he still cuts the mangrove for fuel – he admits to NNO.

VILLAGE #17 – DA-MIN-NAUNG
This village was walking distance from the previous village – we also walked since the weather condition was getting worse and the boat couldn’t make it any further south.
“Name 66” (this is the really bizarre man with the gold chain around his neck and little motorbike in the back of his house and really nice toilet, they clearly were doing something sketchy – must have picture of him as well – add here), 45 years old, and his wife is 43 years old. He has grade 9 educations and his wife has grade 10 educations. His native town is Pat Pwyar – he transferred to this village in 2010 for economic reasons. They have 3 children, the first son is at university at Ma U Bin University studying geography, in his first year, he is 22 years old. The second is 16 years old and is in grade 11 in BEHS #1 and the third is 9 years old and is in grade 2 – also in bogalay – they live with his mother in law. His parents are farmers. When he transferred to this village he started a small fish buyer and collected from other. In 2008, when he was in his native town, where he was also a small fish buyer and collector, he sold to MSKD – his friend in Bogalay. Now he sells to his friend in Yangon. He has been working as a fish buyer for 15 years and bought from local fishermen in his native village, then he sold to his friend in Bogalay in MSKD (name of shop) and his friends name is KKT. After 2008 he started to another person because he could get more money from these people then from MSKD.

So now he moved here and he bought 17 acres of land. He bought the land from DAK – this person is also from his native village – but he cant afford to farm the land so he rents it out for 150 tin per year to KMO, the person who rents his land, also lives in this village, and he grows two species on the farm; bay char and Achaon. He only uses the 150 for his family – not for selling.

He gets the most about of fish during the rainy season (since he buys from bag net fishermen) about 50 vise per day. During the neap tide of the hot season, he gets about 1-3 vise a day, during the cold and hot season at least 10-14 vise a day during spring tide – the prices that he pays fishermen are:

Croaker (based on weight) – more than 0.1 vise = 2000 K, 0.2 vise = 4000 K, up to 1 kg = 5,300-5,500 K, less than 1kg = 5000-5200 K

Prawns (based on size): up to 3 inches of 1 vise = 10,000 K, less than 3 inches of 1 vise = 7-8000 K, and for big/medium prawn smaller than that he pays between 3000, 3500, or 3800 based on their size.

He first sees the price on the daily news and then sells to Yangon. He uses the passenger boat to transport his goods to Yangon. This costs him 13,000 K per box for transport without ice, with ice it costs him 20,000 K per box.

He buys from fishermen in this village and surrounding villages but this changes a lot as fishermen can now sell to whomever they want, but he has 9 regular fishermen that sell to him, but they are from Pa Ti village – where they live in a temporary house.

Two or three of the fishermen that sell to him are also part of this FAO project. He says that the fish have been decreasing but the price has been increasing. He sells according to the price in bogalay.

His wife sells clothes, only to this village she buys the clothes from Yangon and bogalay and sells it to the villagers, but the villagers only buy from her
when they can afford which is during the very good fishing season or harvesting season. She buys the raw materials then sows, has sowing machine at her house. She buys for about 1000 K and sells to villagers for 2000 K. He knew that MKWS was a protected area, even before he moved here from his native town. He doesn’t know any of the ngos that have come. He says that villagers will keep using the wood and crab around the protected area, even if they know it’s protected, because they have to support their livelihoods. In regards to eco-tourism, since he seemed pretty rich – he said that he would change his livelihood as needed, if they want home stay, he will build a house, if they want food, than his wife can cook. He didn’t seem that excited – humans are adaptable creatures… point and case.

2. “Name 67” (40 years old) and is from Kadone Kani – his wife is (40 years old) and her native village is War- Chaung – they moved here about 15 years ago. Previously he was a crew at the passenger boat in Kadone Kani. Now he is an owner of a passenger boat. He has four children, the eldest son is 12 years old and is at grade 7 at Set San – and he lives together with his teacher at set san. The second son is 11 years old and he is grade 4 – and stays at this village. And the third son is 6 years old and is the first grade. The fourth child is 5 years old. Now he has his own boat – the biggest passenger boat – length is 50 feet, width is 10 and 25 hp Honda engine. The price for this boat is 1500$ - made out of timber. One way is 2500 K so Bogalay to da-min-nauing 2500 K and round trip is 5000 K. (he is the owner and sometimes also the driver of this boat).

5 gallons for one way = roundtrip 10 gallons = 1 gallon = (12,000 K Myanmar measurement for one “gallon”) he has two crew for this boat – he pays 70,000 K per month. His wife sells fresh vegetables and dried products- so she has a small shop – her daily income is about 3000 K. She can also make clothes – she makes clothes – she learned how to make clothes since she was 15 years old (learned in her native village of set san) for one t-shirt for men is 1000 K. and one t-shirt for women is 700. He makes 150,000 per day (but he still has to pay fuel) 80,000 K per day after paying other costs – he also has a rice mill and billiard table. During harvesting season, some villagers come to use the rice mill – 1 tin for 1500 K. (same price for all the different kinds of species). (ecotourism) he has seen tourist and NGOs – sometimes some NGOs borrow his boat go to the turtle island. He has had this boat for about 10 years. he doesn’t remember which NGO borrowed his boat. His welcomes the tourist because they borrow his boat and he gets a lot of money from this and he can save the fuel also – tourist and NGO they go everywhere and they can use his boat – and he can save the fuel since they go one way – and he can rest while NGO use his boats. Sometimes he carries the charcoal to sell to bogalay (some people borrow hiw boat) so he knows that a lot of people cut a lot of mangrove trees. He thinks this is bad. He hasn’t been to any workshops – but his wife has been to the ffi workshop – but she has never seen kho maung soe
– she attended the workshop in bogalay and other villages – they didn’t come their village. She learned about the environmental conservation – stove.

3. “Name 68” (35 Yrs), her native land is Set-san and education is Grade (3). Her husband is (35 Yrs), his native land is Set-san and education is Grade (4). They stayed this village 20 years ago. They have four children; 1) (16 Yrs), her education is Grade (8), now she lives in Yangon with her aunty from mother side, 2) (11 Yrs), Grade (4), 3) (7 Yrs), Grade (1), 4) (5Yrs). Name 69 has 20 years experience in fishing. Now she is a crab trapper. She has 100 crab traps and his daily income is 3000-10000 Kyat per day. She sold to crab buyer at Bogalay. She takes a loan from crab buyer UHW at Bogalay about 300,000 Kyat per year. Her buyer supports for crab food and traps. She has no own boat. Sometimes she catches fish in Bogalay River with her husband. And then she sold various kinds of fish and prawns at local villages. She has small cast net, length is 15 ft, and height is 10 ft. She used mixture of rice and coconut for shrimp food. She always cut the mangroves for fuel and selling. She is very simple. She told me about the ecotourism “I don’t understand ecotourism but I know tourists, if I get money I want to wash the tourists’ clothes and sell coffee and Myanmar pan cake (bein-moke)”. She has no idea for environmental conservation.

Village #18 Htaw-Paing (Shwe-pyi-aye) Htaw=gold “Golden Village”
This village had the idea of selling hats made out of mangrove shrubs and wood

1. “Name 69” – contact number (confidential – off report) 52 years old, and wife is 46 years old, he has an education of grade 7 and she has an education of grade 4. He is the village leader. His native town is Tha-Byu-Gone in Bogalay Township. His wife native village is this village that we are at. He has been here since 1988. He transferred for better economic opportunity. His parents are farmers. Before he was working as a general worker his parents are farmers in this village. He is a farmer now too. He owns 50 acres, since 2014 June he started being the leader of this village. He grows 3 species of paddy.
Bay char – 16 acres- 50 tines per acre – 9000 K per tin
Khun Ni – 20 acres – 50 tines per acre – 8000 K per tin
Khun Ni Ma – 14 acres – 50 tines per acre – 8200 K per tin.
He sells in bogalay and sometimes in this village during harvesting time. He has four children. Eldest son is 27 and is married and is a farmer and lives here, education of grade seven. Second son is 24 and is married, sells mechanics for farming and fish boat engine and tractor. The daughter is 21 and is married. The last son is 12 and is in grade 7, in BEHS 2 living with his grandmother.
During harvesting time, some villagers from other villages come to this village to work, they come mostly from villages near Pathein **** this is also interesting, as we noticed that the east side had a lot more migrant workers as well******
They mostly come from the village known as Thar Baung and Ma-U-Bin which are about 9 hours away from here.

July – November is the planting – he hires 2-4 people, pays them 2500-3000K a day.

Harvesting starts in December, he hires 6-10 people, and pays 20,000 to 25,000 per acre.

He says that he has to hire people from those two villages because there are 1,400 acres in this village and not enough people to harvest, plan, since some villagers are crab trappers, fishermen, or go to Yangon to work.

In this village there are people that are bag net fishermen, 5 are drift net (mostly catch hearing) and 3 are duck husbandry, which have between 300-100 ducks.

There are two islands near this village that crab trappers use, and some fishermen as well with drift nets:
1. Law Ka Dat island
2. De Doke island (close to MKWS)

He says that some villagers go to MKWS to catch crab – but he says that FD gives permits to certain crab catchers, which allows to catch crab near those two islands (name as fishing grounds) as well as near the protected area. But they only allow them to go in certain areas of these islands, little creeks that go through the islands- same rules apply to fishermen, and they also can’t go during July and August.

FD asks 3000 K per permit to catch here, but most are crab catchers. – Kway Kway Nang – the FD ranger that was with us during the interview, confirmed this.

The bag net fishermen only have one fishing ground in this village and also work together with DOF and FAO – its 40,000 per bag net and license.

Fishing ground name
1. Htaw Paing (river)

Drift net fishermen pay license to DOF but he’s not sure how much. There is also a creek with the same name, HP, which has a tender – whose name is UMZ (heard this before) and has from Bogalay. When the drift net fishermen fish in this area they have to pay a fee but he’s not sure how much.

He says that there are no large problems in this village, he only solves the problems for teachers because there are not enough teachers so he reports to Bogalay.

With farming it’s the same problems of ownership seen/heard before. Other problems are with men getting too drunk and getting in fights.

There are 1200 people in this village, 61 are farmers – the majority farmers.

He grows 2 acres of mangrove trees but in 2012 they burned, so now he only has 190 plants, so he doesn’t want to risk to keep growing. He grew them because he is interested in growing plants and he can also get firewood from branches. There are two other people that plant mangroves: UShi 5 acres of mangroves and Ko Hla Wai – 1 acre of mangroves. UShi was the first to plant mangroves in this village and got others interested.
Two associations that came to this village –
Myint Thar – 2010 association
FREDA- 2009, farming and mangroves and how to protect invests in their farms.
U Shari Shi got the idea to grow mangrove forest from the FREDA workshops, then Ko Hla Wai started to be interested too.
There was one acre planted by community forestry but he doesn’t know the details.
FREDA mangroves are about 2 acres – the one we saw near the entrance of the village- must have footage of this too)
Kyat Phy Chaung Village, FREDA gave electricity and solar battery and Aye Chaung Char Yar village FREDA built 10,000 gallon water pon. NGOs have helped a lot so he has a positive opinion about them. He is not familiar with the FFI workshops.
He hasn’t received any invitations from FFI since he only began to be the leader in June 2014 – but has heard about the stove workshop in bogalay.
He just realized that his stove was from FFI, didn’t know the name FFI but he knows he really likes it because now he doesn’t need to use as much wood. In his opinion tourism will increase local income, he thinks this will help alleviate poverty.
There is a person from this village that can make hates from mangrove tree shrubs, this could be something to sell to villagers. He think it will be difficult without translators though, and its very rare for foreigners to come to this village, but as it increase they can alternate their livelihoods – he would gladly welcome foreigners to say in his house.

2. “Name 70” (31) he comes from Bogalay and has grade 9 education. His wife is (28) She comes from Toe-Gla village and also has grade 9 education. They have three children; the first one is (9years old) grade 3. The second daughter is (6 years old) grade 2. And the third son is (3 years old) and is in pre-school in this village. He moved to this village 17 years ago. He is a mechanic and repairs tractor, boat engines, various types of engines – all types he repairs.
There are two workshops in this village – he owns one of them. The name of his workshop is “Aung Ko” Workshop. He gets 40,000 K to repair one tractor engine – and he gets 25,000 K to repair boat engine. He started owning this workshop in 2011 – and before he worked as crew in passenger boat. In 2011 he attended the training school in Yangon – technical training school (government school) to learn how to be a mechanic. This school has an MOU with Japanese government. This training school is Ywar-tha-Gyi Technical Training School – this school is under the Ministry of Industry #1. In this village, there were five villagers that were selected to attend this training school – the village leader selected these people. Now he has a certificate from this training school and now he comes back to this village and works on workshop. He repairs about 10 boat engines and 30-40 tractor engines all year round. Estimate one week per engine – sometimes a month. He also attended
workshops from JICA concerned on how to repair these engines – these workshops are also in Yangon. He has two people that work for him. He pays one worker for 30,000 per month. He buys tools and parts from Yangon and Bogalay. In 2013, some of the teachers from the technical training school came to see his workshop – to check how he is doing – this is great – continuous checking. This training school supports and gives suggestion. When he repairs engines and doesn’t know how to repair, he contacts his master from the training school to ask him how to repair – that’s great that they keep contact with the villages. He says that over 10 villages come to this workshop to repair their engines – so he must be very good.

This village has school cum shelter and storm shelter, one monastery, one clinic, one nurse, and one Christian church.

(eco-tourism) he has seen many tourist and NGO in this village – especially FFI and JICA, UNDP, some NGOs have come to see his workshops to take photograph. His workshop is sponsored by JICA (look more into this) in April 2012 JICA came to the village to build this workshop. He knows the difference between tourist and NGO. He attended the JICA and UNDP workshop (UNDP was about drinking water workshop) but he didn’t attend the FFI. But he knows about the knowledge through pamphlets and other villagers tell him. He knew that FFI came to this village to introduce the stove, but his family didn’t receive the stove. Some of his customers cut the mangroves, and they sell to him for fuel – sometimes they have no money so they pay him in mangrove wood or neap leaf- so he has a lot of fired wood for fuel, and big mangrove poles. His opinion is that deforestation is bad.

3. “Name 71” (46 Yrs), his native land is Set-san Village and education is Grade (3). His wife is (35 Yrs), her native land is Set-san Village and education is Grade (4). They moved this village 12 years ago. They have four children, 1) (21 Yrs), (general worker), his education is Grade (5) and now he live in Yangon, 2) (17 Yrs), (fishing), his education is Grade (4), 3) (14 Yrs), Grade (3), 4) (5 Yrs), Grade (1). He has over 30 years experience in fishing. He has own bag net (mouth area is 20 ft, length is 70 ft and mesh sizes are 2 inches, 2.5 inches and 3 inches) and boat (12 x 2 x 1.5), 5 hp Honda engine. He sold various kinds of fish and prawn at Bogalay and local. His daily income is 3000-5000 Kyat. He has no workers on boat. He paid 80, 000 Kyat for net license and about 200, 000 Kyat for tender per year. In this village has FAO tender system include 9 committee members. His fishing ground is Htaw Paing Creek. He won the tender from UMG, Department of Fishery at Bogalay, cooperative with FAO. He bought some ice, fuel from nets from Set-san and Bogalay. He cut the mangrove from Mein Ma Hla Kyun for fuel. He has seen many foreigners together with NGOs. He has no idea for ecotourism and environmental conservation.

4. “Name 72” (54 Yrs) and his wife (47 Yrs), their native land is Htaw paing Village, they have no education. They have six children, 1) (27 Yrs) + ♂ (fishing), her education is Grade (4), 2) (26 Yrs) + ♀ (general worker), live in
Yangon, 3) (17 Yrs), her education is Grade (3), 4) (11 Yrs), Grade (3), 5) (8 Yrs), Grade (2) and 6) (6 Yrs), Grade (1). He has 70 crab traps and one long line hook. His trap made of tin and long line has 70 hooks. He used small fish for crab food and mangrove fruits for dwarf cat fish food. He gets 4000 Kyat for crab trapping and 8000 Kyat for long line hook. He sold all of fishes and crabs to buyer at Set-san. He has small own boat (6×1.5×1) made of timber without engine. He has no idea for ecotourism and environmental conservation.

5. “Name 73” is 18 years old and his native land is Htaw Paing and education is Grade (6). His (17 Yrs), her native land is Kyun-ywa Village and education is Grade (3). He has 80 crab traps, which made of bamboo, he get 3000-5000 Kyat for crab trapping. He sold the crabs to buyer at Htaw Paing. His wife sold small crab at local. He has no child. He paid 8000 Kyat to Ranger U Soe Win for crab trapping identity card at Mein Ma Hla Kyun per year. He has small own boat (9×2×1.5) made of timber and without engine. He took loan from buyer at this village. He attended many workshops and seminar organized by NGOs. He cut the mangrove for fuel and selling. He knows very well government protects mangrove forests but he don’t care. He wants to sell the crabs if the tourists coming this village. He has no idea for home stayed program.

**Day 7, Sunday July 26th, 2015**

**VILLAGE #19  SEIN-YA-TI (DIAMOND VILLAGE) SEIN=DIAMOND**

This is the village where we interviewed and NNO was teaching the little kid hw on the floor – and there were posters of all the NGOS that had come to this village – including the Jesus poster – have all this on camera – add here.

1. “Name 74”, 66 years old and his wife 59 years old, village leader. He has grade 4 education. They have one daughter. His native town is A Si Lay, close to bog lay township. He moved to this village when he was 12 years old with his parents. In 2001 he became the leader of this village. His father was a teacher and his mother was a house wife – I asked why he only had grade 4 education if his father was a teacher – and he said its because they were constantly moving due to political environment, so it was hard to replace him in new schools and get a constant education.

His daughter works with her husband and they own 30 acres of land. They are four in his family, including him, the eldest died of cancer, 15 years ago. Eldest sister also died, and other brothers died all due to health conditions.

Before becoming a farmer, he was a general worker, he has been a farmer for 35 years – he first started with 8 acres, now he has 40 acres. His wife is a UNICEF member, they operate together with UNICEF after nargies to help the devastation in village – he is Kayin nationally – Christian Kayin –
His wife governs the members of UNICEF in this village who care for the children – this could explain why they are children in his house – kid doing homework with NNO and baby. There are 12 members in this UNICEF association. This association looked after the health of children and their school necessities, education, supplies, proper learning. The wife had attended training for this in bogalay and then came back to the village to teach others about the leanings. This project is no longer active, it last for 3 years so after nargis – from 2008 to 20110 doesn’t know why it stopped, most likely ran out of funding. Other associations that have come are

Care Myanmar – integrated livelihood program – seed multiplication poster – they made a micro financing project to reduce the use of mangrove firewood in this area.

UNDP was joined in this – and didn’t ask for interest, but the committee from this village asked two percent interested because they had to use other things, such as materials, that they had to purchase from various people. This project included crab, trappers, fishermen, and farmers, hired persons. It supported farmers with less than 5 acres, UNDP helped them with their machines – helped crab trappers to buy crab traps, and some of the fishermen to get more gear. They also built a bridge with wood – so the village committee put a 2% interest on other villagers for the supplies that were needed for the activities.

FAO – also part of this tender system project, there is one fishing ground in this village and three bag net fishermen fish there. There are more fishermen than farmers but most are ba-win fishermen and that’s why so few bag nets. They fish around the banks of the river – not the small creek we saw. Also there are many crab trappers. The ba-win fishermen don’t need to pay license, and mainly sell to bogaly and mawlamyine kyun and small amount to this village. The bag net fishermen must pay 60,000 K for to FAO and DOF. Before FAO there was another tender here from Sat Stan village – fishermen gave them 50,000 K a year to fish and also could only sell to this person – Ma Hland and Zaw Min

FREDA – gave training on the education and mangrove protection. They initiated community forestry program in this village with about 30 villagers participated but this was about 5 or 6 years ago and the villagers were paid 3000 K per day.

FFI- some people want to attend the stove courses so he sent them to Chaung Byo Gyi village to learn about the stoves. He had a stove but didn’t remember the name of FFI.
Christian Association – also came to this village to help to build a building which was used for a small clinic, this building is now used as a meeting room and place to get married. The village leader donated the land for this building in 2009.

1.3 of the village is Christian and 2.3 are Buddhist, but this has always been the case – the Christian association didn’t come here to convert anyone. About a month ago, FD donated about 500 young plants of mangroves to the villagers to plant along the road and along their house – the people who were most interested received the plants. There is a person in the village that can make mats very well, sells to bogaly and other villages, they mats are made of shrubs. He attended environmental conservation/protection workshop and told villagers not to cut down in MWKS and to cooperate with FD, and that if they did cut down, then they will suffer from storms. He thinks ecotourism could alleviate poverty, increase living standards and education. He has heard about selling their traditional materials such as the mats, or also fish and crab. If the tourism will increase their eco, he thinks this will be an advantage. He also taught them hot to attract foreigners, they think that they need to build a house, but actually the would want to stay at the locals house – we explained. He is glad that these groups came in this village – if they were to come back he wants to develop more transportation. He thinks tourism could help the functions of this village. He also wants to fix the schools of the villages and the roads.

2. “Name 75” (Kayin nationality- Christian) she is 25 years old – this village is her native village. Her education is grade 9. In 2007, she left from school – she attended grade 1 – 9 in Aung-Si Mingalar High School at A- Si-Gyi Village. She stopped her education at grade 9 because she had to help her parents business. Monks support this school. She is a volunteer teacher in this village. She’s single. Her parents are (60 years old) – her father - this village is also his native land. And her mom is (56 years old) and she is also from this village. She only has one sister, and three brothers. The first brother is 39 years old and is married and is a general worker in this village. The second brother is 31 years old and she is also married and is a general worker. The third brother is 22 years old and lives in Yangon and is general worker. And the fourth is 16 years old and his education is grade 9 pass, but now he works in Yangon together with his brother as general worker. So the person that NNO interview is the third one – (they are five together). All her brothers and sisters and parents have all had monastery education. You don’t have to be Buddhist to go to monastery education **** She lives with her parents in this village. Her parents are farmers. They have 5 acres – 1 acre gives them 50 tin
and one tin for 6000 K. They have no workers – their family work on the farm together. They sell the rice locally.

(NGO) she has many experience with NGO, she has attended all the workshops and seminars in this village and Bogalay and sometimes in Yangon. Her family received the family stove. FFI, Care Myanmar, UNDP, Swan-Yee (local NGO), EcoDev, JICA. She attended the FFI workshops for stove. Care Myanmar for first aid. UNDP for how to protect and how to feed animal, especially pig, duck, chicken, etc. UNDP, Care Myanmar, and Swan-Yee for accounting and micro-financing. Swan-yee for reduction of fire wood. Care Myanmar for agriculture training. NGO GG – (don’t know what GG stands for) taught them how to make soap. EcoDev-training for environmental conservation, and weather and climate education (storm protection). After Nargis she attended all of these. She received many certificates from attending these courses. She always shared the knowledge to her village, to leader, neighboring houses, villagers, and the common hall of the village and sometimes at the Church. She also taught other people all the knowledge that she gained.

This village has one common hall, one monastery, one church, one shelter (built by care Myanmar) one clinic. Total houses of 174, and over 500 families. The population in this village the population is over 700. Over 32 farmers, 30 for fishermen, 100 general workers, and some people go to Yangon to find other jobs (migrant workers.)

She said that Buddhist and Karin Baptist Church (KBC) work together to support preschool – children under 5 years old.

(ecotourism) This June 2015, foreigners came to this village and stayed about three days at KBC church – this foreigner was Korean – and together with his daughter they visited the village.

On another occasion, a Korean NGO came to her village to look at how to improve eco-tourism and environmental conservation. Korean Lover NGO > ****this is the first NGO that is trying to promote eco-tourism other than FFI.

***LOOK UP KOREAN LOVER*** - Korean Lover NGO also did a training that she attended, in 2012. This NGO selected 20 villagers from this village to attend to training – she learned a lot about the tourism industry. She learned about the environmental conservation, how to protect the forest, river, and how to protect the flora and fauna near the village and near adjacent areas especially MKWS – especially emphasized on the MKWS crocodiles – because this is one of the attractions to the tourist in this area.

She loves NGOs because she gets a lot of knowledge and education from them.

She wants to increase her education so that she can appeal more tourism in her area – she wants to be a translator for tourist, but she cant since the English school is in bogalay. Every Sunday she teaches in church – English grammar.
3. “Name 76” (24 Yrs), his education is Grade (8) and his wife is (23 Yrs), her education is Grade (8). Their native land is Sein-ya-ti Village and they have two children. The first son is (4 Yrs) and the youngest daughter is (6 months). He is a general worker in this village. He got 2500-3000 Kyat from farming, 2000-5000 Kyat’s from fishing, 2000-5000 Kyat from crab trapping. He caught the fish from Bogalay River. He sold all of fish and shrimp to buyer Chan LR at this village. He attended the mangrove conservation training at Bogalay in 2012. After Nagris, he received food, clothes, shelter and household materials from NGOs. He welcome home stayed program and tourists because he can explain how to protect mangrove forest in Mein Ma Hla Kyun and its vicinity. He doesn’t cut the mangrove and bought firewood for fuel. His point of view for ecotourism is “good and safety transportation, clean environment and good health care system are main important for tourism industry”.

4. “Name 77” (28 Yrs), her education is Grade (10) one failed and her husband is (3), his education is Grade (5). Their native land is Sein-ya-ti Village. They have two children, 1) (4 Yrs) and 2) (1 Yr). She has only one Ba win pike. It length is 600 ft and 15 ft height. She has own small boat (6×1.5×1) made of timber without engine. She sells fish and prawn at local villages and marketable sizes are selling at buyer Saw Sar Mue at this village. Sometime she sells to Set-san and Bogalay. Her fishing season is September to March. She got 30000-60000 Kyat per week during the fishing season. Her husband works at offshore fishing boat as a general worker. Her father helps in fishing every day. She doesn’t cut the mangrove and buys firewood for fuel. She has no idea for ecotourism and conservation. After sharing my knowledge, she told me that she like to home stay program because this is simple and money can get easily.

5. “Name 78” 51 years old- contact number (confidential-off report), his wife 49. He has grade 10 educations and she has grade 5 educations. They have two children. First – 21 years old – grade 11 and goes to BEHS 1 in bogey – and now she is house keeping in this house and lives with her parents. The second son is grade 6 in BEMS in Aung Si Mingalar village. His native town is Than-Lite Village in Bogalay Township. His father is dead and his mother is still alive and lives with his eldest sister in bogalay. Father was a general worker before he died. He has 8 brothers and sisters. One sister, 65, sells wood and bamboo in bogalay. Second sister is 62, taxi owner in Yangon, 3 sister is 59 and is a shop keeper in than-lite, fourth sister is 57 years old and is rice shop owner in Hland Thar, Yangon. fifth is the brother, 55 year old, electric mechanic in Mine Ka kone tip village, sixth sister is 53 years old, sewing clothes in bogalay, seventh is him – pady buyer and seller and shop keener, and 8th is his sister – her husband is a fishermen. He first lived with his wife in her native village of Phoe De Kwar, and had chicken husbandry – than he transferred to this village due to this son’s health
in order to get fresh air for his son – since he had a heart attack. He came to this village in 2007 and became leader in 2013. There are 163 acres in this village, he doesn’t buy much from farmers, only about 400 or 500 tins from village farmers, these are 4 to 10 people that sell to him, and then he sells to two paddy buyers in Sat San – During the rainy season he buys 4000 to 5000 per tin and during cold and hot season he sells for about 7000 k per tin – according to the scarcity of paddy – he mostly buys the best quality. He also buys dried goods and other products to sell here at his shop. He got the money to start all this by selling his entire chicken husbandry.

There are a total of 30 fishermen, including bag net and trappers, drift net. Some other villagers sell fire wood. Some are farmers and other sell vegetables around the village – they buy from sat san and bogalay.

He was written 10 recommendations to FD to get permit for crab trappers to catch in MWKS but he still hasn’t received the permit. There are 9 bag net fishermen with the FAO project – before FAO there was a tender called Daw Tin Tin la from Sat San. For one year, the bag net fishermen pay 60,000 for one bag net (FAO) there is one fishing ground here: A Si Lay fishing ground

There are 5 people that do drift net and they just pay for their license.

As leader he has seen many NGOs:
- Care Myanmar – for dinking water in 2009 and 2013
- MEALs – 2010-2013 environmental conservation
- World Concept – 2009-2012 give material for houses and medicine
- UNICEF – for children and health 2011-2013
- ffi – training for stoves
- Mingalar Myanmar – drinking water in 2013
- ION 2013 to today for health – his daughter took this course and now an assistant nurse for the village
- UNDP – microfinance 2013-today no interest (?) who is benefiting from this
- Swan yee – micro financing with 2% interest (?) whom, farmers? Crab?fish?
- FREDa – came only once after nargis to give water pots to conserve water, they didn’t come to plant anything though.

for the FFI workshop on stoves, he chose two people from the village to go who were interested in going - as for the ecotourism workshop, he attended himself. He learned that if foreigners come to the village they should welcome them and provide home stays, selling local foods, not build heavy houses, just fixing and cleaning their house. He thinks that it would be difficult due to the language barrier. Also some people can make mats, but no animal husbandry. If tourism increase he wants to be able to rent them boats - ******** very good idea

if foreigners to local stay then they can go along the banks and enjoy the nature during the day and stay in temporary huts and boats for them to rent. As ecotourism increase, the locals will slowly learn how to appease their needs and to
increase their economic benefits. Keep the page that I made that shows how microfinancing projects are not sustainable in comparison to ecotourism.

In 2014 they started community forestry with MEAL project, about 400-500 plants are left out of about 1000 they grew along the banks – the plants were lost due to erosion – ripped away by storm. Villagers were paid 3000 K a day to plant. He asked FFI for 1,400 mangrove plants on 1 acre of land for the village to plant but he never received.

In may, 2015 – FD from bogalay gave 1500 freshwater plants (eucalyptus, seen pan plants) 20 people planted these plants – no children – but these 20 people were volunteers.

In his opinion, he thinks that NGOs will have to pay people to plant mangroves and give the seeds, otherwise it won’t work. Then I explained how that’s not sustainable, that the money will run out, so the village needs to become organized itself from within, locally owned and locally developed, business need to locally managed, and ideas need to come from locals – so it’s important to have these kind of discussions to ask other villagers what their ideas might be. If no one wants to plant for free then they can have children plant from the schools, even if just starts with one small project, gave explanations of local organizations, locally owned businesses, not souvenirs shops – just things that can depend on outside – FFI will promote this area, bring tourist but then their work is done. Its up to them to organize themselves and to bring communities together to have activities that foreigners will like, and they should be proud of their ideas and own them. Ideas that don’t need a start up cost, that are simple and local. When explaining everything he still said that he doesn’t think ecotourism can really start because they don’t have a storm shelter in the village so in case of emergency, they would have a place to put the tourist.

VILLAGE #20 – AH-SE-LAY (SMALL SEED VILLAGE)

1. “Name 79” (65) and his wife is 63 years old. And they have 9 children. Six died in Nargis, now he has three children. The first is son, second is son, and third is daughter. The first one lives in Yangon and is general worker. The second one lives with him in this village and the third daughter live with him – the second son is eel trapper. He has his own boat – 6feet length 1. Width and 1 foot depth – made by timber – no engine. One eel trap is 700K made of bamboo and buys from
bogalay. He uses small shrimp and fish for eel food. He catches the eel from Meinmahla island, Byome-hmwe island (where FREDA is) and in mangrove forest. One trap gets 1-5 eels. He catches in between 1 – 4 vise per day. He sells to Pa-daee-kaw village – to an eel buyer there called U Phoe Hla. He goes daily to sell eels there. One vise for small size eels is 3500 K, and for the big size of one vise is 4000 -5000 K (big size). The big ones are 1 kg and the small eels are less than 1 kg. The price for the small fish and shrimp (for eel food) is about 500-1000 K – daily - and he buys this from local fishermen. There are about 10 eel rappers in this village – including him. Very early morning, at 3 am, he puts the eel traps in the mangrove forest, and then during the low tide he collects the traps. Every Sunday is his holiday because he goes to church – he is also Karin. Karin Christian is dominant in this village – since there is no monastery in this village. (ecotourism) he has no idea about tourism industry or environmental conservation. He has no education – he can’t even spell his name. NNO explained to him and his friends about this – but they had absolutely no idea. But he is interested in increasing business if he can get a lot of money- he also wants to own boat and carry the tourist.

***3 am eel trapping in this village – could be an adventurous activity – coupled by crocodile spotting

***a reason for low education could be that there were many Karin Rebels in this area so the government did not provide primary/basic education ***

2. “Name 80” (48 Yrs), his native land is Aung Si Mingle Village and education is Grade (4). His wife is (46 Yrs), her native land is Mawlamyine Kyun Township and education is Grade (5) passed. In the past they live in Mawlamyine Kyun Township and they moved this village 20 years ago. They have five children, 1) (27 Yrs) + ♀ (general worker at Yangon), 2) (26 Yrs) + ♂ (fishing at A-si-lay village), 3) (23years) ♂ (farming at A-si-lay village), 4) Naing Oo (19 Yrs) (fishing together with his father), 5) (17 Yrs) + ♀ (farming). Name 82 has 170 hooks and his experience is over 25 years old. His long line hook is 300 ft length and 15ft height. He has own fishing boat (12 × 2 × 1.5) made with timber and 4 hp Honda engine. He paid 60000 Kyat for long line license and 350000 Kyat’s for FAO+DoF tender every year. His monthly income is about 60000 Kyat. He used mangrove fruit and small crab for dwarf cat fish food. He attended the environmental protection and disaster management at Bogalay in 2010. His point of view for ecotourism is “he warmly welcomes to tourists and he can sell food and snacks, he can demonstrate how to make the fishing boat and net”.

#21 -AH-SE-GYI (BIG SEED VILLAGE)- another name for this village Aung Si Mangalore (Famous Greeting Village)

this is the village where the village leaders daughter is the financial accountant for NAG – that national activity group -
“Name 81” (40) he comes from Ah-se-lay village. His wife is 35 years old and she also comes from Ah-se-lay village. They have 6 children. The first daughter is 15 years old and is in grade 6. The second daughter is Ma Than Than Wai, she is 9 years old and is in grade 5. The third son is (7 years old) and is in grade 2. The fourth son is 6 years old. And the fifth daughter is three years old. The youngest son is just over 2 years. he is a fisherman and only has one bag net – the length is 150 feet and the width of the mouth is 70 feet, and he has one beach seine net – the mouth length is 25 feet and total length (from the two wings) is 35 feet, and the bag length is 65 feet. And the mesh size of the bag part of the beach seine net is about 3 inches and the wing mesh is about 1 or 2 inches. The length of his boat is 18 feet, three width, and depth of 2 feet and his boat is made by timber. He seals his fish locally and also to a buyer in Bogalay. The buyer name in Bogalay is U Moe Swe. He also joined the FAO and DOF for boat license and tender system. He knows very well U Aunt Htay Oo, which is the FAO representative in Bogalay and also knows the rep from Yangon called U Maung Maung Lwin – his buyer introduced him to these two representatives. He pays 200,000 K for the bag net in the bogalay river (tender price) and he pays 80,000 for the beach seine net. This village has 9 committee members for the FAO tender system – he is one of the committee members. From the bag net he gets about $1000 dollars per fishing season – so about 3000$ a year. He catches various kinds of fish and prawns from bag net, and he catches Therapon jarbua with the beach seine net (local name for this fish is Gone Jar). His daily income for the beach seine net is about 5000-8000 K. he catches about 1500 feet from MKWS (so far from this area).
If there are a lot of problems in his committee he reports to Bogalay FAO and DOF committee. For example some fishermen stole net/fish/or boats from other fishermen, or destroy the engine of other fishermen. Or some fishermen go to other fishing grounds, so he reports these problems to DOF.
The fishermen are dominant in this village, especially long line hook, bowline, bag net and crab trapper, and beach seine. Farming is about 20%. There is also animal husbandry, especially duck and big. There are many general workers. Migrant workers are dominant in this village – sometimes they come from bogalay, set san, kadon kani and locally.
He really likes the FAO and DOF tender system – because he thinks that the rules and regulations are fairer for this committee.
There is one primary school in this village, one middle school, one high school – the monks support this high school. There are 11 teachers and over 300 students. Only one clinic/health care center.
His wife sells the fish to this village and sometimes neighboring villages, and dried fish - her daily income is over 10,000 K (she is the best seller). She also has idea for tourism industry: (ecotourism) she has clean living room and clean bathroom so she can receive tourist for two or three days, but she has no clean toilet, but her husband has no idea. The husband is more interested in planting the mangrove tree – he has seen FFI plant mangrove trees in this village. He has good friendship with khin moang soe.
(NGO) he has experience from FFI, Care Myanmar, UNDP, Swan Yee, FAO. He attends over 50 seminars from these NGOs after Nargis. He has gained a lot of experience. After this seminar he shares to other villagers and sometimes he shares to village leader homes. He knows very well the FFI project – he has FFI stove.

After Nargis he received a lot of support from various NGO. Swan-Yae and Swe-tha-ha (local NGO) microfinance program for farmers, fishermen, and general worker after Nargis (2009) (?) and also the Karin Methodist Church supported the fishing net and boat. This is 50% 50% Buddhist and Methodist.

What kind of things do they discuss in this committee? And how to they pick the members? The village leader chooses the committee members. First the fishermen have to propose that they want to be committee members and then the village leader choose. He says that every night he goes to the village leader and discusses the fishing nets and fishing boats and solves the problems together of different problems that could be going on. They also discuss the different prices of the tender system, compare between previous years, and current years, and they can also come up with a price and they can propose to FAO and DOF in Bogalay. They also talk about gear. They also speak about different fishing techniques: how to get fishing technique from FAO – they would ask FAO and DOF which technique gets them more fish and most money, which are more sustainable?

Where the best fishing grounds.

Any specifics on the fish species? Vise prices? What does he sell locally compared to bogalay?

Which does he think is better income? Bag net or beach seine net? Bag net is a better income in his opinion.

Give examples of these seminars?

What kind of support did he get from NGOS? He received a boat and a fishing net from FAO, - and he has over 15 years experience in bag net fishery. He was a farmer before bag-net fishery.

contact U Aunt Htay Oo (fao representative in Bogalay)
U Muang Maung Lwin (fao representative in Yangon)

2. “Name 82” is 43 years old native land is Amar Township and education is Grade (7) passed and his wife is 40 Yrs), her native land is Aung-chan-tha Village and education is Grade (6) passed. They stayed this village 19 years ago. They have five children, 1) (18 Yrs), Grade (10) passed; now he waits for enrollment in university, 2) (16 Yrs), Grade (10) Border at Bogalay, 3) (14 Yrs), Grade (9) at A-si-gyi Village, 4) (12 Yrs), Grade (6) at A-si-gyi Village, 5) (3 Yrs). He works at farming and he has 60 acres, one acre for 50 tins, and one tin for 6500 Kyat. He sold rice at Bogalay and he has four permanent workers. He paid one worker for 300,000 Kyat per season. He chose Bay-kyat and Khun-ni-ma species and sometimes he used chemical fertilizers in paddy fields. He has seen many NGOs after Nargis. He welcomes tourists and NGOs for development of his village. He has an idea for ecotourism; his point of view is “electricity and clean houses have in this area we can attract to tourists”.
3. “Name 83” 62 years old – leader of this village since 2009 after nargis and his wife is 59 years old – they both have monastery education. Their native village is Mime Ko Kane village, came to this village with his parents when he was 12 years old. They have four children, one daughter is 30 and is a member of the NLG ********** and lives in Pyar Pone township, was previously member of UNDP, she has a bachelors degree of art from Ma U Bin Uni – she worked for UNDP for 8 years . the second daughter only had a grade 8 education – h she’s 27 years old, she lives in this village and is the financial coordinator for Swan Yee Association in three villages : Seen Ya Ti, A Si Gyi and A Si Lay. The second, 22 years old, she is in her final year in economic university at Ma U Bin University. The third is Ma Htet Htet Win and she’s 17 years old and goes to boarding school in bog lay, grade 11. Name 85 is a farmer, they own 10 acres of land. There are 20 other farmers in this village. Before being a farmer he use to buy and sell paddy. When he was buying and selling about 8 years ago – he was buying from local village farmers and selling to bogalay and Pyi Lone Chan Thar village. Now he sells to the best buyer – UBO– the rice buyer in this village. He produces 40 tins per acre of bay char species, and he has 6 acres of this – and sells 1 tin for 7000 K . he can produce 50 tins per acre of the Kaw Gyi species, and he has 4 acres of this – 1 tin he can sell 5000 K. When his son died (he used to have five children) he decided to become a farmer because his son was the one that went around the village to collect from farmers and that why he switched to just being a farmer now. This village has 1,238 acres, some are farmers, and some are general workers. some fishermen use bag nets and others do long-line and some are “gow” fishing gear to catch prawns and shrimp – this is the push net (explained by noun naung oo)The bag net fishermen of this village also work with FAO tender system – this village has one fishing ground : A Si Gyi fishing ground. When other fishermen from other villages want to fish here, they have to pay the village committee 30,000 per year. There are only two bag net fishermen in this village. Before FAO there was a tender called Dawn Tin Tin Hla – from set San – they had to pay her 50,000 K to fish in this area and could only sell to her . FAO system started in 2010 (?) this is different than 2011?

The Ngoc that he knows are:

Ecodev – 2009-2011 give free eucalyptus plants, banana trees, coconut tress but this was not successful, only the beetle plants were successful

MSN – 2009 – today training fisheries - fishermen

Red Cross – health, only one time in 2008 after margins and gave food

MEALs

FAO – 2010-today fishing gears, boats, and fixed tender system

UNDP – 2008 to now – give plants, mangroves, and forest to get shade, protection and firewood.

Swe Thar Har – he knew the donators from Cambodia, came in 2009-2013 this association helped with food and health
Care Myanmar – 2009-2013 build the bridge and house and support for food
Mary Sto (woman’s care) – woman health, 2009-today
Christian Religion Association – 2009-2011 help pure dirking water and help build school – 40 houses here are Christian
FAO and ESFSP – Environmental Sustainable food Security Program
FFI – two people attended stove training course in this village but only got raw materials for stove, not actual stoves
FREDA – hasn’t heard of – which is super weird
SWEET- builds a storm shelter in 2009 – today this is from Singapore. Still active now by building a new room in the storm shelter.
Community Forest that has 2 acres > villagers, 500 K for one plant from UNDP and FD
Another person, individually planted 10 acres of mangroves, U myint

Nobody went to bird watching or crab fattening FFI courses – he doesn’t know anyone that goes illegally to MWKS and he hasn’t written any recommendations to ask permits. Seems to me that FFI is more active on the west and all other NGOs are more active on the East.

Before Nargis there was less development, and no connection for education
After nargis – they have better transportation, more shelters, more connections to the outside world, more education – so the thinks that even though it was a disaster, it had advantages for development of our villages.”

This is a fucking unique quote- basically embodies the relief cyclical patterns of the world –

After he said that I said that instead of having NGOs help develop your villages or small communities, after disasters, eco-tourism to areas, and this needs to swoop in fast so that these villagers don’t suffer the after relief crisis, and development can continue but with a more sustainable development approach in mind that is not dependant on NGO funding. At first he thought that he must build a new house for home stays but now he understand that we don’t want change as tourist, we want to explore the unknown and see things intact, just as they are. These were hard concepts to try and get through – but he said he understands.

Kyaw Naung – FD ranger - said that the east has more general migrant workers than the west and so they use MWKS illegally more than the west. He also said that the east has more population than west > could be another reason for the need of illegal use, larger population. West has more farmers West and East big difference in terms of development. East has more fishermen, transportation in the west side is more developed in the east.
APPENDIX C

FISHERIES, CRAB, AND PRAWN DATA

(1) FISHERIES

57 Species of Fish Identified

This list was done in collaboration with Dr. Tint Swe, a retired fisheries professor from Mawlamyine University. Dr. Tint Swe conducts fisheries survey in Mein-ma-hla Kyun every month, so we were able to compare our results from July with his results in June in order to analyze trends in fisheries abundance.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Local Name</th>
<th>June</th>
<th>July</th>
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<tbody>
<tr>
<td>1</td>
<td>Mugil cephalus Linnaeus 1758</td>
<td>Grey mullets</td>
<td>ကဘီလူ း</td>
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<td>ကဘလဲ</td>
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<td>Valamugil seheli (Froskal 1775)</td>
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<td>Tenualosia ilisha (Ham, Buch 1822)</td>
<td>Herrings</td>
<td>ငါးသေလာက္</td>
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<td>Osteogenerous militoris (Linnaeus 1758)</td>
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<td>Congresox talabon (Cuvier 1829)</td>
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<td>Tri tail</td>
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<td>Osteobrama balangeri</td>
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<td>46</td>
<td>Osteobrama belonger</td>
<td>Carplet</td>
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<tr>
<td>47</td>
<td>Dasyatidae</td>
<td>Whip ray</td>
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</tr>
</tbody>
</table>
Additional species observed individually without Dr. Tint Swe help:

Mullet Fish: 3 different species identified:

45. Mugil cephalus
46. Valamugil sehile
47. Liza tade

Croaker Fish: 4 different species identified

48. Chrysschir aureus
49. Jonius coitor
50. Otolithes ruber
51. Otolithoides pama

Flathead Fish: 1 Species identified

52. Platycephalus indicus

Catfish: 4 species identified

53. Plotosus indicus
   a. Prefers salt water but can also be found in brackish water
   b. Has very poisonous spine
54. Airus maculates (same family as Osteogeniousis mititaris)
   c. Prefers salt and brackish
   d. 3 pairs of barbells
55. Mustus (no genus)
   e. Prefers fresh and brackish
   f. 4 pairs of barbells – known as “Hnoke Khan Hmwe = barbell whiskers”
56. Osteogeniousus mititaris (same family as Osteaogeniousis mititaris)
   g. Fresh and brackish
   h. Only one pair of barbels

Puffer Fish: 1 species identified

57. Xanopterus (find genus)
a. Looks all yellow and bloated when being sold at the market (many pictures of this)
b. The organs are extremely poisonous – especially the splean and liver
c. Organs are removed and only the muscles are eaten

2. Photo Record of Fish Identified

The local common names and scientific names were identified with Fishbase.org.

![Image of fish]

Common Name: (Myanmar) Pengha (English) Carplet
Scientific Name: Osteobrama belongeri

![Image of goldspotted grenadier anchovy]

Common name: (Myanmar) Nga-la-wa (English) Goldspotted grenadier anchovy
Scientific name: Coilia dussumieri
Common name: (Myanmar) Nga-nan-gyuang (English) Commerson’s anchovy
Scientific name: Stolephorus commersonii

Common name: (Myanmar) Nga-ni-tu (English) Indian anchovy
Scientific name: Stolapharus indicus

Common name: (Myanmar) Nga-one-pu (English) Chacunda gizzard shad
Scientific name: Anodontostoma chacunda
(Not a fish) Common name: (English) Scaly sting ring
Scientific name: Himancura walga

Common name: (Myanmar) Nga-dingar or Nga-waing (English) Common ponyfish
Scientific name: Leiognathus equulus

Common name: (English) Pama croaker
Scientific name: Otolithoides pama
Common name: (Myanmar) Nga-khwae-shar (English) Long tongue sole
Scientific name: Cynoglossus lingua

Common name: (Myanmar) Kyauk-nga-wet (English) Four-barred-tiger-fish
Scientific name: Datnioides polota

Common name: (English) Electric ray or Brown numb-fish
Scientific name: Narcine brunnea
Common name: (Myanmar) Nga-let-kwa (English) Four-finger threadfin
Scientific name: Eleutheronema tetradactylum

Common name: (Myanmar) Ka-tha-bo (English) Tank goby
Scientific name: Glossogobius giurus

Common name: (English) Lined silver grunter
Scientific name: Pomadasys hasta
(not a fish) Common name: (English) Japanese butterfly ray
Scientific name: Gymnura japonica

Common name: (English) Common half beak
Scientific name: Hyporhampus unifasciatus (Ranzani, 1841)

Common name: (Myanmar) Daungdana (English) Toli shad
Scientific name: Tenualosa toil (Valenciennes, 1847)
Common name: (Myanmar) Nga-thanshe mingya (English) Savalani hairtail
Scientific name: Lepturacanthus savala (Cuvier, 1829)

Common name: (English) Stripped mullet
Scientific name: Mugil cephalus (Linnaeus, 1758)

Common name: (English) Soldier catfish
Scientific name: Osteogeniosus militaris (Linnaeus, 1758)
Common name: (English) Mudskipper
Scientific name: Periophthalmus cantonensis (Eggert, 1935)

Common name: (English) Common pike conger
Scientific name: Murraenesox bagio (Hamilton, 1822)

Common name: (English) Indian pike conger
Scientific name: Muraenesox talabomoides (Bleeker, 1853)

Common name: (English) Seven-finger threadfish

Scientific name: Polynemus indicus (Shaw, 1804)

Common name: (Myanmar) Nga-phet-ywat (English) Large tooth flounder

Scientific name: Pseudorhombus arsius (Hamilton, 1822)

Common name: (English) Eye-spot puffer

Scientific name: Tetraodon biocellatus (Tirant, 1885)
Common name: (Myanmar) Nga-yaung (English) Spotted catfish
Scientific name: Arius maculates (Thunberg, 1792)

Common name: (English) Bearded worm goby
Scientific name: Taemiodes cirratus

Common name: (Myanmar) Ngaei-book (English) Hamilton’s thryssa
Scientific name: Thryssa hamiltonii (Gray, 1835)
Common name: (English) Bluespot mullet
Scientific name: Valamugil seheli (Forsskal, 1775)

Common name: (English) Golden puffer
Scientific name: Auriglobus naritus (Bleeker, 1850)

Common name: (Myanmar) Pin-lae-nga-khu (English) Gray eel catfish
Scientific name: Plotosus canius (Hamilton, 1822)
10 Types of Artisanal Fishing Gear

1. Trammel net
   a. 3 different mesh sizes 125mm mesh size to 570 mm
   b. the bigger mesh size is used for hilsa
   c. the smaller mesh size is used for threadfin
   d. license needed

2. Cast net (English) Lat-pyit-kon (Myanmar)
   a. Mostly used to catch small shrimp and prawn
   b. The fishermen place at least 40 posts which are made of bamboo or mangrove wood
   c. The method step by step explained:
      i. Place the bait near marked pole
      ii. Wait 5 minutes
      iii. Cast the “cast net”
      iv. After retrieving the catch in the designated pole area, the fishermen removes the poles and places them inside the boat – this process is repeated nearly twenty times
   d. The bait used is a mix of “chipping rice” (the outer seed coat of the rice) and coconut. This paste is mixed together for about two days before it is ready to be used. The bait is usually prepared by the women-fishermen’s wife
      i. About 5 vise of coconut for every 3 vise of chipping rice
      ii. Each coconut is about 300 Kyat – so 5 x 300 = 1500 Kyat
      iii. Each vise of chipping rice 650 Kyat – so 650 x 3 = 1850 Kyat
      iv. This mixture provides the fishermen bait for about 3 days

Illustration of a fisherman casting “lat-pyit-kon” with the relevant measurements.
3. Long Line of baited hooks (English) Ngar-myar-tann (Myanmar)
   a. There are a minimum of 70 hooks attached and maximum of 200 hooks-
each hook can catch one fish.
   b. The hooks are 5 inches long.
   c. The hooks hang from a line that is submerged 10 feet under water where
the river’s maximum depth is about 15 feet.
   d. The bait used on the hooks depends on the season
      i. June-July – crab species
      ii. August-Sept – they use the local name La-mu or Kant-ma
      iii. Oct-Nov – they use local species Tha-mae
   e. The main catch collected from this technique are: (specific scientific
names are and photos are given in the previous section)
      i. Dwarf cat fish (English) Ngar-zin-yine (Myanmar)
      ii. Small cat fish (English) Ngar-zine (Myanmar)
          1. Most popular on the market – sells for about 1500 Kyat per
vise
      iii. Veined cat fish (English) Ngar-dan (Myanmar)
   f. Fishermen require a license for long line and hooks
   g. With all the hooks and lines include, the total price for Ngar-myar-tann is
about 68,000 Kyats

Illustration of long-line of baited hooks and the relevant measurements observed.

4. Beach seine (Swae pike)
   a. The mouth of the net is usually 35 feet wide which funnels into a circular
trap that is 23 feet wide and 6.5 feet long.
   b. The mesh size is between 2 and 3 inches.
   c. Various kids of fish and prawn caught all year round
   d. This type of fishing requires 2 or 3 people
   e. No license is needed for this great type.
Illustration of a beach-seine net and its respective observed measurements.

5. Lift-net or man-push net (English) Yin-toon, Yat-thae, or Kywe-kaw (Myanmar)
   a. The mesh size is about 3 inches
   b. The net itself is 10 feet long – but the fishermen uses poles that are 13 feet long so that he is able to cast out the net or push it along the river side if the fishermen does not own a small boat.
   c. Used for small shrimp/small fish
   d. Used in paddy fields and creeks, or shallow coastal area with not more than 3-4 feet
   e. No license needed for push-net, not license needed for cast net

Illustration of a fishermen using Yinn-tonn and the respective measurements observed.
6. Upright Eel Trap
   a. The upright eel trap is 1.5 feet in height, 1 foot wide at the bottom, and has a 2.5 inch opening at the top where the eel enters to find the bait – which is small fish, prawn, or a similar rice/coconut paste described for the long-line baited hook technique.
   b. It is made from bamboo strips and weaved together in an artistic way.
   c. One trap costs about 700 Kyat and can be purchased in Bogalay, Kadon Kani, or Set San (the three main villages discussed in the interviews).
   d. The two most common eels caught are:
      i. Swamp eel: Monopterus albus (scientific name) Nga-shint-ne (Myanmar)
      ii. Cuchia eel: Monopterus cuchia (scientific name) Nga-shint-mwe (Myanmar)

Illustration of an eel trap and its respective measurements observed.

7. Bag-net (Kyar-pike)
   a. There are five different sections within the net used – each with its respective mesh size.
   b. One fishermen and a crew of three, use one boat to collect the various types of fish and prawns caught with this non-selective gear type.
   c. Bag-net fishing is practiced all year, and fishermen collect their catch from this net up to 4 times a day – between the spring tide and neap tide. The spring tide has yields the most prolific catch.
   d. 70% of the catch are brackish water fish species and 30% of the catch are freshwater fish species.
   e. Bag-net fisheries requires a license granted by the Department of Fisheries – however the notorious Tender acts like a middle man between the Department of Fisheries and the fishermen, and thus profits by demanding more money from the fishermen than the actual license fee.
The Department of Fisheries allows up to 33 bag nets per designated fishing area – which is usually owned by a local “Tender” who then charges the fishermen a fee to fish in the designated “plot of water”. This “Tender System” is extremely corrupt – as described by local fishermen (evidence in the interviews). The Tenders basically are “rich men” from Bogalay, the largest town about 4 hours boat ride from these villages. They demand a high price for the fishermen to simply be “allowed” to fish in the waters near their villages. Since the fishermen cannot afford this high price, the Tender makes a “deal” with the fishermen. This notorious deal is what causes the poverty cycle. The fishermen are constantly in debt, and must sell all their catch to the Tender person at a much lower price that they could get at the local market – thus they are never able to make a profit from their catch, or escape the poverty cycle. A project conducted by FAO on the Eastern Villages attempted to eliminate this Tender System – but the project was not successful. As soon as FAO’s presence left, the Tender system quickly re-entered the fisheries.

Illustration of the bag-net fishing gear with it’s various sections separated by their respective mesh-size sections. The net is held by two poles that are anchored at the bottom of the river and buoyed by various forms of locally-made buoyancy devices – such as empty barrels or empty large water jugs. The mouth is open opposite to the direction of the current in order to trap various types of fish, shrimps, rays and even invertebrates.

8. Beach Surrounding Net (English) – Pike-ba-win or Maw-yan (Myanmar)
   a. The mesh size of this net is varies depending on the available net that the fishermen is able to afford.
   b. Fishermen operate between low and high tide (twice a day – 3 meter difference) – best catch during spring tide.
   c. Pike-ba-win was most seen in the Western villages compared to the villages on the East side of MWKS.
   d. There are various types of small fish and gobies caught with this technique – but there are two main types of catfish and prawn being caught with bawin: Mystus and Plotosus canius
Illustration of the Pike-ba-win fishing technique and its relevant observed measurements.

9. **Tar-pike**
   e. Similar to ba-win but with smaller mesh size, used to catch water snakes in creeks – water snakes “yae-mwe” can be used as crab bait as well – a good replacement for eels.

10. **Drift-gill net (English) Ngar-tha-lawk-pike or Thone-htet-pike (Myanmar)**
    a. The length of his drift fishing net is 1000 ft and the width/mouth is 7 feet. The mesh size is one inch. They use different kinds of fishing nets according to the season. In the rainy season they use a plastic net that they buy new one each season because you can't fix it when it breaks and it wears and tears too easily. It costs about 250,000 K for the 1000 ft plastic fishing net and this comes with the plastic floating balls attached to it. The mesh size for the plastic nets is 1 inch. After the rainy season, they change to another kind of fishing net – this is made with cotton and is 500,000 K – but you can use it up to 4 years and you can fix it. These are the nets we saw being fixed by the local men when first coming to the village. The fishing net for hot season has mesh size of 3 inches.
    b. The length of boat used is 18 feet length 4 feet wide and 2.5-3 feet deep.
    c. Most drift-net fishermen use a Honda Engine of 6.5 HP. They buy their nets in Sat San - the big village on the north east side which is the equivalent to Kadon Kani, the big village on the south west side, in terms of importance for fish landing and big ports for the west side.
    d. The net is mainly used to catch herring.
    e. The most prolific season for drift-gill net fishermen is from Sept-Feb.
    f. Drift-gill nets require a license from the Department of Fisheries.
Illustration of a drift-gill net and its respective measurements observed.

**Gear Use Depending on Seasons:**

Rainy: May – Sept: 1000 feet long, 7 feet wide, 1 inch mesh size, made of plastic, 250,000 K for new one – targets mostly threadfin fish.

Hot: Feb-April: 600 feet length 6 feet wide, 1.5 inch mesh size – made out of cotton or nylon, mostly targets croaker fish – this net they buy second hand from offshore fishing boats for K150,000 since they cant afford to buy new ones – so they just buy second hand and then fix it after buying.

Cold: Oct-January: 600 feet length and 18 feet wide: 3 inch mesh size – made out of cotton and nylon- targets mostly hearing and big prawn, puffer, mullets and rays, 500,000 for a new one but can last up to 4 years.

The hot and cold season are the most income for fishing.
He buys his boat from Mawlamyine Kyun. There are a few houses there that sell boats. His boat cost about 110,00 K but this was 7 years ago so he is sure that the boat prices now are much more expensive. Some boat shops in Bogalay, but its cheaper to buy in Mawlamyine Kyun.
His boat is made of Taung Sagaing – evergreen forest wood. If he needs to fix his engine, then he goes the Sat San since there is a mechanic there.
Before FAO, there was a tender system. There were three tenders: U Thein Tan (from sat san), Dao Tin Tin Hla (from Sat san) and he forgot the name of the third tender.
Three years ago they would sell their fish to three main fish buyer in Sat San village: Ko Phoe Htaung, U Own Kyin and Ko Tin Htun.
Now they sell to fish buyers from this local village: U Thaung Aye and Daw Wah Wah – because they can get more money from these local buyers.
Prices during different seasons:

1. Rainy Season:
   a. Threadfin 1 vise = 4000 K male threadfin and I vise = 8000 K female

2. Cold season:
   a. Hearing 1 vise= 1 fish = 30,000 K
      0.8 v - 1.0 vise = 20,000 – 25,000 K
      0.5 vise – 0.8 (not including 0.8, less than) vise = 12,000 K

3. Hot season:
   a. Croaker: 0.01 vise 200 K
      0.15 vise 300 K
   b. Big Prawn: over 0.15 vise = 4300 K less than 0.15 vise between 2-3000
   c. Rays: dried rays and they don’t sell locally

Specifics of Bag-net Fishing Technique:

Bag Net (based from mee laung kwin – west side – so no fao system, only tender)
80,000 K per bag net must pay to tender

During the rainy season, which is the best for him because he gets medium size prawns, hot and cold season are bad and equally bad for income. They don’t catch during the neap tide.

During the rainy season he gets 16,000 K per day and during the hot and cold season he can get a max of 7000 K.

For the bag net fishermen – kyar-pa-sat (tiger mouth) – this was the big FAO project on tender system. Bag net always creates problems with villagers so FAO came to help. Fishermen sell their price for less (7000) when selling to tender instead of 10,000 which they could get in Bogalay market. Also they would cheat on the weight so if they had one vise, the tender would only weight 0.8 vise. Also, there isn’t just one tender, there are levels of tenders, all these middle man profited in some way or another and left the fishermen with very little.

FAO now made it so that the bag-net fishermen can directly sell for the market price.

There are currently 40 FAO members in this village, 10 of them are bag net fishermen. 70-80% of these members are fishermen, some prawn, some crab trappers, but FAO members are people who are interested in joining this project – they must pay 500 K a year to participate. This also creates a type of fishing coop-which is unique to Myanmar’s coastal waters (as we have observed so far). These 40 members know which are the best fishing spots, the best fishing areas, all benefits from being part of FAO project (similar to being part of certain
committees like the ICCAT and things like… same concept – use this as an example when presenting).

The village choose 9 members to be the head of the committee – they are the ones that solve the problems and set the price of each fishing ground. These 9 members are elected by villagers and they don’t necessarily have to be fishermen, they are re-elected yearly.

The most expensive fishing ground is 100,000 K – there are 2 of these types of fishing grounds. The second category are 80,000 K – five of these fishing grounds. Third type is 65,000 K – 6 of these fishing grounds. These fishing grounds are spread out throughout the different villages on the east coast (double check the exact numbers and price with FAO document).

This village has 2 fishing grounds – one fishing ground has 7 bag nets and the other fishing ground has 6 bag nets – total of 13 bag nets – so if there are 10 bag net fishermen in this village, one or two of them must own more than one bag net.

(example of FAO project implemented in Kone-tann-pauk (good transportation village) information based on person interview with U Khin Myo – leader of village who is also a fisherman:

There are 20 bag net fishermen in this village – they do have the FAO + DOF tender system project here too. There are 33 total fishermen, but 13 of them are drift net or crab trappers.

There are three fishing grounds here:
- A Shaye Kone Tan Pauk – has 9 bag nets
- De Doke Kyun “lower ege” – 3 bag nets
- De Doke Kyun “upper edge” – 8 bag nets – he fishers here and he has two bag nets.

These fishing ground are 90,000 K per year – which includes the license for their bag net, so he has two bag nets so he pays 180,000 per year.

This project started in 2011 and he joined in 2013. Before this there was a tender system and the tender was in Bogalay – he had to pay this tender more than 180,000 (don’t know exact price) so he says that the FAO tender system is cheaper.

(example of FAO project and fishing grounds in Yawy-chaung)- also description of their paying system by using the bank – interesting – must see if others operate like this also.

This village has three fishing grounds:
4. Yway Chaung – 10 bag nets
5. Da Min Naung – 8 bag nets
6. Kwin Thar Yar – they didn’t catch in this one because there are too many waves.

****They pay 70,000 K for one bag net including the license to the FAO plus DOF tender system. There are nine people in this village that are in the committee. They give the money to the committee and then they bring it to to Kan Baw Za bank in Bogalay (KBZ bank) see everyone here. ***this is
important since this is how they manage their money – first time we hear about details like this.
Before the FAO project there was also another tender in this village, but he wasn’t fishing at that time so he doesn’t know.
The FAO project is trying to stop overfishing he says – they said that before this, their old tender would allow them to fish as they like, with no limit and during whichever season. They decided to join this project because if they didn’t join then they wouldn’t be allowed to fish in the FAO set fishing grounds. But under these rules they can’t fish from April to July due to weather also and FAO rules – but now they work as general workers or crab catcher. Some fishermen go to other wares during the closing time, and these areas are under another tender person – this is know as Pa Ti Creek – only one fishermen from this village continues to fish in this creek during the closed season (while we were there) but they don’t judge him, they don’t think anything special of this.

Dry Fishing Methods

Brief Explanation:

Raw fish come from the open sea on offshore trawling boats. Trawlers boats have different permits for this type of fishing. During the dry season, the fishermen preserve the fish with ice on boat and others preserve with salt. The ice-storage technique can last up to one month. When fishermen salt the fish, they remove the visceral (internal organs: liver, pancreas, stomach, intestine, and head).

There are two main ways of preserving, with ice – then with whole fish is preserved (more expensive because they sell by fresh condition standards) but sometimes they don’t have enough ice for long enough duration so they preserve with
salt – the preservation of salt requires them to remove the head in the visceral and the ration is 1:6 (salt:fish) so 10 vise of salt can dry 60 fish – and then they come back to fish landing site and sell to the fish buyer and the men rinse with freshwater and then spread to dun dry for 1.5 or 2 days – during rainy season they will cover with plastic cover and in the evening they preserve with the salt – the next day, when the sun is shining they rinse the fish again and spread outside – sometimes this takes longer 3 to 4 days – depends on the raining condition.

Fish Bladders and Skin of Rays Price List:

1. Croaker swim bladder:
   a. 60,000-65,000 K per vise
2. Pike fish swim bladder
   a. 400,000 K per vise
3. Catfish swim bladder:
   a. 25,000 to 30,000 K per vise
4. Threadfin fish swim bladder:
   a. 300,000 K per vise
5. Skin of Rays
   a. 5,000-20,000 per skin depending on smoothness and color of skin (photo and video image of this, show which one is more expensive, also have genus identification of each)

Photo Record of Dried Fish Bladders

Sea catfish – Arius thalassinus

Carcharhinus species – muscles of a shark Visceral, head, fins removed
Dried Pike fish (common name) Muraenesoc talabonoides (scientific name)

Dried Pike fish (same as above)
Scientific name: Dasyatidae dasyatis. Caudial fin absent, central disc and dorsal surface of tail normally with some thorns and tubercles. This dried ray skin is used to make purses and sold in Yangon markets for a very high price.

Scientific name: Plesiobatidae dasyatis. Caudal fin present, no thorns or tubercles on disc or tail. This is a smoother ray skin and is more expensive.
Scientific name: Polynemus inidcus. Swim bladder of a threadfin.

Scientific name: Muraenesox talabonoides. The swim bladder of the fish was extracted and dried. The difference between this fish and the threadfin is that this fish has a longer pectoral fin than the fish above. This is more expensive.

Common name: Sea catfish bladder
Scientific name: Arius thalassinus
Common name: croaker fish. This is the most expansive swim bladder exported to China. There are many species of croaker, but the most common is:
Scientific name: Protomebea diaconthus

Species: Loligo- offshore squid
Woman removing swim bladder from catfish
Main Fishing Seasons with Associated Catch

1. The Hot Season – Feb-May
2. The Rainy Season – June to September
3. The Cold Season – October to January
4. Seasons based on Wind patterns
   a. Monsoon Season -- May to September
      i. Winds come from Bay of Bengal and North of Indian Ocean – wind direction SW to NE – max 4 knots
   b. Cold/Hot Season – October to March
      i. Winds come from northern China, Mongolia, Tibet – wind direction NE to SW – max 2 knots
   c. Currents
      i. Dependent on winds and tides, so there is a current categorized by the NE winds and another current categorized by the SW winds

(2) CRAB

1. Classification of Crabs:
   a. Female A – 150 grams = 500 K
   b. Male A – 200 grams = 1100 K
   c. Male B – 150 grams = 400 K
   d. “John” (full big crabs) = 1 kg = 2300 K
   e. “General” (<1kg of big and small/incomplete/broken arm crabs) = 1500K

2. Classification of Crabs: from interview on August 20th with Ko Kyi Than – crab trapper that traps around MWKS with special permit:
   a. Male A : best – weight up to 0.2 vise = 1,200 K per crab
   b. Male B: medium – weight up to 0.15 vise = 700 K per crab
   c. Male C – lowest – weight up to 0.1 vise = 400 K per crab

3. Crab Traps:
   a. Bamboo: 300 K per trap
   b. Iron: 550 K per trap
   c. Iron + Plastic: 750 K per trap
   d. Entire families are hired by a “rich man” to make crab traps – these families are responsible for making 100 crab traps a day with the material that the “rich man/crab trap seller” provides them with. If the families are unable to make 100 crab traps a day, then they are responsible to pay back the “rich man” for the material that they were unable to use.
Photo of a crab-trap making family – including all members, even the 6 year old daughter.

Illustration of a crab type and its appropriate dimensions.

4. Photo Record of Mangrove Crabs

Common name: Orange mud crab
Scientific name: Seylla oliveacea
5. Crab Trapper
   a. Pays permit to FD to trap around MWKS, 5000 K per year
   b. Also has to pay 3000 K to military – IF military demands- only heard this information from one interview from crab trapper that traps around MWKS – data from interview near Yway Chaung Village.

(3) PRAWN DATA

1. Classification of Prawns based on local methods and Price:
   (First type of local classification and related price)
   a. Bot Gyite – Best size/quality – 1 vise – 4000-5000 K fresh condition
   c. Pae Non Pyar - Medium – 1 vise – 1000 – 2000 K fresh condition
   d. Zike: Lowest – 1 vise – 600 K fresh condition
   (Second type of local classification and related price)
   e. Big Prawn: over 0.15 vise = 4300 K
   f. Less than 0.15 vise = 4000 K
   g. Between 2000-3000K
   (Third type of local classification and related price)
   h. Prawns (based on size): up to 3 inches of 1 vise = 10,000 K
   i. Less than 3 inches of 1 vise = 7000-8000 K
   j. Big/medium prawn smaller than buyer pays between 3000, 3500, or 3800 based on their size
   (Fourth type of local classification and related price)
   k. 4 inch prawn – 1 vise = 10,000 K
   l. 1.6-2.0 inc – 1 vise – he gets 4000 K
   m. less than 1.6 inc – 1 vis – 3,000 K
   n. smallest prawn – 1 vise – 2,000 K

2. Photo Record and Identification of Prawns

Common name: (English) Giant freshwater prawn
Scientific name: Macrobrachium rosenbergii (De man, 1879)
Common name: Brackish water shrimp
Scientific name: Palamon (unknown species)
APPENDIX C

RELEVANT RESEARCH TERMS IN MYANMAR LANGUAGE

(1) Villages names around MWKS: listed in order that we visited them – excluding Kadon-Kani

1. Mee-Laung-Kwin (Burning field)
2. Kan-Seik: “this village means Fortune Jetty
3. Chaung-byey-gyi “very rich creek” chaung=creek
4. Gway-chaung-gyi – same meaning as above
5. Ma-pway-tan : “sleeping girl village”
7. Ah-pyin-ma-yan village name means : Ah-pyin= outside, ma-yan = name of a very sour fruit “Outside Sour Fruit Village”
8. Nga-poke-thin-tann (Croacker fish village- meaning)
9. Pa-dai-kaw (Spicy Root Village)_they use this root in Rakkhine traditional mohinga – and also in Thai traditional soup (tum-yam)
10. Ah-pyin-boke-chaung (Village of the Fatty Creek) Boke=fatty
11. A Nout (west) La-wine (full moon) village – West Full Moon Village (the full moon village is separated into the east and west part)
12. Pyin-boe-gyi (pyin= floor, boe-gyi= expensive) = “Expensive Floor Village” – last village on the west – most beautiful with long creek passage before reaching – dominant forestry related
13. Kant-malar-chaung= “limited area creek village”- first village on the top east
14. Aung-Chan-Tha (near Set San) Aung = famous, chan-tha= wealthy, so this village means the “Wealthy and Famous Village”.
15. Kone-tann-pauk – (A Shaye = east) – “good transportation village”
16. Yawy-chaung (?) ask the meaning – maybe no meaning
17. Da Min Maung (?) ask meaning
18. Htaw-paing (also known as Shwe-pyi aye, village has two names) htaw=gold, so “the golden village”
20. Ah-se-lay – small seed village
21. Ah Se Gyi – Big seed village – another name for this village is Aung Si Mingalar “Famous greeting village”

(2) Fisheries related terms:

1. Kyun = island, important to understand this term – especially since our field site is called Mein-mah-la (beautiful lady) Kyun (island) – The beautiful lady island.
2. Hnoke Khan Hmwe = barbells/whiskers – used to describe the different number of pairs that catfish have, which distinguishes which species they are
3. La Pyae = full moon (heard often due to tide-dependent fisheries)
4. La = moon (heard often due to tide-dependent fisheries)
5. Pat-kaung = eel (used for crab food) and marine eels are sold for export
6. “Pie” = crab trap

Classification of Crabs:
   a. Female A – 150 grams = 500 K
   b. Male A – 200 grams = 1100 K
   c. Male B – 150 grams = 400 K
   d. “John” (full big crabs) = 1 kg = 2300 K
   e. “General” (<1kg of big and small/incomplete/broken arm crabs) = 1500K

7. Trammer net = drift net
8. Kyar-pa-sat (tiger mouth) = bag net fishing
9. “Nga-zin-yine” – local name for a species caught with long line hooks during rainy season – information from interview in Aung-Cha-Thar village.
10. “Nga-khu” local name species for fish caught with long line hooks during the cold season – information from same interview in Aung-Char-Thar.
11. Ba-win = stationary type of fishing gear – explained in further detail in fisheries report. Also seen in Rakhine coast, but there it is called Maw-Yan.
12. Yay-ki Ngar = name of small fish that they don’t sell but eat locally – interview from “good transportation village.”
13. Gow – push net to get prawns and shrimps
14. Get other fishing terms from awesome paper that NNO gave
15. Yae Mwe – water(yae) snake(mwe) – crab trapper that we interviewd in Yway Chaung Village said that sometimes, when he doesn’t have eels to use as bait, he catches these water snakes with “tar-pike” net – he places this net in the creek and leaves it over night – in the morning he can get about 20 snakes – no bait is needed – this net is similar to ba-win method, but with smaller mesh size.

(3) Forestry Related Terms:

1. Kyun (teak) : Tectona grandis (dominant in central dry zone – Mandalay region, Megwe region...) – best quality
2. Pyin-kado (timber) : Xylia dolabriformis (found all over Myanmar)
3. To-ma-lan (mangrove species) : Dalbergia oliveri (dominant in estuarine area – Ayerwady delta, near the coastal zone)
4. Kya-na (mangrove species) : Xylocarpus moluccensis – this is the cheapest wood to use for boats
5. Ta-bot – term for shrub that the local traditional matts are made of – which we saw in the village of Gway Chaung Gyi with the crab trappers and crab buyers – holding up local matt (have picture of this)
6. xylleae dola brefomis – type of wood that they can make furniture from in the village of Ma Pway Tan (according to our interview)
7. Nipa leaf – used t make the roofs of most houses
8. Heritiera formes – mangrove tree that has the very sour fruits – found in the village which has very sour fruit : Ah-pyin-ma-yan_village name means : Ah-pyin= outside, ma-yan = name of a very sour fruit “Outside Sour Fruit Village”
9. Byu Shwe Wah – local name for mangrove species that Aung Kyaw Myint plants (the interesting “monk-like” character that has a suspicious amount of land in Ahpyin-boke-chaung village.

10. Taung Sagaing – evergreen forest wood – wood used to make the boat of fishermen interviewed in Kant Ma Lar village – his boat was made in Mawlamyine Kyun – which apparently is the cheapest place to get your boat made – much cheaper than Bogalay

11. Taung-bane – local wood – bag net fishermen from Mee Laung Kwin Village buys this wood and then makes the boat himself (interview august 20)

12. Taung-Ta-Yat – other type of wood to make boats (from interview with crab trapper in Yway Chaung Village, august 20th) Taung= moutain, Ta-Yat=mango

(4) **Myanmar Animal Husbandry Terms:**

1. Wat- pig
2. Kyat- chicken
3. Bel- duck
4. Kywel- water buffalo
5. Wat-nar-ywat-pyar = blue-ear disease that pigs get. Pig (wat) Ear (Nar-ywat) Blue (pyar). UNDP did some sort of training in the village of Htaw Paing, to teach villagers how to cure this disease in 2010-2011. (interview with crab trapper at Yway Chaung Village)

(5) **Myanmar pronouns and family terms:**

1. U= Mr.
2. Daw= Mrs.
3. Ko = boy
4. Maung = boy
5. Ma = girl
6. Ko Naung = brother
7. Parahita = someone that gives money to people without interest, out of good will (crab trap seller in kadon kani interview on august 19th)

(6) **Myanmar Snacks:**

1. Bain-moke = pan-cake
2. Moh-hin-gar = traditional rice noodle
3. Lat-phat-thoke- lat-phat (green tea leaf) and thoke (salad)

(7) **Seasonal fruits and vegetables in rainy season:**

1. Yone-pa-di = lady fingers (get picture)
2. Bu – Cucubit (not pear)
3. Tha-khwar-thee = cucumber
4. Kha-yan-chin-thee – tomato
5. Kha-yan-thee – eggplant

(8) **Myanmar Traditional Food:**

1. Hta-minn = rice
   a. Bay kyar – this sells for the most – he has 3 acres of this type – 8000/tin
   b. Kauk Gyi – medium quality – has 5 acres of this type – 5-6000/tin
   c. Nan Kan – lowest quality – has 8 acres of this species - 4000/tin
2. Khun-Ni-Ma = type of rice grain that has a red outer seed color. This species is very resistant to bad weather conditions and can also survive in salty water environments when delta water becomes higher in salinity during hot and dry season. Many farmers use this species. This seed has a very sweet smell.
3. Kauk-Hnan = type of paddy plant whose shoot bends near the top – also very resistant to floods and storms.
4. Da-Ni-Yae = Nypa Juice, this is like alcohol (get this all season)
5. Htan-yae = palm juice alcohol (only can get during dry and cold season)
6. Kauk-Nyin = sticky rice
7. Gone jar = traditional name for the scientific name Therapon Jarbua (?) find out local name
8. Nga Pi = shrimp paste, equivalent to butter, they call it “Myanmar’s butter”
10. Mont-Hin-Khar (Myanmar traditional breakfast)
11. Mohinga- traditional noodle
12. Thar-ku-pyot = made out of palm sugar, coconut and wheat – traditional snack that ChuChu and I ate at night – our home stay family made it for us- super super sweet

(9) **Myanmar Traditional Medicine:**

1. Pa-yoke-si = Tiger balm for headaches
2. Lay-zae = used for stomach ache
3. Sae-ni-hmoke = used to reduce fever (red color powder) made from different local plants, but especially beetle leaf – mix with hot water, beetle leaf and pepper
4. Kun-yawt-pon = used to cure cough (also made by beetle leaf)
5. Na-mwin-hmoke= tamarind powder used for stomach
6. Lay-ngan-sae= cures paralysis; made from many fruits and herbs (what we saw being sold on the boat – get picture from trip to Bilu island)
7. Kant-ma-lar-thee - some of the mangrove fruit, some of the villagers use the ripe mango fruit and peel it, and then mix it with honey, and this cures stomach pain- diarrhea
8. Kha-yar – Acanthus species of mangrove - chest congestion – they pound the leaf of this mangrove until they make a liquid and cure chest congestion.
(10) Myanmar Religion Terms:

1. Ba Yai Chaung = church
2. (name of little monk) later in interviews with chuchu in august – add here
3. Baka – monestary education
4. Oak Ka Hta – monk association in Chaung Byo Gyi – term to describe monk association of several villages
5. Ko Yin – little monk – this is not dependent on age though, it is based on your education level and years as a monk
6. U Zin – old/adult monk, also not based on age, this is an education level
7. Mahanyarna- Japanese Buddhism where you believe in Buddha and in spirits
8. Htayrawrahra – Myanmar Buddhism which only believes in Buddha
9. Buddha-win = Buddha literature
10. U-Shin-Gyi – Nat – all fishermen we spoke to in MWKS worship U Shin Gyi – the story is that before MWKS was a protected area, loggers would come during the day and cut wood to sell back to Bogalay – and U Shin Gyi was one of these loggers, but after they were done cutting wood, he would always play his guitar – and all the women in the MWKS loved his music, and always wanted him to stay – so one day he never left and just stayed on the island. (confirm this story)
11. Myin Phyu Schin – white horse nat – one of the crab trappers also worshiped this nat (at Yway Chaung Village)

(11) Myanmar Traditional Music:

1. Oesee – name of the traditional “bongo”
2. War-lak-khote – name of traditional bamboo clap
3. “Ta-saung-mone” – traditional music in Yawy Chaung village, for the festival in November, water festival in april, and march festival. 6 people in the village play the instruments, and many singers and dancers.
4. Flute, bamboo, clap, drum= all instruments, need to find names for them – the drums are made out of skin of cows and water buffalo and also rubber.

(12) Myanmar Festivals:

1. Thin Gyan – water festival in April
2. Ta Boung – festival in march
3. What is the name of the festival in November?
4. Swaun Gyi Laung Pwe – festival in October (crab trap seller in kadon kani told us that he gives uncooked rice – big donations of it – to monks during this festival, along with money)
APPENDIX C

KNOWLEDGE DISSEMINATION

Brief Overview

On Monday, August 10th, 2015 NNO, Chu-Chu and I presented our research findings to the Marine Science Department of Mawlmayine University (Appendix C). We individually presented our own PowerPoint presentation, each with a duration time of about 20 minutes. NNO and Chu presented in Myanmar language. I presented in English while Chu translated for me. There were over 80 people in attendance, including undergraduate students, graduate students, PhD students, and even professors. The questions at the end of each presentation emphasized the excitement from the students and their eagerness to participate in field-based research projects. Additionally, the Head of the Marine Science Department, Dr. San Tha Tun, is extremely enthusiastic to keep building the marine science research capacity of Mawlamyine University through the open-ended network that was co-created throughout this thesis.

On Tuesday, August 11th, 2015 we presented our results to a group from UNICEF, seeking to fund innovative educational programs in developing countries (Appendix C). They were also quite impressed by this research collaboration. Their main question was how do we intend to increase educational opportunities and environmental awareness programs in the impoverished villages of MWKS. This is a common question, one that I hope to solve by promoting Integrated Knowledge Translation.

On Thursday, August 13th, 2015 Chu-Chu and I traveled to Yangon to present our research findings to FFI project managers U Zau Lunn, Robert Howard, and Mark Grindley. NNO could not attend this presentation due to his responsibilities as an associate professor at Mawlamyine University. The FFI project managers found the presentation to be very informative and were intrigued by the newly introduced concept of Educational-Tourism. As a result of all the hard work and a clear demonstration of her capacity as a researcher, FFI offered to sponsor ’s research in MWKS for the rest of the year (Appendix C).

Research Results and Presentations by Naung Naung Oo and Chu-Chu

Location: Mein-ma-hla Island protected areas in Bo-ga-lay Township, Ayeyawady Region, and Delta Area in Myanmar

Field survey sites: Western and Eastern Mein-ma-hla Island, totally (11+10 = 21) villages

Operation time: (7:00 a.m – 5:00 p.m)/ (22.7.15 – 27.7.15)

Team members:
Dr Tint Swe (Retired Professor, Mawlamyine University, Marine Science)
1. Roxane de Waegh (University of Miami, USA)
2. Naung Naung Oo (Mawlamyine University)
3. Khin Myo Myo Tint (Chu Chu) (Mawlamyine University)
4. Khin Maung Soe (Field coordinator, FFI), Chaung-byegyi
5. Thant Zin Tun (Assistant field coordinator, FFI), Chaung-byegyi
6. Zaw Htoo Aung (Ranger, Department of Forestry, Bo-ga-lay)*
7. Kyaw Kyaw Naing (Ranger, Department of Forestry, Bo-ga-lay)*
8. Zaw Pwar (Boatman, FFI), Chaung-byegyi

Classification of Shelter
1. Public shelter (1000 people)
2. School-cum shelter (500 people)
3. Clinic-cum shelter (for only patient, children and old people)

Classification of School
1. Unofficial or informal primary school/ self-help (Grade 1 to Grade 5) supported by villagers
2. Ba-ka school (Grade 1 to Grade 5) supported by monks and Bo-ga-lay Tsp
3. Primary school (Grade 1 to Grade 5)
4. Post primary school (Grade 1 to Grade 7)
5. Middle school (Grade 1 to Grade 8)
6. High school (Grade 1 to Grade 11)

Classification of Religion
1. Buddha
2. Karen Baptist Convention (KBC)
3. Nat (U Shin Gyi, Pin-lae-pyin-maung-hna-ma)

Classification of Job
The five main occupations are:
1. Fishing (fisher, buyer, dried fish seller, broker, boat seller, net seller, boat construction, saw mill)
2. Farming (farmer, buyer, fertilizer and chemical seller, rice mill)
3. Animal Husbandry (cattle, pig, chicken, duck)
4. Workshop (various engine, tool, tractor, lathe)
5. Odd jobs (coolie, boatman, vendor, unofficial lottery selling, lumberjack, casual)
**Classification of Boat** (Why did they choose this wood?)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Depth (ft)</th>
<th>Engine (hp)</th>
<th>Use</th>
<th>Wood (must find local name)</th>
<th>Price (kyat) Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>1.5</td>
<td>1</td>
<td>No</td>
<td>Crab/eel</td>
<td>Mangrove wood</td>
<td>100,000</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>2</td>
<td>1.5</td>
<td>No</td>
<td>Crab/eel</td>
<td>Mangrove wood</td>
<td>130,000</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>2</td>
<td>1.5</td>
<td>4</td>
<td>Fishing</td>
<td>Teak, Hardwood</td>
<td>150,000</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>2</td>
<td>1.5</td>
<td>4</td>
<td>Fishing</td>
<td>Local name, Hardwood</td>
<td>180,000</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>2.5</td>
<td>2</td>
<td>5</td>
<td>Fishing</td>
<td>Local name, Hardwood</td>
<td>250,000</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>3</td>
<td>2</td>
<td>7.5</td>
<td>Fishing</td>
<td>Local species</td>
<td>450,000</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>3</td>
<td>2</td>
<td>7.5</td>
<td>Fishing</td>
<td>Teak and local wood</td>
<td>450,000</td>
</tr>
<tr>
<td>8</td>
<td>21</td>
<td>3.5</td>
<td>2.5</td>
<td>10</td>
<td>Fishing</td>
<td>Local Hardwood</td>
<td>450,000</td>
</tr>
<tr>
<td>9</td>
<td>24</td>
<td>3.5</td>
<td>2.5</td>
<td>10</td>
<td>Fishing</td>
<td>local Hardwood</td>
<td>800,000</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
<td>10</td>
<td>4</td>
<td>25</td>
<td>passenger</td>
<td>Local Hardwood</td>
<td>15,000,000</td>
</tr>
</tbody>
</table>

**Classification of Education** (Why did they postpone of leave from school?)

1. Graduate and undergrad
2. Grade 11 passed
3. Grade 11 (one fail)
4. Grade 10 (postpone/left)
5. Grade 1 to Grade 9 (postpone/left)
6. Ba.Ka level

**Classification of fishing gear**

In this survey, there are two main types of gears:

I. **Passive gear** (does not have to be dragged or towed to capture fish)
   e.g. long line, traps, weirs, gill nets

II. **Active gear** (to be moved, dragged or towed in order to capture fish)
    e.g. seines

1. Long line of baited hooks (Ngar-myar-tann)
2. Bag net (Kyar-pike)
3. Lift net (Yat-thae) OR Man push net (Yinn-thonn, Kywe-kaw)
4. Beach seine (Swae-pike)
5. Upright Eel trap
6. Crab trap
7. Set gill net (Tar-pike)
8. Cast net (Lat-pyit-kon)
9. Drift gill net (Ngar-tha-lauk-pike) OR (Thone-htet-pike)
10. Beach surrounding net (Pike-ba-win)

**Classification of environment**
1. Mein-ma-hla Kyun Protected Area (33776 Acres) (Length = 16 miles; Width = 6 miles)
2. Ka-don-ka-ni Protected Area
3. Pyin-da-yal Protected Area
4. Mangrove swamps
5. Sand dunes and mud flats
6. Paddy fields

**Classification of season**
1. The Hot season (February to May)
2. The Rainy season (June to September)
3. The Cold season (October to January)

**Classification of month**
1. Ta-gue (April)
2. Ka-sone (May)
3. Na-yone (June)
4. Waso (July)
5. Wa-khaung (August)
6. Taw-ta-lin (September)
7. Thi-din-gyut (October)
8. Ta-zaung-mone (November)
9. Nat-daw (December)
10. Pyar-tho (January)
11. Ta-boe-dwe (February)
12. Ta-baung (March)

**Classification of fishing nets in Western and Eastern Mein-ma-hla Island**

<table>
<thead>
<tr>
<th>Village</th>
<th>Long line of baited hooks</th>
<th>Bag net</th>
<th>Lift net</th>
<th>Beach seine</th>
<th>Upright Eel trap</th>
<th>Crab trap</th>
<th>Set gill net</th>
<th>Cast net</th>
<th>Drift gill net</th>
<th>Beach surrounding net</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>East</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
### Village Profile Statistics

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Date</th>
<th>Time</th>
<th>Village</th>
<th>House</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>No. of interviewee</th>
<th>School</th>
<th>Monastery</th>
<th>Church</th>
<th>Clinic</th>
<th>Police station</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22.7.15</td>
<td>11:00 a.m.</td>
<td>Mee-laung-kwin</td>
<td>42</td>
<td>110</td>
<td>122</td>
<td>232</td>
<td>2</td>
<td>P</td>
<td>PP</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>2:00 p.m.</td>
<td>Kan-seik*</td>
<td>93</td>
<td>244</td>
<td>202</td>
<td>446</td>
<td>7</td>
<td>P</td>
<td>PP</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>5:00 p.m.</td>
<td>Chaung-byu-gyi**</td>
<td>316</td>
<td>669</td>
<td>661</td>
<td>1330</td>
<td>5</td>
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<td></td>
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<tr>
<td>4</td>
<td>23.7.15</td>
<td>8:00 a.m.</td>
<td>Gway-chaung-gyi*</td>
<td>190</td>
<td>397</td>
<td>453</td>
<td>850</td>
<td>3</td>
<td>P</td>
<td>PP</td>
<td>2</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>10:30 a.m.</td>
<td>Ma-gway-tann</td>
<td>43</td>
<td>101</td>
<td>79</td>
<td>180</td>
<td>1</td>
<td>P</td>
<td>PP</td>
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</tr>
<tr>
<td>6</td>
<td></td>
<td>1:00 p.m.</td>
<td>Kone-tann-pauk (West)</td>
<td>150</td>
<td>230</td>
<td>216</td>
<td>446</td>
<td>3</td>
<td>P</td>
<td>PP</td>
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<td>1</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td></td>
<td>3:25 p.m.</td>
<td>Ah-pyin-ma-yan</td>
<td>60</td>
<td>107</td>
<td>91</td>
<td>198</td>
<td>1</td>
<td>P</td>
<td>PP</td>
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<td></td>
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<tr>
<td>8</td>
<td>24.7.15</td>
<td>7:00 a.m.</td>
<td>Nga-poke-thien-tann</td>
<td>91</td>
<td>284</td>
<td>245</td>
<td>529</td>
<td>3</td>
<td>P</td>
<td>PP</td>
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<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>8:30 a.m.</td>
<td>Pa-dai-kaw*</td>
<td>300</td>
<td>640</td>
<td>680</td>
<td>1320</td>
<td>4</td>
<td>P</td>
<td>PP</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td></td>
<td>12:00 p.m.</td>
<td>Ah-pyin-boke-chaung*</td>
<td>81</td>
<td>159</td>
<td>142</td>
<td>301</td>
<td>3</td>
<td>P</td>
<td>PP</td>
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<td>1</td>
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<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>3:30 p.m.</td>
<td>La-mwine (West)</td>
<td>141</td>
<td>225</td>
<td>215</td>
<td>440</td>
<td>2</td>
<td>P</td>
<td>PP</td>
<td>2</td>
<td>1</td>
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<td></td>
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</tbody>
</table>

**Western Mein-ma-la Island**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Date</th>
<th>Time</th>
<th>Village</th>
<th>House</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>No. of interviewee</th>
<th>School</th>
<th>Monastery</th>
<th>Church</th>
<th>Clinic</th>
<th>Police station</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>25.7.15</td>
<td>9:35 a.m.</td>
<td>Pyin-boe-gyi**</td>
<td>180</td>
<td>388</td>
<td>392</td>
<td>792</td>
<td>2</td>
<td>P</td>
<td>PP</td>
<td>2</td>
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</tr>
<tr>
<td>13</td>
<td></td>
<td>12:30 p.m.</td>
<td>Kant-malar-chaung</td>
<td>187</td>
<td>402</td>
<td>398</td>
<td>795</td>
<td>4</td>
<td>P</td>
<td>PP</td>
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<td></td>
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<tr>
<td>14</td>
<td></td>
<td>4:20 p.m.</td>
<td>Aung-chan-tha</td>
<td>213</td>
<td>902</td>
<td>839</td>
<td>1741</td>
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<td>P</td>
<td>PP</td>
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<tr>
<td>15</td>
<td>26.7.15</td>
<td>7:15 a.m.</td>
<td>Kone-tann-pauk [East]*</td>
<td>126</td>
<td>226</td>
<td>174</td>
<td>400</td>
<td>4</td>
<td>PP</td>
<td>PP</td>
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<tr>
<td>16</td>
<td></td>
<td>10:00 a.m.</td>
<td>Gway-chaung</td>
<td>83</td>
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<td>146</td>
<td>300</td>
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<td>P</td>
<td>PP</td>
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<tr>
<td>17</td>
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<td>12:10 p.m.</td>
<td>Da-min-naung*</td>
<td>108</td>
<td>280</td>
<td>268</td>
<td>566</td>
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<tr>
<td>18</td>
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<td>3:00 p.m.</td>
<td>Taw-paing (= Shwe-paw-gyi)**</td>
<td>290</td>
<td>704</td>
<td>720</td>
<td>1424</td>
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<td>19</td>
<td>27.7.15</td>
<td>7:30 a.m.</td>
<td>Sein-yat-ty</td>
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<td>320</td>
<td>680</td>
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<td>P</td>
<td>PP</td>
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</tr>
<tr>
<td>20</td>
<td></td>
<td>10:00 a.m.</td>
<td>Ah-se-lay</td>
<td>97</td>
<td>154</td>
<td>164</td>
<td>318</td>
<td>2</td>
<td>P</td>
<td>PP</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>1:00 p.m.</td>
<td>Ah-se-gyi (= Aung-se-min-ga-lar)*</td>
<td>185</td>
<td>498</td>
<td>572</td>
<td>1070</td>
<td>2</td>
<td>P</td>
<td>PP</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Eastern Mein-ma-la Island**

**School-cum-shelter, clinic-cum-shelter**

**Public shelter**

**PP**

Every village has firebrigade and militiaman.

Without electricity
Coastal Social ecology of Mein Ma Hla Island and Adjacent Areas

Presented by
Naung Naung Oo
Khin Myn Myn Tint
Roxane de Waegh

10.8.2015

Main building
Room: 19
Aims

➢ to share the experience of field survey

➢ to let you know connection of livelihood of local people and estuarine fauna and flora around the Island

➢ to inform the socioecology and ecotourism of Mein Ma Hla Island

Mein Ma Hla Island Wildlife Sanctuary, Bogalay Township, Ayeyawady Region
Mein Ma Hla Island Wildlife Sanctuary

- section of Ayeyawady Delta mudflat
- a few feet above sea level and located close to the open sea
- 1994 Government announced as Wildlife Sanctuary
- length: 16 miles, width: 6 miles, forest cover (33776) acres

- 25 mangroves; 117 forest, riverine, open water and coastal birds; Orcaella brevirostris (Ayeyawady dolphin); Macaca fascicularis (long-tailed macaques); Dermochelys coriacea (Leatherback), Lepidochelys olivacea (Olive Ridley), Eretmochelys imbricata (Hawksbill); 44 fish species; 2 Scylla species (mud crabs).

Mein Ma Hla Island

**Western Part**

1. Mee-laung-kwinn
2. Kan-seik
3. Chaung-by-e-gyi
4. Gway-chaung-gyi
5. Ma-pwav-tann
6. Kone-tann-pauk (West)
7. Ah-pvin-ma-yan
8. Nga-poke-thin-tann
9. Pa-dai-kaw
10. Ah-pvin-boke-chaung
11. La-wine (West)

**Eastern Part**

1. Pyin-boe-gyi
2. Kant-mlar-chaung
3. Aung-chan-tha
4. Kone-tann-pauk (East)
5. Yway-chaung
6. Da-min-naung
7. Htaw-paine (= Shwe-pyi-aye)
8. Sein-ya-ti
9. Ah-se-lay
10. Ah-se-gyi (= Aung-se-min-ga-lar)
Coastal status around Mein Ma Hla Island

- Roots protected by land
- Reduced the plants
- Reduced the plants
- No plants
- No plants
- Erosion
- A collapsed jetty due to erosion
- Replantation
- Green environment
- Stable environment

Warning Sign Post

Salt-water or Estuarine Crocodile *Crocodylus porosus*
Salt-water or Estuarine Crocodile *Crocodylus porosus*

- within the sanctuary year-round
- spotlighting from a boat at night
- during the breeding season it is also possible to observe nests
- monitoring activities, plus also eggs or hatchlings that have been rescued from disturbed nests
- tourism sites that can offer viewing of this species

Clinic-cum shelter

Forest-cum shelter

Public shelter

School-cum shelter
Classification of Education status

- Unofficial or informal school
- Ba-ka school
- Primary school
- Post primary school
- Middle school
- High school
Classification of Religion

- Buddhism

- Kayin Baptist Convention (KBC)

- Nat (U Shin Gyi, Pin-laepyin-maung-hna-ma)

Classification of Job

The five main occupations are:

- Fishing (fisher, buyer, dried fish seller, broker, boat seller, net seller, boat construction, saw mill)

- Farming (farmer, buyer, fertilizer and chemical seller, rice mill)

- Animal Husbandry (cattle, pig, chicken, duck)

- Workshop (various engine, tool, tractor, lathe)

- Odd jobs (coolie, boatman, vendor, unofficial lottery selling, lumberjack, casual)
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- Bag net (Kvar-pike)
- Lift net (Yat-thae) OR Man push net (Yinn-tonn, Kywa-kaw)
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- Upright Eel trap
- Crab trap
- Set gill net (Tar-pike)
- Cast net (Lat-pyit-kon)
- Drift gill net (Ngar-tha-lank-pike) OR (Thone-htet-pike)
- Beach surrounding net (Pike-ha-win)
Protection, Awareness, Replanting, Flora & Fauna
NGOs, INGOs, Local

Infrastructure of community level

Meinmahla kyun fire-wood saving stove

Stand for drinking water

Duck husbandry

Workshop
Nursery for Protecting

Land + Water + Air

Macaca fascicularis
(long-tailed macaques)

Livelihood

Habit

Shelter

Happy & Save life

QUESTIONS ??

My answer is

.....+-x÷.....@#$%
Thank You
Fishery status of Mein Ma Hla Island and Adjacent Areas

Presented by

Khin Myo Myo Tint
Department of Marine Science
Mawlamyine University

11.8.2015

Point b (Mawlamyine University)
Goals

➢ To see clearly the social and economical developments of these fishing areas,

➢ To realize the circulation between their daily incomes and livelihoods,

➢ To let you know the tender system and fishing gear around the island.
Crab Fishery
Various kinds of fish
Tender system

➢ Before 2012,
  tender system = (Buyer + Fishermen)
➢ In 2012,
  tender system = (FAO+DoF+Buyer+Fishermen)

For bag net only

License

➢ Long line net and drift net, Drift gill net (Ngar-tha-lauk-pike) or (Thone-thet-pike)
➢ Labor card for fishermen, crab trappers and eel trappers

Without License

✓ Long line of baited hooks (Ngar-myar-tann)
✓ Lift net (Yat-thae) or Man push net (Yin-tonn, Kywe-kaw)
✓ Beach seine (Swal-pike)
✓ Set gill net (Tar-pike)
✓ Cast net (Lat-pyit-kon)
✓ Beach surrounding net (Pike-ba-win)
Conclusion

- Good benefits from cooperating with FAO tender system
- To promote sustainable fishing technique and alternative job opportunities
- To create the healthy environment.

Future Research/Goals

- to learn and work with fishery expert Dr. Tint Swe (mentor)
- fish species in East and West
- compare analysis from each locations
- Fish abundance/species differences during different seasons (rainy June-August, hot, cold)
- fishermen income during different seasons
- what fish species use mangrove ecosystem as spawning habitat
- show tourist about about the research I am conducting
- work with U See Htun (retired professor) to do international publication
THANK YOU
(1) Naung Naung Oo presenting research findings from MWKS to the students, professors and staff from the Marine Science Department at Mawlamyine University. Photo taken on August 10th, 2015 by Roxane de Waegh.
(2) Naung Naung Oo presenting research findings from MWKS to the students, professors and staff from the Marine Science Department at Mawlamyine University; visual of PowerPoint presentation and classroom environment at Mawlamyine University. Photo taken on August 10th, 2015 by Roxane de Waegh.
(3) Naung Naung Oo presenting research findings from MWKS to the students, professors and staff from the Marine Science Department at Mawlamyine University. Photo taken on August 10\textsuperscript{th}, 2015 by Roxane de Waegh.
(4) Chu-Chu presenting research findings from MWKS to the students, professors and staff from the Marine Science Department at Mawlamyine University. Photo taken on August 10th, 2015 by Roxane de Waegh.
(5) Chu-Chu PowerPoint presentation to Marine Science Department at Mawlamyine University. Photo taken on August 10th, 2015 by Roxane de Waegh.

(6) Chu-Chu (left) Naung Naung Oo (middle) and Roxane de Waegh (right) presenting research findings and sharing experiences with pointB change agents and UNICEF team. Photo taken on August 11th, 2015 by Roxane de Waegh.
Consultancy Contract

**Name of Consultant:** Khin Myo Myo Tint (Chu Nge)

**Address of Consultant:** No. (498/C), Aun Mingalar Road, Shan Gone Ward, Kawkareik Township, Kayin District, Myanmar

**Contact email:** chuenge92@gmail.com

**Contact telephone:** 09401591010

**Date contract commences:** 12.08.2015

**Date contract terminates:** 31.12.2015

**Job Title:** Researcher

**Reporting to:** U Zau Lunn (Marine Programme Coordinator)

**Responsibilities**

The Consultant will carry out the consultancy services specified in the attached Terms of Reference (Annex 1) on a self-employed basis. The documents constituting the Contract do not imply an offer of employment as a member of Fauna & Flora International (FFI) staff, permanent, temporary or otherwise. The Consultant is not an agent of FFI and will not hold him/herself out as an employee or agent of FFI.

**Warranties**

Khin Myo Myo Tint warrants that she has the necessary knowledge, qualifications, ability and expertise to perform the activities set out in the Terms of Reference to the standard of care and technical professional expertise required by FFI.
Expenses

FFI will only reimburse the following expenses incurred in direct pursuance of the consultancy services detailed in the attached Terms of Reference (Annex 1). All expenditure must be within the agreed project budget. Any expenditure exceeding the agreed budget must be approved in advance by the FFI Project Manager for the project on which the Consultant is working.

- Travel costs within Myanmar – Travel will be by the cheapest means and by the most direct route.
- Daily subsistence allowance while working in Meinmhalay Kyun WS and surrounding villages
- Accommodation costs within Bogale and Meinmhalay Kyun WS
- Costs related to field activities
- Additional expenses by prior agreement with the FFI Project Manager for the project on which she is working

Any claim for reimbursement of expenses must be accompanied by detailed records and original receipts, wherever possible. Reimbursement will be made by cheque/bank transfer in US Dollars or Kyat within 30 days of receipt of an approved claim.

FFI expects the Consultant to act reasonably and responsibly to ensure that expenditure is minimised mindful that FFI is a charitable organisation and has a duty to spend money in a cost-effective manner.

Insurance

Khin Myo Myo Tint is responsible for arranging her own medical and personal liability insurance including insurance for personal property. Khin Myo Myo Tint is not covered by any professional indemnity insurance from FFI and is responsible for arranging her own professional indemnity insurance at her discretion. FFI will not be held liable in any way for any injury, loss or damage, unless shown to be directly responsible due to its direct actions or negligence.

Liability

Khin Myo Myo Tint exempts FFI from any civil responsibility or liability for any damage (loss of goods or articles or any other occurrence) suffered by her in connection with the performance of the activities.

Intellectual Property Rights

All materials, images and information produced while working on this project must be shared with FFI.

FFI shall have the right to use the material, images and information as it deems best for furthering the cause of conservation. FFI allows Khin Myo Myo Tint to use the materials, and information providing an appropriate acknowledgement is made.
Any scientific publications or images published by Khin Myo Myo Tint that arise from her activities on the project shall be credited both to Khin Myo Myo Tint and to FFI.

**Early Termination**

Withdrawal: Khin Myo Myo Tint agrees to give FFI at least 2 weeks’ notice should she wish to retire from the project on which she is engaged. Any such notices must be in writing.

Delays: Khin Myo Myo Tint shall inform FFI of any event(s) that could affect the performance of this agreement, and will provide any necessary details.

**Travel Advice**

Khin Myo Myo is advised that she may be going to areas where there may be increased risks to health or life whether as a result of the political situation in the country where the project is based or as a result of increased presence of certain diseases. Khin Myo Myo Tint confirms that she is aware of such risks and agrees not to hold FFI responsible for any such risk being realised.

**Notices**

All notices concerning this Contract and its performance shall be addressed to Fauna & Flora International at the following address:

Fauna & Flora International Myanmar, 3rd Floor, No 35, Shan Gone Condo (Corner of Shan Gone Street and Myaynigone Zay Street), San Chaung Township, 11111, Yangon, Myanmar.

**Amendments/Additions to this agreement**

Any amendments or additions shall be in written form and attached to this agreement in the form of a supplementary annex.

**Entire agreement and severability**

This is the entire agreement between the parties and replaces all and any previous agreements. If any clause or part of a clause in this agreement is or becomes invalid or unenforceable this shall not affect the validity and enforceability of the remaining clauses of the agreement.

Prepared in Yangon in two copies.

Khin Myo Myo Tint: On behalf of FFI:
ANNEX 1

TERMS OF REFERENCE

Name of Consultant: Khin Myo Myo Tint (Chu Nge)

Reporting to: U Zau Lunn (Marine Programme Coordinator)
Empowering Mein-ma-hla Kyun’s Artisanal Fishing and Farming Communities

Discovering the potential for the inclusive development of Community-Based Educational Tourism for the villages surrounding Mein-ma-hla Kyun Wildlife Sanctuary (MWKS)

August 31st, 2015

Empowering local people

The villages around MWKS depend directly on their surrounding natural ecosystems to support their livelihoods. In 2008, the devastating Cyclone Nargis stripped these communities from their primary source of income— their farmlands and fisheries—making it even harder for them to meet basic life necessities.

Ecotourism, a form of tourism distinguished by its emphasis on conservation in natural areas, is thought to increase income-earning opportunities in impoverished rural communities. Community-based ecotourism (CBT) takes the social dimension of ecotourism but places the emphasis on the development of local communities by promoting tourism attractions that are owned, controlled, and managed by the local people (UNWTO, 2002).

The way that CBT is approached and implemented is critical to its success in terms of promoting the well being of both local people and their environment. This report suggests an alternative strategy to the development of CBT in MWKS, which aims to empower local people. The villagers surrounding MWKS need to become psychologically empowered in order to be proud of the uniqueness and value of their culture, their natural resources and their traditional knowledge. Increasing confidence of community members will lead them to seek out further education and training opportunities (Shevvers, 1999).
Introducing Mein-ma-hla Kyun Wildlife Sanctuary and a New Approach to Myanmar’s Tourism Industry

Mein-ma-hla Kyun, also known as “Beautiful Lady Island” in Myanmar, is located southwest of Bago, Township, in the Pyayon District of the Ayeyawady Region. The island is in a low flat delta area, where freshwater from the Bago River meets the marine waters of the Adaman Sea, forming an incredibly diverse ecosystem.

With over 29 identified species of mangroves, 117 species of birds, 53 medicinal plant species, 11 orchid species, 18 mammal species (including the rare Irrawaddy dolphin species), saltwater crocodiles, 59 fish species, 12 shrimp species, 10 crab species, 35 butterfly species and 26 snake species (MOECAF, 2015) it is no wonder that MWKS was chosen as one of the ASEAN’s Heritage Park Areas.

In 2005, Myanmar joined the ASEAN Centre for Biodiversity (ACB) in order to participate in regional biodiversity conservation activities and to receive technical and financial assistance from ACB (MOECAF, 2015). There are currently 32 ASEAN Heritage Parks (HPA) in the ASEAN region, and seven of them are in Myanmar – one of which is Mein-ma-hla Kyun Wildlife Sanctuary (MWKS).

Since 2005, there has been countless monitoring, research and capacity building activities conducted in collaboration with both local and international non-government organizations (LNGO and INGO), ministries, departments, and agencies in MWKS (Appendix I). Most of these activities were focused on disaster relief projects (post-Nargis), biodiversity conservation research, environmental impact assessments, and socio-economic surveys.

However, due to Myanmar’s relatively recent “open market” policy in 2010, tourism has exponentially increased – including the eco-tourism industry. Subsequently, all stakeholder groups involved in the conservation and management of Myanmar’s Protected Areas, have also re-aligned their project objectives in order to meet the new interests and demands from Myanmar’s Conservation and Development Program (MCDP).

Currently, Myanmar’s Ministry of Environmental Conservation and Forestry (MOECAF) is under a Memorandum of Understanding (MOU) with the INGO Fauna & Flora International (FFI) to promote community based ecotourism in MWKS.
The first ecotourism-focused project was conducted in 2013 under a joint initiative between and INGO-FFI, a NGO - the Biodiversity and Nature Conservation Association (BANCA) and the People Resources and Conservation Foundation (PRCF). This report was a result of a rapid assessment under the project name “Ecosystem Management and Biodiversity Conservation through Community Participation in MWKS.”

The key findings from this report concluded that the main activities that will help draw visitors are dominantly associated with nature: mangrove exploration, bird watching, crocodile and dolphin spotting, day trips to sea turtle nesting sites and even adventure kayak/canoe trips into the sanctuary’s waterways (Grindle, 2013).

Unfortunately, all of these activities are within the protected area, and therefore exclude the villages surrounding MWKS. Thus, the report also emphasized the limited economic benefits to local people, despite the increasing tourism in MWKS (Grindle, 2013.)

This report is not the only one of its kind. There have been a series of linked initiatives in the Myanmar tourism sector carried out by ministries and departments within the Government of Myanmar, various international donors, and a multitude of INGOs and NGO (Annex 1). The Myanmar Centre for Responsible Business (MCRB), the Tourism Sector-Wide Impact Assessment (SWIA) and the Myanmar Information Management Unit have summarized all these projects in a recently up-dated list this passed February, 2015 (MCRB, 2015).


When analyzing this long list of tourism-related initiatives, it is surprising that so many of them are categorized separately from one another, despite having very similar objectives. For example, numbers 2, 5, 6, 10, and 11 could all be connected into a collaborative network in order to produce more inclusive and effective project outputs. By connecting these sectionalized projects based on their similar interests, these projects can benefit from a common pool of donors, an increase of partnerships between stakeholder groups, and the enhancement of tourism transparency.

The purpose of networking is to help each other for greater accountability, collective action, and to make the best use of the investment in conservation. Networking will allow for greater capacity development, enhance information sharing and technical exchange, increased participation in joint research programs and a continuation of training courses based from the sharing and learning of best practices.
Connecting the “Linked Initiatives” in Myanmar’s Tourism Sector

This report has identified and connected five initiatives from Myanmar’s Tourism SWIA report in order for form a collaborative research network to enhance knowledge sharing for the implementation of CBT in MWKS.

Point B Design + Training (pointB) is a US-based NGO working to support the rebuilding of education systems in Myanmar. Under the guidance of Myanmar Ministry of Education, pointB is partnering with Mawlamyine University in Mon state. Mawlamyine University is currently working with pointB to build partnerships with international marine science institutions who can support and guide the rebuilding of its Marine Science research and educational program.

From June 16th–27th, 2015, professor Dr. Sarah Meltzoff from the University of Miami taught a two-week field course on Social Coastal Ecology (Appendix I). Students practiced ethnographic fieldwork by visiting artisanal fishing communities in Mon coastal area and conducting dozens of personal interviews based on a multi-level approach. The two best students from this, Naung Naung Oo and Khin Myo Myo Tint (Chu-Chu) class were selected to join FFI in one of their conservation research initiatives based in MWKS.

Fauna and Flora International (FFI) has been working in Myanmar on a series of jointly implemented projects since 2012, providing training to local NGO partners, local civil society organizations and coastal communities. In addition, FFI has secured EU funding for long-term partnership programs to strengthen the capacity of local civil society organizations to protect biodiversity through collaborative protected area management (FFI, 2015).

Due to FFI’s extensive experience, strong links with both local and international partners, and active implementation on all five selected “linked-initiatives” they are the ideal INGO to include in this collaborative network.

FFI Project Managers, U Zaw Lwin and Robert Howard, offered their generous cooperation to this research network by allowing two students from Mawlamyine University to conduct field-based research in MWKS with the help of their on-site field coordinators, Khin Maung Soe and Than Thar Tun.
Yangon-Based Tourism Agencies Interviews  
July 15-20th, 2015

Tourism agencies in Yangon that are currently promoting MWKS as an ecotourism destination were selected for interviews. A total of 21 interviews were conducted via phone conversations. The four best agencies, based on the information gathered from the preliminary phone interviews, were then selected for personal interviews in the respective agency’s office throughout Yangon’s various townships (Appendix II).

MWKS Empathic Ethnographic Fieldwork  
July 21st-28th, 2015

Over a period of 8 days, the two students from Mawlamyine University, FFI’s Field Coordinators, and Rangers from the Forest Department conducted over 90 interviews in the 22 villages surrounding MWKS. This ethnographic fieldwork was done through a method known as empathic ethnography. This method allowed us to promote a mutual learning environment to enhance knowledge sharing amongst the local villagers (Appendix III).

Analysis of Fieldwork and Presentations  
August 4th- 14th, 2015

Naung Naung On, Chu-Chu and I traveled back to Mawlamyine after field-research in MWKS. We analyzed our field notes from August 4th-9th. The following August 10th, we presented to the Marine Science Department of Mawlamyine University and on August 11th, we presented to a team from UNICEF. Finally, on August 13th, Chu-Chu and I traveled back to Yangon for the final presentation to FFI. (Appendix IV)
Traditional Fishing Methods

There are over a dozen artisanal fishing methods being practiced by the local communities surrounding MWKS. These fishermen are eager to share their traditional knowledge with tourists and even take them out on their handcrafted wooden boats for a real fishing experience!

The fishermen of MWKS are subsistence-based fishermen who directly depend on their catch in order to support their livelihoods. Due to this highly fluctuating climate, the fishermen have to adapt their methods based on both seasonal and tidal patterns. Each method serves a specific purpose in order to adjust to these seasonal changes.

“Ba-win” fishing method, or a beach surrounding net, is most commonly used during the rainy season. The most common catch linked to this method is a type of brackish water dwarf catfish. Ba-win fishermen are more frequently seen on the West side of MWKS than on the East side – where Bag-Net fishing is the dominant technique.

Bag-Net fishing, or “Kyar-pike” in Myanmar language, is used to catch various kinds of fish and prawn. Fishermen paddle out to their stationary bag-net fishing gear 4 times a day to collect their catch – between the low tide and high tide. This technique can be applied year round – thus making it the most popular technique amongst local fishermen.

“Yin-ton” or a man-push net is also used year round. However, unlike the other fishing methods, it is most commonly at the mouth of small creeks during floods and ebb tides – as the water flows away from the shores.
Fish Market & Post Harvesting

The fishermen’s wives are actively involved in the processing and marketing of the fish catch. Just like their husbands, who practice a diverse set of fishing methods, these women also have various ways of preserving, harvesting, and selling fish.

During the rainy season – it is quite difficult to attempt to “sun dry” the fish due to the massive daily rainfall. Therefore, from June to August, the women use a combination of salting and drying to preserve the fish – a process that takes about 2 to 3 days. Whenever the sun is out, they remove the tarp and let the fish dry for as long as possible. When the rain starts again, they quickly replace the tarp over the fish, and add salt in order to maintain the preserving process.

Other women are more involved in the direct selling of fresh fish at the local market. In the southern villages, located closest to the marine water coming from the Adaman Sea, one can see everything from freshwater catfish to hammerhead sharks. The women use an old-fashion weighing system with heavy stones on one end of the balance, and the demanded fish quantity on the opposite side.

The most lucrative product from fisheries is actually derived from the selling of dry swim bladders and the dry skin of rays. Most of the swim bladders are exported internationally, especially to China, while the dried up skins of rays are actually used to make purses and can sell for up to 30 USD per skin.
Crab Trapping and Eel Trapping

Crab trapping is just as important, if not more, than fishing. The crab trapping business is enormous in MWKS, and involves the entire family and in some villages, the entire community.

Crab trapping, unlike fisheries, is carried out year round and is not dependent on seasons. The only time where crab-trappers may be a bit dissatisfied with their catch, would be during the months of October and November, when the crabs migrate to offshore marine waters in order to spawn.

There are two main types of crab traps: the cheapest traps are made out of bamboo and nylon and sell for about $1 USD/trap. The best quality traps are made out of iron and nylon and sell for about $2.5 USD/trap. Each crab trapper owns between 30-200 traps, and can make up to $10 USD a day if the catch is good.

The crab trapping business involves all members of the family. The men are usually the crab trappers themselves and the wives and children help build and prepare the crab traps. The main bait used to attract the crab are eels, or in Myanmar language “pat-laing”. Although crab trappers will also use small goby fish, “pat-laing”, and sometimes even a paste made out of a coconut and shrimp mix.

There are fewer eel trappers than crab trappers since big offshore trawling boats can also catch eels and sell them at a lower price. However, during the rainy season, many villagers take to eel trapping since the creeks and paddy fields become infested with these brackish creatures. Eel trappers will mostly use small fish or prawn to attract their prey.
Community Forestry and Farming

Since Cyclone Nargis in 2008, the villagers of MWKS have been frequently visited by INGOs and INGOs whose primary objectives are to promote community forestry – especially for the re-nourishment of mangroves. Thus, these local communities are very well aware of the benefits that mangroves and local forests can offer.

FFI and MOBCAF are currently working together with local farmers in order to enhance these mangrove plantation efforts. Many farmers have even donated portions of their land in order to partake in these reforestation efforts.

A local primary school teacher, from the village of Chaung Thu, plans to engage the youth in these environmental conservation efforts by bringing her students to FFI’s environmental awareness workshops.

She hopes that her students will actively participate in community forestry and increase their environmental knowledge so that they can teach tourists about their local plants and medicinal species.
Animal Husbandry

In addition to crab trapping, fishing, and farming, there is also the occasional animal husbandry business of ducks, chicken, pigs and even water buffalos. One of the village leaders, who takes care of 8 water buffalos (6 adults and 2 babies) came up with the idea of letting tourists ride his water buffalos and learn about the work of paddy farmers.

Many of the animal husbandry business were re-established with the help of UNDP after the super cyclone Nargis in 2008.

Out of all the micro-financing projects that the NGOs provided in post-Nargis disaster relief times, the most successful projects seem to be in the villages on the East side of MWKS.

The villages on the West side remains considerably poorer and less developed than the East. However, you can find welcoming local people with great ideas for community-based tourism on both sides of MWKS – regardless of their economic situation.
Traditional food, local street markets...and even a local lottery

There are various types of traditional Myanmar foods found in the villages of MWKS. It is most common for women to make and sell these traditional meals and snacks, but you often see little children.

In addition to the fresh prawns, fish, crab, and eels, you can also find traditional Myanmar snacks such as pancakes and bean-filled muffins.

Another commonly seen food is the traditional Myanmar noodle, known as “mohinga”, which is usually eaten in the morning with various types of plants and herbs.

The most common dish though is actually not a meal itself, but is used in nearly every meal of the day – the famous fish sauce. Made out of various types of peppers, plants, and small dried gobies, the fish sauce can range from being mildly spicy to extremely spicy.

The woman are happy to teach tourists their traditional cooking, and would be even grateful for a little help at night to cut and prepare the vegetables to sell in the morning at the local market.

And yes, these villages even have a local lottery system! A gambler participating in the lottery has 1/10,000 chances of winning a grand prize of about 1,000 USD (bottom right).
Thank you

This report provides a summary of the research findings on MWKS of the needs and visions of the villagers for community based ecotourism development. This research initiative was facilitated through a series of partnerships (Annex I) and wishes to thank all stakeholder groups for their extensive collaborative efforts. Furthermore, we are particularly grateful to all the villagers around MWKS who warmly welcomed us to experience their unique lifestyles by sharing their time and traditional knowledge. The information in this report is created for the villagers to share with tourist, INGOs, NGOs, conservation agencies, and government departments to ensure that development projects are aligned with the villagers’ needs and visions, and that future action plans will empower the local communities to design and proudly own their community based ecotourism.

Roxane de Waegh
Masters of Science Research
Department of Marine Ecosystems and Society
University of Miami
WORK CITED


