

Mesei:

**Restoration, Development,
Management of Ngarchelong
Taro Fields and Landscapes**

2015

First Dilisor Taro Festival

Ngarchelong Mesei

**Dikesed:
Dongeluolu,
Dongedmokl,
Dolemolem.**

Palau Resource Institute

Faustina K. Rehuher-Marugg, Julita Tellei,
Meked Besebes-Rdiall, and Motil Timarong-
Kewii

July 2015

This book is dedicated to

Ebil er a Imei Sariang Ngirailild Osarch and Ebil Kldil er a Teblang Ongelakel Towai Kuroda,
who were with the project in the beginning.

We also recognize all the mothers, grandmothers and great great grandmothers of the people
of Ngarchelong who labored in the taro fields and kept them as mesei until today, so that we
can restore them, carry on the important work of preserving their legacy, preserve and
protect our mesei heritage, perpetuate mesei values, and pass on mesei know-how.



Ebil er a Imei Sariang Ngirailild Osarch



Ebil Kldil er a Teblang Ongelakel
Towai Kuroda

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Bai Beam illustration in Krämer Vo. IV Bai 36 VIII a story 157 Taro thief

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Message from the President of the Republic of Palau
His Excellency Tommy E. Remengesau, Jr.

"A ochid a mekleched." This Palauan proverb speaks to the significance of the Mesei, as a valuable resource for the people of Palau since ancient times. The backbreaking work of women to maintain Mesei and produce 'kukau' (taro) for the family sometimes meant the difference between having nourishment or an empty stomach.

Taro farmers have an important role in our communities. Not only does taro farming uphold our cultural values through perpetuating traditional practices, it also plays an important role in food security for Palauans. As we all aware, food prices continue to rise, bringing challenges to the financial responsibilities of Palauan families. The restoration of Mesei promotes sustainable self-sufficiency for families as well as healthy communities.

The people of Palau applaud the efforts and achievements of the Ngarchelong women and men, the Ngaraklidm Women's Association and community partners who worked together to bring the Ngarchelong Mesei project to fruition. We thank the Global Environment Facility/Small Grants Program implemented by the UNDP on behalf of the three GEF Implementing Agencies – UNDP, UNEP and the World Bank-and executed by UNOPS and GEF National Steering Committee who made the Mesei Project possible.

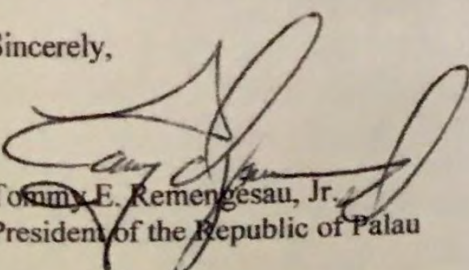
The outcome of the Mesei project is a testament to the ancient adage- A Ochid a Mekleched. For the women of Ngarchelong, and the men that support them, their feet literally and figuratively brought about the restoration of many Mesei in Ngarchelong.

As I have said before, "The environment is our economy, and the economy is our environment". As we move forward together and seek to protect our heritage, so shall we remember an important lesson learned from the Mesei: that the whole is greater than the sum of its parts. Meaning that it is not just the plants alone, or the compost, or the water, or the farmer, etc. Many factors working together harmoniously with the environment.

I understand there were at least a total of 30 Mesei workers; among them were the ReKedul a Mesei who supervised the weekly work activities. You were there from day one, weeks in and weeks out. You made it work! That is the spirit at the heart of Mesei work.

Thank you taro farmers who continue to make substantial contributions to Palauan families and our communities and the guests who visit us. And thank you women of Ngarchelong for your important vision and for taking the lead and sharing your experiences through this valuable publication. Kom kmal mesaul!

Sincerely,



Tommy E. Remengesau, Jr.
President of the Republic of Palau



Bai Beam illustration in Krämer Vo. IV Bai 131 VI b story 164 Unfriendly Maluadlegur

Preface

The Republic of Palau (Belau) is an archipelago located in the Westernmost Caroline Islands of the Pacific. Formerly a Trust Territory of the United States, the country entered into a fifty-year Compact of Free Association with the U.S. on October 1, 1994, marking its independence. There has been an observed revival, a renaissance if you will, of mesei and taro cultivation since early 1990s in Palau.



Active efforts of the Bureau of Agriculture (BOA), OISCA, Palau Community College (CRE) and Taiwan Technical Mission (TTM) taro cultivation is reclaiming its place as important traditional agricultural system in Palau. In July 2011, Palau held its first National Taro Festival, "*A Mesei a Delal a Telid*"—a three day event featuring a conference on taro cultivation and consumption, field visits to mesei (taro fields), and taro plant exhibition. The Taro Festival organizers advocated sustainable farming practices and engaged the community in discussions on the importance of mesei and *kukau* (taro) to the people of Belau.

The purpose of this booklet are three-fold. First, to memorialize the work undertaken by the Ngaraklidm women's association of Ngarchelong, Palau Resource Institute, and other individuals, stakeholders and supporters of the Mesei Project and partner agencies. Second, to collect and compile, into one resource, valuable information pertaining to mesei and taro production. And Third, to stimulate dialogue among farmers, community leaders, lawmakers, educators, researchers, and other stakeholders on the potential to further develop taro farming, as an integral part of domestic agriculture, such that other market opportunities are opened up for value added production of taro.

This booklet developed primarily from the research, writings, and experiences of the authors and has compiled material from other sources and references pertaining to the subject of mesei, taro cultivation, the Ngarchelong Mesei Project and related issues.

Background

Kukau (taro) and mesei, believed to have divine origins, are sacred to the people of Palau. According to Palauan legend, the demi-goddess Iluochel appeared from the reef after the giant Uab fell and formed the Palauan islands, and it was she who carved out the first mesei in Ngeaur

(Angaur). She continued to develop mesei as she migrated from Ngeaur and northbound to Beliliou (Peleliu) and throughout the villages of Babeldaob. Mesei and kukau contribute to the health of our families, our communities, our environment, and our economy.

Although our tools have evolved, the skills and techniques used in taro cultivation have remained relatively unchanged since perhaps the time of Iluochel. Mesei work is still a labor intensive process, and one must get down and dirty in the mud at some point. Also, to have a productive and healthy mesei, a ready source of clean naturally flowing water is required. Thus, fresh water resources and matters pertaining thereto are significant and very relevant for taro cultivators.



Ollei mesei.

For instance, a recent study conducted in 2013 by the Palau International Coral Reef Center (PICRC) concluded that mesei play a critical role in the health of reef ecosystems. The study showed that ninety-percent (90%) of eroded sediment are trapped by mesei (Koshiba et. al. 2013). Taro cultivators regulate and manage the water flow into and out of the mesei based on weather and cultivation cycles. This process helps to divert water from its natural paths downstream and trap sediment in the mesei before eroded sediment can reach the sea and smother the reefs.

The Ngaraklidkm mesei project was motivated by the desire that we and others share in preserving and perpetuating the values passed down from mothers to daughters throughout generations past in the taro fields of our ancestors. We have walked the paths of our mothers and their mothers before them. We have touched and tilled the soil where they labored. We have lived on the fruits of their labors. We have been renewed and refreshed by the water that flows through and around the patchwork of mud fields. We will continue in the footsteps of our mothers and their mothers before them. And by the grace of God and the spirits of our ancestors, so will our children carry on and never forget from whence they came.

A Poem By Margo Vitarelli

April 28, 2014

Kukau (Taro)

A mesei a delal a telid:

The taro patch is the mother of our breath

Stable, smooth, comfort food
The solid yin for the wild seafood yang

From the primordial mud where toes
Squish down deep finding a firm foothold

Green hearts reaching upward
Shining in sunlit breezes

The faint sound of a trickling stream
Steady flow, sturdy legs, strong corm

A woman's retreat, a hallowed haunt
Sharing secrets, stealing time away

Tradition, the ties that bind
Rites of passage, a gathering

Placed with care in coconut baskets
Lined neatly in rows, revealing the riches

Abundance for everyone, not just a few
The breath of life.



Bai Beam illustration in Krämer Vo. IV Bai 36 VIII a story 157 Taro thief

About the State

Ngarchelong State is one of the sixteen states in the Republic of Palau. According to legend, when the giant *Uab* was set afire and fell dead, the mass of his body formed the main islands of Palau, and Ngarchelong his head. The seven stripes on the state's flag represent the *Euid el Llomes* (seven lights) for the head of *Uab* with seven facial openings. The eight stars on the flag represent the eight villages united in a red circle that represents the sun.

Ngarchelong is the northern most state on *Babeldaob*, the largest landmass in the Palau archipelago. Though smallest in size with four (4) Sq. Miles or ten (10) Sq Km, Ngarchelong is one of the biggest states in terms of its population. From the 1930 Palau Census, it was second to Ngaraard State in Babeldaob with 435 and 578 people, respectively. The population kept increasing until the completion of the Palau Compact Road connecting all Babeldaob States to Koror, the urban center. In the 2005 Census, Ngarchelong was the third largest populated State in Babeldaob, next to Ngaraard (581) and Airai (2,723), with 488 people. This is primarily due to accessibility for intra-migration to other states as well as out-migration overseas for education, better life and employment.



Ngarchelong governance is divided into eight municipalities (villages) headed by a traditional leader. The *Btelul a Beluu*, or high chief, of Ngarchelong is the *Uong er Etei*. The *Rubekul a Ngarchelong*, officially referred to as *Re Teiai* (literally, 'the eight') participate in state governance and are included in the legislative body, the State Assembly. In addition to the traditional leaders, each village elects a representative that serves a two-year term on the Ngarchelong State Assembly. The State Assembly enacts laws, authorizes and appropriates state funds, imposes state taxes, and generally acts to promote the welfare of its citizens and economic development of the state. The head of state is an elected Governor who serves a four year term. During national elections, state citizens select a representative to the House of Delegates of the *Olbiil Er a Kelulau* (The Palau National Congress).

Traditional chiefs have a female counterpart (*kldorolel*) in each village. These female counterparts are usually typically the leaders who select men who become title holders of their family and clan. Traditional chiefs of Ngarchelong are listed by their titles holders, regions, and by villages in the following table.

Table 1 Title and name of Ngarchelong traditional leaders (chiefs) listed by village and region, as of July 2015

Traditional Title	Name / Osemellel	Village	Region
Uong er Etei	Victor Joseph	Mengellakl	Keiukl
Ngiraurreked	Siliang Tem	Ngebei	Desbedall
Rimirch	Hayes Ngirateraged	Ngeiungel	Kieukl
Obak er Bau	Ulitech Ngirakebou	Ngerbau	Desbedall
Reiungel	Jacob Dou	Ngermetong	Keiukl
Obak er a lebukel	Lorenzo Ngiramolau	lebukel	Desbedall
Iechad er a Butelbai, Speaker*	Mathias Erbai	Ngriil	Keiukl
Tet	Singich Sato	Ollei	Ollei

* When the project began in 2014, the Speaker of the State Assembly at the time was Rimirch Hayes Ngirateraged.

During the project period, members of the Ngarchelong State Governor, Delegate, and State Assemblymen and women showed their support of Ngaraklidm and the mesei workers. The state's leadership are listed as follows:

Table 2 Position and names of Ngarchelong State leaders by village and region, as of July 2015*

Leadership Position	Name / Osemellel	Village	Region
Governor	Brownly Salvador	Ngarchelong State	
Delegate Ngarchelong State	Marhence Madrangchar	House of Delegates, Olbiil Era Kelulau, The Palau National Congress	
State Assemblywoman	Kyoko April	Mengellakl	Keiukl
State Assemblywoman	Dorothy Tadao Ueda	Ngeiungel	Kieukl
State Assemblyman	Dwight Ngirchemat	Ngriil	Keiukl
State Assemblyman	Jason Ngiratrang	Ngermetong	Keiukl
State Assemblyman	Caleb Tekriu	Ngebei	Desbedall
State Assemblyman, Vice Speaker	Johnny Ngirablau Sambal	lebukel	Desbedall
State Assemblyman, Floor Leader	Dwight Ngiraibai	Ngerbau	Desbedall
State Assemblyman	Abraham Osima	Ollei	Ollei

*Harper Skang, Governor Office representative to Ngaraklidm Mesei Project.

Project Beginnings

Many factors contributed to initiating a project to restore and revive taro fields cultivation in Ngarchelong. Increasing taro production for home consumption, marketing, food security, health, cultural revival, land degradation, environment, climate change and community cultural revival were a few key issues that needed to be connected into this project. Focusing on mesei presented itself as the ideal project for people in Ngarchelong as taro and its cultivation method (the *omesalo*) is culturally associated with the people of Ngarchelong. The mesei project arose from recognizing the danger of unsustainable mesei development due to the introduction of invasive plant species and impending soil erosion from ineffectively-controlled development resulting in siltation to the nearby streams, mangroves and reef flats.

The Ngarchelong Mesei Project began as an idea in 2013. Discussions with the women of Ngarchelong in 2013 indicated that there was great interest in the restoration of Ngarchelong taro fields and serious discourse and planning began in the Fall of 2013. The Ngaraklidm women leaders and Palau Resource Institute (PRI) discussed the possibility of writing a GEF/SGP Grant proposal for the purposes of reviving and restoring Ngarchelong mesei.

The Ngaraklidm women agreed to entrust PRI not only with the writing of the grant but the eventual implementation of the project. It was understood that the Ngarchelong Ngaraklidm Women's group would own the project, whereas PRI would implement the project in consultation with them, and with the people who live in the state.

The Ngaraklidm women were propelled to explore this initiative for positive, sustainable livelihood and economic development. Mesei as a traditional source of food for the community and an important cultural source of taro crop for food exchange is in danger of being altered unsustainably due to rapid inappropriate development and this must be mitigated.



PALARIS mapping of mesei in Ngarchelong

In 2011, sixty four (64) cultivated taro fields were mapped by Palau Automated Land & Information Systems (PALARIS). During initial consultation meetings with Ngaraklidm leaders, estimates were made that, maybe 64 mesei was 1/3 or 30% of all mesei in Ngarchelong. It was not clear, as there was no data showing all mesei in Ngarchelong, cultivated and maintained or overgrown or abandoned. However, it was agreed that this, in and of itself, was all the more reason to restore, develop and manage the mesei. At that time, it was decided that the target or goal of the project would be that Ngaraklidm will ensure that an additional 20% of taro fields will be restored by end of the project.



ReKedul a Mesei consultation, early 2014



Ngaraklidm consultation, 2013

A community meeting took place at Bai Mengellakl in Ngarchelong State on October 12, 2013 to introduce the concept and discuss the GEF SGP grant proposal. A series of consultative meetings were conducted thereafter to finalize the proposal, and on October 26, 2013, another meeting at Bai Mengellakl was held to conclude the planning aspect. A total of fifty (50) women, thirty-five (35) of whom are full-time residents of Ngarchelong State and the rest reside in Koror and commute to Ngarchelong on weekends or when time permits. There was an overwhelming support of the mesei project and all women present confirmed their commitment to the project. The women were all owners or cultivators of taro fields many of whom were children of owners who have learned mesei making skills from their mothers and elders.

"A Kukau a Tengetang er a Ngarchelong", a statement alluding to the quality of Ngarchelong taro, an attribute relegated to it, seemed to appeal to the pride of the women. Hence their whole-hearted support to restore the state's taro fields, even when it was unclear where and how to begin. However, with the passion of the younger and older women alike and their resolve to revive the taro fields, the seed of trust was planted in this initial development stage of the project. Trust and caring will, to improve village livelihood became important attitudes to uphold from the very beginning of the project. The open consultative meetings which characterized the initial discussions of the planning, writing and making of the project, became the modus operandi throughout the entire life of the project. Trust, caring will, perseverance and hard work became the attitude of all those involved in the project and helped move it beyond real and perceived obstacles.



MOA Signing Ceremony with UNDP December 2013



President Remengesau Jr. funding assistance to Mesei Project.

On November 19, 2013, the women's Small Grants Project, officially entitled "Mesei: Restoration, Development and Management of Ngarchelong Taro Fields' Landscapes, was approved and awarded \$50,000 in funding. This auspicious event was commemorated in the signing of a Memorandum of Agreement between the Ngaraklidm women of Ngarchelong, Palau Resource Institute, and the United Nations' Global Environmental Facility Small Grants Programme.

The Small Grants Programme provides technical and financial support to projects that conserve and restore the environment while enhancing people's wellbeing and livelihoods.



Dr. Osnat UNDP visit to Ngarchelong Mesei 2013



Kiblas Soaladaob, GEF National Coordinator, mesei field consultation project manager FCRM.

"Te meskid a udoud eng di diak el bel tuu er a blid mel kedmkelii el bora chemrungel mel riiekii"
 We have received financial assistance, but the grantors won't come to clean our house inside out. We have the responsibility of cleaning it, and in this case, implementation needs to take place at all levels. Implementing this project from the beginning was challenging and people had their doubts. There was no question that people were apprehensive about such a task, for this kind of undertaking has not been taken up at the grassroots level with women. The spirit of the people who have lived in this land for millennia was much greater than the fear, and thus the project went forth with so many meetings taking place, planning, ongoing monitoring, and implementation.

The main objectives of the project:

- To ensure capacity-building occurs for state citizens by conducting two, two-day fora in Ngarchelong on environment conservation and preservation, forests, wetlands, mangroves, taro fields, traditional practices, economics and health.
- To ensure clearing and cleaning of taro fields and waterways draining to the mangroves takes place.
- To ensure that planting different varieties of taro happens.
- To conduct inventory and mapping of Ngarchelong taro fields.
- To ensure sustainability of the Taro Fields is maintained. Ngaraklidm and PRI have solicited technical and scientific assistance from different relevant agencies in Palau to assist in this endeavor.

In February 9, 2014, Palau Resource Institute, the project's administrators, met with the membership of Ngaraklidm, the *ReMechas* (matriarchs), and drafted letters and a petition to the Ngarchelong State government to request the state's leadership to plan for and help restore and maintain roads, trails, and piped-in water where needed to facilitate the mesei work. The documents were written and signed; project leaders were formally established, and the term "*ReKedul a Mesei*" was officially coined in reference to the project team leaders from each region.



Ngaraklidm consultations with Director Fred Sengebau, Bureau of Agriculture; Priscilla Subris, NEMO; and Maria Ngemaes of National Weather Bureau

Reibelau, ReBeluu, ReKedul a Mesei

*"A beluu a tekoi el kirel a daob me a chutem,
a re-Beluu a melekoi el kirir a rechad el oubeluu er a beluu"*

Beluu refers to the land and sea which makes up our environment, *Re-Beluu* on the other hand are the people who own and manage the land. *Re* is a plural prefix in the Palauan language that is used only with nouns referring to human beings. In the course of designing and implementing the project, there were different roles that needed to be created and one of them was for those who led or served as organizing personnel representing each region.



ROC Ambassador and TTM field visit to Ngarchelong Mesei.

Many Palauan terms were thrown out there, but in the end, *ReKedul a Mesei* served to be the right one, as *kedul* stems from the word *oked*, which literally means to call into action, organize, supervise, and implement.

The *ReKedul a Mesei* comprised of taro cultivators from each region who participated in all aspects of project work.

Ngarchelong traditional structures remains to be intact, therefore, when it came time to decide how to organize leaders of the *ReKedul a Mesei*, women from

the appropriate clans assumed this leadership role for each region.

For the purposes of the project's implementation, the state was divided into the three traditional regions: Keiukl, Desbedall and Ollei.

The women selected for *ReKedul a Mesei* were:

- For Keiukl:
 1. Alvina Merur
 2. Florence Towai Sokau
 3. Juliana Sechalboi Tekriu
- For Desbedall:
 1. Inaria Dou
 2. Yorang Roman
- For Ollei:
 1. Ruchad Paulina E. Skang
 2. Anemary Shiro
 3. Ulang Skang



Receiving taro plants from PCC CRE for Ollei and Desbedall mesei, June 2014.

Several planning meetings were held during the months from January through May 2014 to discuss and make arrangements pertaining to logistics, determination of project workers, and funding. Coordinated efforts were undertaken to locate and make assessment of taro fields and meet with prospective mesei owners and taro cultivators committed to being part of the project.



Launching July 3, 2014

Approximately seven months following that first community meeting in October 2013, a *Mesei* Forum was held at Bai Mengellakl to formally introduce the mesei project to the community and the public, and report on the progress of project planning. In addition, several guests were invited to present on the status and role of mesei in Palau's economy and ecology.

The First Ngarchelong Mesei Forum, held in May 2014, was a two day event culminating the months-long series of consultations and discussions with Ngaraklidm, Ngarchelong State leaders, taro cultivators, and other project stakeholders. The forum brought the community together in support of the project and shed light on emerging issues relevant to mesei and taro cultivation.



Mesei Forum May 28-29, 2014 Bai Mengellakl.

First Mesei Forum
 May 28-29, 2014, 6pm-9pm
 Bai er a Mengellakl, Ngarchelong State
 MC: Assemblywoman Ms. Kyoko April

	Program
Day One, 5/28/2014, Wednesday	
Nglunguuch (Prayer) <i>Pastor Paulus Swei</i>	
Welcome <i>Ms. Maria Isamu Ngirmidol, Ngaraklidm Leader</i>	
Remarks <i>Governor Brownly Salvador</i>	
Remarks <i>Speaker Rimirch Hayes Ngiratreged</i>	
Remarks <i>Del. Marhence Madrangchar, HOD, OEK</i>	
Special Remarks <i>Ms. Sharon Sakuma, UN Joint Presence Office in Palau</i>	
Closing Remarks <i>Minister Baklai Temengil-Chilton, MCCA</i>	
Introduction of Mesei Project <i>Palau Resource Institute(PRI)/Ngaraklidm</i>	
Ngarchelong Mesei <i>Ms. Hilde Ulang Skang, Ngarchelong Taro Cultivator</i>	
Mesei Mapping <i>Ms. Darlynnne Takawo, Acting Program Manager, PALARIS, MPIIC</i>	
Taro Value-Added/Future Exports <i>Dir. Hayes Moses, Bureau of Commercial Development, MPIIC</i>	
Role of TTM in Taro Development <i>Mr. Gow-Shyang GS Suen, Mission Leader, Taiwan Technical Mission</i>	
Marine Conservation and Fisheries Management in the Northern Reefs <i>Steven Victor, The Nature Conservancy and Darwin Mista, Director, Northern Reef Management</i>	

	Program
Day Two, 5/29/2014, Thursday	
Nglunguuch (Prayer) <i>Ms. Florence Towai Sokau</i>	
The Economics of Mesei <i>Ms. Motil Rehuher Timarong, Taro Cultivator, Yobei Agriculture Development</i>	
Community & Mesei Development <i>Mr. Leonard Korkas Basilius, PCAA</i>	
Agriculture in Palau <i>Dir. Fred Sengebau, Bureau of Agriculture, MNRET</i>	
Terrestrial Watershed vs. Marine Environment <i>Dr. Yimnang Golbuu, CEO, PICRC and Shirley Koshiha, PICRC Researcher</i>	
Taro Seedlings Propagation, Taro Value-Added, Climate Change Mitigating Measures <i>Vice President Thomas Taro, PCC, CRE</i>	
Land Degradation and Watershed <i>Ms. Ann K. Singeo, Executive Director, Ebiil Society</i>	
Taro and Health (Omelisichel a Bedenged El Okiu a Keled) <i>Dr. Stevenson Kuartei, Pacific Family Medical Clinic</i>	
Open Discussion: Future of Mesei Fields' Landscapes in Ngarchelong and Emerging Issues	
Omengedmeklel a Mesei er a Ngarchelong	

Emerging Issues Discussed during the First Mesei Forum

- ✓ Conduct pre- and post- mesei soil test
- ✓ Mesei major filtering system for keburs and chelemoll
- ✓ Access to mesei
- ✓ Connection from upland to lowland
- ✓ Machine to mesalou, or till mesei
- ✓ Domestic-international market
- ✓ Economics of mesei—young people, training, supervision, enhance know-how of foreign workers
- ✓ Klebelau-klechibelau on identity—reng affecting/influencing healthy lifestyle
- ✓ Food security—Palau imports an estimated 90% of its food
- ✓ Human resources—men/women power, in limited supply
- ✓ Kaukbuk—kukau(taro) and ngikel (fish)

At the conclusion of the Mesei forum, evaluation of the forum was administered as many of those who participated. One written forum evaluation by Mrs. Bernie T. Keldermans captured the spirit and essentially summarized the surprising positive feedback of the respondents. The statement is included below.

Comment on the May 2014 Mesei Forum

By Bernie T. Keldermans

May 29, 2014

Ngaraklidm,

Thank you for planting two seeds for us villagers: a seed of hope and a seed for encouragement. Our fear that our culture is second to outside cultures has been trampled. Thank you!!! This forum has lifted our spirit and gives us encouragement to look at our own village with a positive approach. This forum has put our culture on a stage of recognition and on a Priority List for Survival, without singing all the beautiful lyrics. I have been in the field of education all my life, and I have dreamt of this – we learn the Western knowledge/culture and use it to improve our own culture, tradition, etc. Western knowledge/culture should not replace what we have developed for so many centuries. Yes, we need Western knowledge/culture because it is our TOOL!!!

Mesei is not important if we deal with it by itself, or as an isolated concept and action. However, mesei is an important part of a very important Palauan system, the “Life Support System.” The organization of the topics expresses exactly THAT SYSTEM. I enjoyed what all of the speakers said. What they said clarified that Mesei is a critical part of that Life Support System. The nutritional importance of fish was discovered many many years ago, but only last century (during the 1970s) did they discover that taro has nutrients that our brain needs. Can you imagine – we have been eating fish and taro for centuries. What can that tell us??

Ngaraklidm, *ko meral btelul a Belau* [you truly are the head of Belau, figuratively ahead of the rest of Belau]. You were not afraid to put our dying culture through that concept and action of Mesei-ing. You give us hope and encouragement to follow the path you have provided.

Ko meral mesulang!!

Project Implementation

Project commenced by holding the First Mesei Forum in Ngarchelong on May 28-29, 2014, in Bai er a Mengellakl. This was an important event as it brought to the fore front of the village people and leaders and relevant partner agencies, serious discussion of the Mesei project as it relates to environment degradation and protection, agriculture development and food security, climate change, fisheries management, health, economics and marketing, mesei as filtering system for marine environment.



June 2014 ReKedul a mesei receiving tools and equipment.

The month of June 2014 was spent acquiring all the equipment, tools and materials, delivering them to workers, more consultative and project implementation planning meetings. Finalizing mesei workers commitments, finalizing list of committed and potential mesei cultivators for each region-Keiukl, Desbedall and Ollei. Basically, time was spent discussing how the work was to begin and progress week in and week out. Lengthy discussions were held at different times in the event that cultivators will be cultivating mesei, taro fields, which are family, lineage and or clan-owned. Very innovatively, we all thought, all parties agreed that when such situation arise, a Memorandum of Understanding (MOA) will be drafted and given to the relevant parties to sign, ensuring that no issues of 'overtake' will occur by owner until perhaps, 3 years after the Mesei project has finished. As it turned out, after 12 months life of the project, no one used the MOA, even though nearly 100% of the mesei cultivated were done by relatives or in-laws of mesei owners. The Palauan traditional way is still intact and functioning.

Clear delineation of roles was taking shape in June and July 2014. Bi-weekly monitoring of the project was the agreed schedule for work monitoring by one of the PRI Consultants. Ngaraklidm leaders were to be consulted as needed with no firm meeting schedule. Project administrators were committed to do all the consultative work.



Mesei project manpower, real men helping women.

Following the mesei forum, on July 3, 2014, a ground breaking ceremony was held at Bai Mengellakl officiated by PRI, Ngaraklidm, Ngarchelong State Leaders, partner agencies and special guests. Representatives of partner women's organizations were also on hand to support the initiative, namely, the Ngarayaml of Meyuns, and the Ngaralukes of Ngeaur (Angaur). The ceremony commemorated the official field commencement of the project for which field work began on July 4, 2014, in all three regions of Keiukl, Desbedall, and Ollei.

The *ReKedul a Mesei* and project workers in the three regions organized and planned their mesei work schedules in accordance with the objectives of the project. An estimated thirty (30)

workers, men and women, from the three regions of Keiukl, Desbedall, and Ollei participated in the various project work undertaken.



Clearing taro fields and waterways

Project work entailed cutting down trees and foliage, cleaning and clearing water ways and streams and sediment from the *bong*, picking-up and clearing away garbage and other discarded items. Two levels of mesei work preparation were done to prepare for planting of taro. For very old and overgrown mesei, *omeruuch*, technique of planting with a stick. For many others *omesalo* (preparing soil for planting), and *melouch a ramk* (cutting and gathering variety of foliage for mesei compost) was the method used. Improvements were made to mesei access and trails, including creating bridge structures across waterways and soft soil.

Throughout the project's timeline, Palau Resource Institute conducted several onsite monitoring visits in the three regions. It was decided during project implementation that Ms. Kyoko April, Assemblywoman representing Mengellakl in Keiukl, would coordinate with project workers and conduct scheduled bi-weekly monitoring of project work.



GEF National Steering Committee members consultation.



Women at work

Ngaraklidm and *ReKedul a Mesei* participated in several relevant workshops and consultations over the course of the project. For instance, Ngaraklidm and the mesei workers met with the El Nino Working Group on August 28, 2014, to learn about the El Niño weather conditions and its impacts on mesei. Given their traditional knowledge, mesei workers were encouraged to discuss what to do and how their ancestors managed mesei during drought seasons applying what they already know. Also, there was a workshop facilitated by the Bureau of Agriculture (BOA) on September 25, 2014, to discuss the Bureau's Food Security initiatives, including strategies to raise community awareness and help prepare families for El Niño and effects of invasive species on

mesei. Taiwan Technical Mission also conducted workshop on different types of dry land agriculture as well as a tour of Ngarchelong mesei.

In tandem with the work that went on within and surrounding the *mesei* in the three regions, PRI worked hard to promote the Ngarchelong Mesei Project in other regards. During the months of October 2014 through April 2015, the project's administrators attended several speaking engagements, meetings, programs and events. In fact, it was a conscious effort on the part of PRI to insert themselves in other similar initiatives to influence actions which might build stronger and innovative nation building action that can go beyond meeting rooms to touch and improve the lives of ordinary citizens in Palau.



Profession women, taking over mother's mesei.



Mother, daughter, granddaughter.

A living culture will always endure changes and influences. Palau has endured such changes and has built resilience. Mesei and all its associated cultural significance is one of the many pillars of the Palauan culture has been perpetuated and is being strengthened. In this project the knowledge and knowhow of reviving and restoring mesei did not come from elsewhere but the women themselves, they once observed and experienced mesei cultivation from their mothers and grandmothers. The paths which needed much clearing and overgrown taro patch didn't need an outsider to teach them how to clear them, they relied on their knowledge and each other to accomplish these tasks.



Mesei workers on site.

One of the project's objectives is to pass on knowledge and planting taro seedlings in Ngarchelong, is synonymous with planting taro in the minds and hearts of young children who accompany their mothers, parents, and grandmothers to do mesei work. The Ngarchelong community already involved in so many sustainable types of activities regarding fishery and mesei, that adults and young children knew the significance of passing down these types of traditional knowledge.

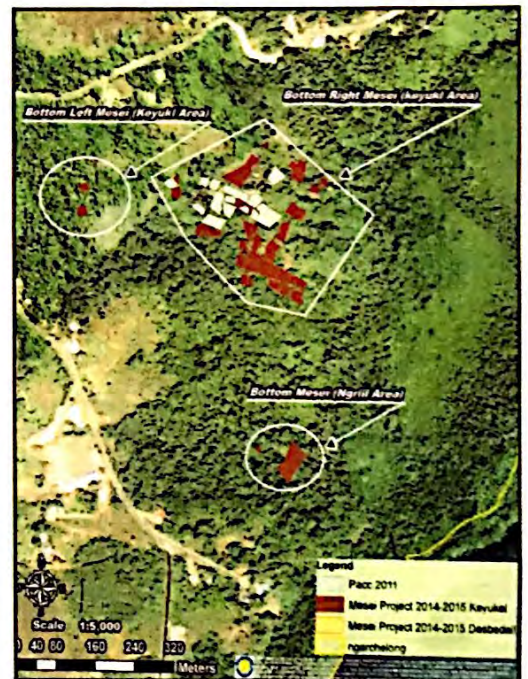
Mesei Restoration

One hundred forty four (144) mesei were cultivated during the life of the project. Below are Tables 1-6 in the following pages which show mesei names and names of cultivators by region. It is important to note that the number of mesei names below do not add up to 144. This is because in several instances in all 3 regions there are cultivators who cultivated 2, 3, and over 4 mesei. Mesei names appeared only once in all tables.

Keiukl

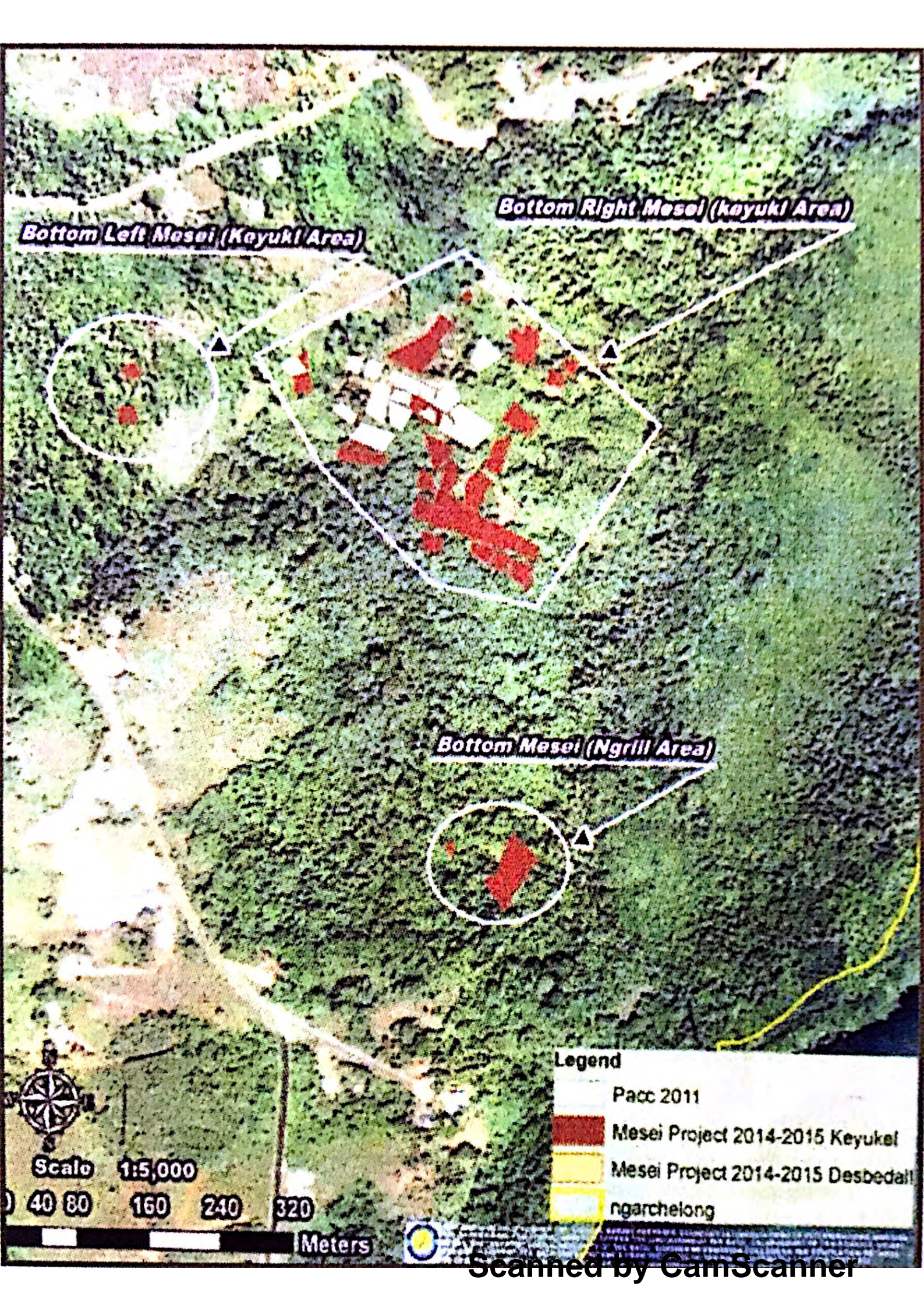
Keiukl, the Western region of Ngarchelong, comprises the villages of: 1) Mengellakl, 2) Ngeiungel, 3) Ngermetong, and 4) Ngruil.

Table 1 List of mesel names in Keiukl	
Ngruil	Mengellakl
Bab el Ngetkerbei	Chosm
Babelcheuang	Eoulbeluu Olbael
Beldert	Ilebulech
BitrongelNgetkerbei	Irikl
Chebulech	Kebui
Chereang	Kemrilabeab
Chereimodob	Kiuerong
Chomelsong	Kodong
li	Mersak
lou el Cheuang	Ngermeluang
Kldoel	Ngerngas
Krekur	Ngezechaus
Ngerdebtong	Ngetuong
Ngermedebech	Ngerkekerang
Ngetkerbei	Techemer
Ngitong	Techolotang
Ngoi	Telmotem
Oteloi	Uodemui (Sers)
Rebai	
RebaiNgetkerbei	
Rekong	
Rekungel	



PALARIS mapping of Keiukl mesei





Bottom Left Mesai (Keyuki Area)

Bottom Right Mesai (Keyuki Area)

Bottom Mesai (Ngrill Area)

Legend

- Pacc 2011
- Mesai Project 2014-2015 Keyuki
- Mesai Project 2014-2015 Desbedall
- ngarchelong

Scale 1:5,000

40 80 160 240 320

Meters



Ngril
Taro to

Table 1 List of names in Keiukl

Riang	
Tuk	

Table 2 List of taro cultivators in Keiukl, Ngarchelong

Ngril		Mengellakl	
1	Carlin Sablan	1	Agnes Salvador
2	Claudia Siano	2	Arbina Merur Riungel
3	Deborah Sisang	3	Alvina R. Timarong
4	Dilmai Saiske	4	Anathania Timarong
5	Doibkur Wasisang	5	Bedebii Chiokai
6	Ferista N. Besebes	6	Carla West
7	Florence Mochesar Towai	7	Claudia Siano
8	Imengel Mai	8	Emau Hindenburg
9	Juliana Sechalboi Tekriu	9	Fautina Rehuher-Marugg
10	Juliet Kuroda Cross	10	Florence Mochesar Towai
11	Julita Debengek ('Uly' Hito)	11	Imengel Mai
12	Kyoko April	12	Inaria Dou
13	Linda Dildabel Yuri	13	James Madracheluib (Yens)
14	Luisa April	14	Johnny Salvador
15	Mercy Yashiro	15	Maria Rehuher
16	Minora Renguul	16	Nancy Renguul
17	Patricia George	17	Remeldil Tutii
18	Sadaria Aguon	18	Simeng Aguon
19	Siano Techur		
20	Simeng Aguon		



The needed foreign laborers.



Women consultation on-field with GEF National Steering Committee and GEF National Coordinator.

Desbedall



The region of Desbedall, the Eastern part of Ngarchelong, includes the villages of Ngebei, Ngerbau, and Iebukel..

At the time of this publication, an estimation of total wetland cover for Desbedall was not available from PALARIS.



Discussion and planning after a days work.



Young woman tending her newly restored mesei.

Notes and records of Ms. Inaria Dou were instrumental in documenting the project work in Desbedall. Project records which included oral histories showed detailed accounts of the 55 mesei in Desbedall that were restored and planted.

Table 3 List of mesei names in Desbedall, Ngarchelong		
Ngebei	Iikdbeluu (Ngerbau & Iyebukel)	
Dims	Betiei	Ngeribuk
Ikrekur	Blak	Ngeringel
Imolobang	Chetbidau	Ngeririkl
Ingos	Dechedachel	Ngeriut
Iuelang	Deleb	Ngerkedam
Kebuachel	Dertereu	Ngerkokok
Malk	Desomel	Ngetmengedas
Mecheui	laus	Oriich
Ngerchebang	Ikedmesei	Teklou
Ngerchelbang	Isbad	Termong
Ngerkekerang	Lukesecherong	Ngerkedam
Ngeruliutel	Merebkeram	Oibatel (Sers)
Sebelau	Metangelrael	

Project Anecdote

(excerpt from the records of Ms. Inaria Dou)

Friday, July 18, 2014

Ng mlo merek a ureor er a Desomel, el mesei er a Irish Tutii, me aki di melai er a bong me a kerrekar a debachel. Ng knal betok a butiliang me a beached er a cheleiuis er a Ngeriut me aki lilechang er a tutuu. A beached el mle chadou a ngar er a bong el sebeched el medobech er ngii a lak de kerekikl.

We completed work at *Desomel*, Irish Tutii's mesei, and proceeded to clean and clear the waterways running alongside the mesei; and cleared away some trees. We picked up the many bottles and cans trashed in the surrounding areas as well. Discarded tin roofing lay in the stream and can cause injury if we're not careful.

Table 4 List of taro cultivators in Desbedall, Ngarchelong

Ngebei		likdbeluu (Ngerbau & Iyebukel)					
1	Agnes Salvador	1	Antonia Benardo	16	Dr. Kate Decherong	31	Ulang Hilde Skang
2	Bedebii S. Chokai	2	Chieko Abier	17	Kesouaol Sekool	32	Urriik Itpik
3	Claudia Siano	3	Desimona 'Mona' Subediang	18	Leslie Ngedebuu	33	Veronica 'Nica' Kloulechad
4	Inaria Delkuu	4	Dilmai Haruo	19	Lorenza Ise	34	Olbed Kesolei
5	Irene Naito	5	Edith Techur Elbelau	20	Lydia Mirair Johnson		
6	Jennifer "Snich" Ngirengkoi	6	Eileen Midar	21	Margarette Dou Masang		
7	Juliana Ngedebuu	7	Erica Immanuel	22	Dr. Maria Hindenburg		
8	Juliana Sechalboi Tekriu	8	Evelynn Ngedebuu	23	Miriam Alfonso		
9	Julita Debengek	9	Imengel Mai	24	Ngirur Haruo Salvador		
10	Lily Ulitech	10	Inaria Dou	25	Remeriang Kingto		
11	Linda Mokisang	11	Inglore Swei	26	Sabina Ewatel		
12	Lisa Hideos	12	Irish Tutii	27	Sadaria Aguon		
13	Maria Rehuher	13	Irorou Ubedei Albert	28	Sisbartol Holan		
14	Sofia Skilang Ultirakl	14	Josephine Huing Ewatel	29	Sizue West		
15	Sophia Ultirakl	15	Justina Ngiramolau	30	Ukong Ubedei		
16	Uldak Ngirchemat						



Women doing traditional tilling, mesalo, cooperatively, omengerakl.

Project Anecdotes

Excerpts from the project journal and records of Ms. Inaria Dou, *ReKedul a Mesei*, Desbedall region:

Friday, August 1, 2014

Aki mlo melai er a klou el bong me ng mle ta el sils [a ureor]...a resechal a mengiut er a bebul a eleiuis e a redil a melai er a elsel a bong. Ng meral meringel el ureor el e berdakl me a chudel a dekimes e oberoed, e ke de olab el olengasech er a eleiuis. Ng di ng meral fun el e aki di kaungelakel e ng mo merek a ureor.

[We worked all day to clear away a large accumulation of sediment in the stream. Men cut grass along the mounds surrounding the mesei while the women worked in the stream. It is intensely hard work requiring laborious effort to lift heavy, water-laden foliage out of the stream. But we make it fun so the work is done before we know it.]



Mesei Workers in action.

Tuesday, September 23, 2014

Aki dirrek el dirke ngar er a omoachel. Betok er kemam a medakt a kitelel me te di meleotem er a tkul a omoachel e di tedei er kemam a ngar er a elsel omoachel ma uchul me aki meiod.

[We are still clearing up the water way but many of us are afraid of the *kitelel*. Therefore all of the workers are clearing the dry edge of the waterway while only three of us clearing it making our work very slow to complete.]

Wednesday, February 18, 2015

Aki continue el ngar er a mesei er a Sofia Ultirakl. Ng kmal klou a medechel e le chakksel me a cheremall a kmla klou er a elsel. Ng dirrek el kmal betok a hats er ngii ma re bebil er kemam a chulbetuut er a hats. Ng kmal meringel a sils me sel de tuk a cheremall el mei er iou e de sengsongd e ng meral di mo meualech me ng meral mo ungil a rengmam sel ki mrekir a ureor el uaisei.

[We continue to clear *chakksel* and *cheremall*. Just like the abundant overgrown trees there were surmountable number of trees on this mesei and a lot of the workers were stung by bees. The scourging sun has brought the rising heat and when we cut the leaves off the *cheremall* it quickly wilted which made the work easier for us.]

Monday, March 30, 2015

Continue er a mesei er a Maria. Tiaikid el side er ngii er chelechang a kmal klou a cheremall er ngii me a cheuais. A kot e aki melaml el ngmai a cheuais me a dersta el chakksel me a chudel e a uriul e aki mochu meluk a cheremall me a meklou el kerrekar. Nga er ngii a re terung er a resechal er kemam el mle excuse e mlo melachel a bedikl e le aleko te omedikl a malk el mo odimam er a sueleb.

Aki mla mo merek e lou sueleb e olengull me aki kuk mocha tmaut er a ureor, e ng di sel kumes er kemam e ng locha kmal medinges a rechad me te diak el sa el active.

[Work continued at Maria mesei. This side has largely overgrown trees and foliage. We'll begin by clearing the shrubs and then we'll chop down the large trees. Two of our men were excused to go and catch chicken for our lunch... After lunch we'll rest and resume our work but we all are looking so full so we may not be so active.]

Monday, April 6, 2015

Continue er a mesei er a Maria. Tiaia mong meng mocha ongeim el sils el ki mngara mesei er a Maria, me ng di omerollel el mochu merek e kemam a kora kmal mo miss a ikal ureram er tiang, e le ki ko er a smongang el merael el mei e ng kuk mo kebesengei me aki kuk mo olengasech er sel rael el diak dongedecheduch a dokiui ngii. A uchul me a kmo ng diak dongedecheduch a doraer er ngii, ngii el rael a di merael el bedul bab. Me kerdil olengasech el di merekmo obo er a rael; meng diak molekoi, or mengedecheduch, el di merekmo obo er a rael e le omongedecheduch e ng soal suebek a telim; dim luk me a omei er a rael e mongellau e bochu mongedecheduch. Me a klukuk.

[We continued work at Maria mesei. This is our fifth day here, we're on our way to completing the work and we'll miss it. We're now accustomed to returning up the path we've affectionately come to call "the path of silence" because no one speaks at the end of the day when we're all ascending this path, as it is so steep that we cannot speak for we're all catching our breaths.]

Ollei

Project records for Ollei listed thirty (30) mesei and nineteen (19) taro cultivators.



Man assisting women carrying compost, ramk.



Preparing cover, dekedek.



Cultivator identifying mesei to be mapped.

At the time of this publication, an estimation of total wetland cover for Ollei was not available from PALARIS.

Table 5 List of mesei names in Ollei, Ngarchelong	
Babelibech	Ngereklemais
Bekong	Ngeritbab
Bitalomouachel	Ngetiau
Bitareomoachel	Ngetmai
Deleb	Sechesei
Emeraech	Tuanged
loulibech	Tutuu
Mesei er a lbedei or Tuanged	
Meyong	



PALARIS mapping of Ollei mesei, 2014

Table 6 List of taro cultivators in Ollei, Ngarchelong			
1	Agnes Sato	11	Mary Osima
2	Camilla Shiro	12	Mona Skang
3	Denicia Mariur	13	Pasquana Ewatel
4	Dilbuked Ibu Skang	14	Ruchad, Paulina E. Skang
5	Esy Eldesel	15	Ramona K. Ngiraingas
6	Irene Ewatel	16	Rose Berry Kingto
7	Jane Olsudong	17	Sabina Ewatel
8	Jelina Renguul Sato	18	Sisca Tuloi
9	Martha Temong	19	Ulang Hilde Skang
10	Mary Jane Villanueva		



Tilled mesei showing sauikr and kllaeb, waterways.

Results of the Project

The Palau Automated Land and Resources Information System (PALARIS), accompanied by *ReKedul a Mesei* and PRI representatives commenced mapping of mesei in Keiukl, Desbedall and Ollei in December 2014 at the request of project administrators. This work was pivotal in measuring and reporting on the total mesei area and potential for use of wetland coverage for active mesei cultivation in Ngarchelong State.



Desbedall and Ollei PALARIS mapping of mesei.

Indirect Outcomes

- ✓ Strengthening of family and clan ties
- ✓ Recording of *mesei* names and locations
- ✓ Documenting the history and lineage of mesei
- ✓ Identifying *mesei* boundaries
- ✓ Dialogue among taro cultivators whose *mesei* boundaries are in dispute or otherwise unclear

Mesei Mapping

In 2011, PALARIS had conducted a survey of mesei in the three regions of Ngarchelong for the purposes of a national climate change study initiative. Information from that assessment shows that the total area of mesei surveyed in 2011 was approximately 22,525 square meters.

After PALARIS conducted field surveys of Ngarchelong mesei in December 2014, the area of wetlands in all three regions was estimated to total approximately 56,059 square meters.

Table 7 Taro Fields' Cultivation in Ngarchelong State		
<i>Keiukl</i>		
	Count	Percentage
Mengellang	24	41%
Ngeiungel	0	
Ngermetong	0	
Ngruil	35	59%
TOTAL	59	
<i>Desbedall</i>		
Ngebei	17	31%
likdbeluu (Ngerbau & lebukel)	38	69%
Total	55	
<i>Ollei</i>		
Ollei	30	

Available information from PALARIS in 2015 indicates that there is approximately 261,182 square meters of wetland cover in Keiukl. It is further indicated that an area totaling approximately 234,794 square meters remains to be cultivated and developed into active mesei.

Table 7 shows the distribution of the 144 mesei restored by the Ngaraklidm Mesei Project by Region and by the different villages in Ngarchelong. Of the 59 mesei restored in Keiukl, 24 of them were mesei in Mengellakl, no mesei in Ngeiungel and Ngermetong were restored and 35 mesei in Ngruil. For Desbedall, of the 55 mesei restored in Desbedall, 17 were Mesei from Ngebei and 38 were mesei in likdbeluu (Ngerbau and lebukel). A total of 30 mesei were restored in Ollei.

Table 8	Keiukl	Desbedall	Ollei	Total
Mesei in Ngarchelong by July 3, 2014*	37	32	14	83
Mesei in Ngarchelong Restored by Ngaraklidm Mesei Project	59	55	30	144
Total Mesei in Ngarchelong in July 2015	96	87	44	227
Percentage change (Increase)	159%	171%	214%	214%

*based Interviews

Figure 1. Cultivators vs Taro Fields

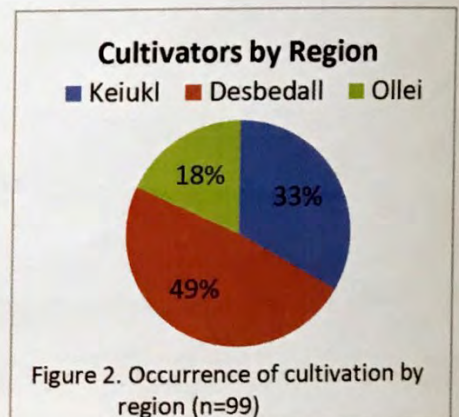
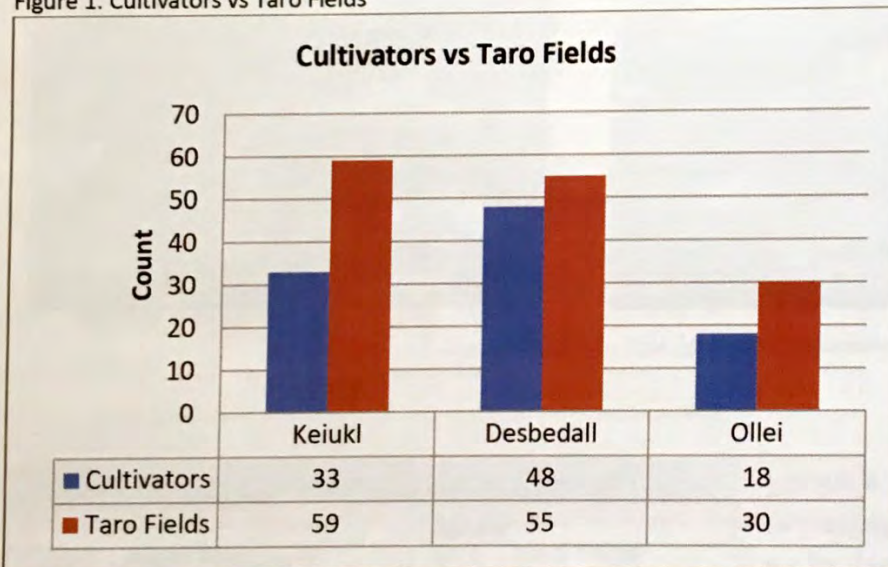
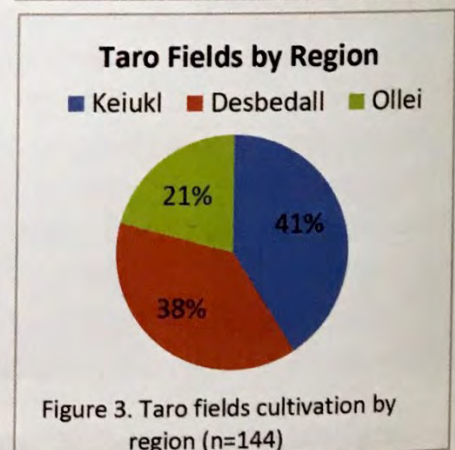


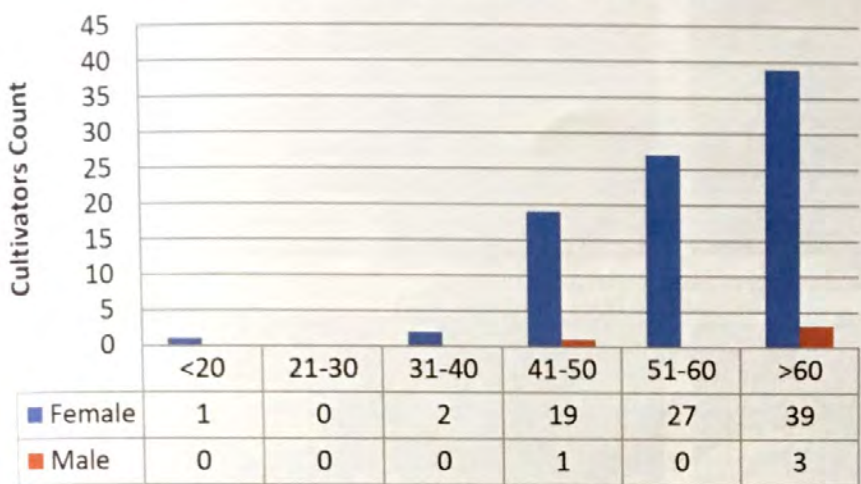
Table 9. Cultivators vs Taro Fields	Cultivators	Percentage	Taro Fields	Percentage
Desbedall	48	48%	55	38%
Keiukl	33	33%	59	41%
Ollei	18	18%	30	21%
	99	100%	144	100%



Taro Fields (Mesei) – Figures 1, 2 and 3 shows the total number and percentages of taro fields (mesei) cultivated for Keiukl, Desbedall and Ollei and Number and percentages of cultivators, the people, who are cultivating these mesei. They show that 144 mesei were cultivated by 99 cultivators for all three regions. These figures show that of the 144 mesei, 59 or 41% of them were mesei in Keiukl, 55 or 38% were mesei from Desbedall and 30 or 21% were mesei from Ollei.

The figures as well show that off the 99 mesei cultivators, 33 or 33% of them are from Keiukl, 48 or 49% of them are from Desbedall and 18 or 18% are from Ollei.

Figure 5. Cultivators by Gender & Age Group



Overall, based on the numbers in Figures 1, 2, and 3 and Table 8 above, the total number of mesei in Ngarchelong increased from 83 in July 2014 to 227, which is a 227% increase of number of cultivated and restored mesei in all Ngarchelong. There is reason to believe that perhaps 144 mesei in Ngarchelong might not even be 40% of mesei in Ngarchelong. For increases of numbers of mesei by region, Keiukl increased in the number of mesei from 37 in July 2014 to

96 in July 2015 that is a 259%. For the same period, Desbedall increased the number of its mesei from 32 to 87, a 271% increase. For the same period, Ollei increased the number of its mesei from 32 to 87, a 314% increase.



Young women and children experiencing mesei work.



Always ready to plant, melalm, and merort.



Resting time activities-talking story.

Omoachel me a Rolel a Ralm er a Mesei (Streams and waterways of mesei)

A large part of the mesei project involved the cleaning and clearing of mesei streams and waterways. Due to El Niño and limitation of workers, all streams and water ways were not cleared all the way to keburs, the mangrove area. An important function of taro cultivation is the diversion of water from these water sources into and out of the mesei. Recording of the names of these streams and water sources in the three regions is important, hence they appear on table.

Table 10 List of streams and waterways for all three regions of Ngarchelong*

Keiukl	Desbedall	Ollei
Oteloi	Imolobang	Omoachel er a Kiok
Irikl Omoachel	Bekuu	Ngetechur
Chouang	Touchesas	
Mersak Omoachel		

*The list of streams is not exhaustive.

Identifying Taro Varieties

Another outcome of the project was in identifying and recording the taro varieties planted in Ngarchelong. It is noted that there are taro varieties which are known to be *dung* of Ngarchelong. *Dung* means they originate from a particular area. Identifying taro varieties helped stimulate

discussions and clarification among cultivators from different villages who uses different names for the same variety.

Table 11 List of popular taro varieties planted in Ngarchelong			
1	Cherderid	17	Kirang*
2	Chesuch	18	Kerdeu
3	Chochab	19	Metengalangas
4	Cholilai*	20	Merii
5	Chokelang	21	Ngemekeang
6	Choirremech	22	Ngetmadei
7	Choiska	23	Ngerbachel*
8	Churungel	24	Ngesuas, redil and sechal
9	Cheridel*	25	Ngeruuch, becheleleu
10	Dilisor*	26	Ngeruuch, bekerkard
11	Dirraklei	27	Ngetmel*
12	Dirratengadik	28	Rrenged*
13	Dungersuul	29	Rriu*
14	Dirrubong	30	Terrekaki
15	Fiji	31	Tirou*
16	Homusted	32	Ulecham

*Dung of Ngarchelong, the list is not exhaustive.

Table 12 List of other taro varieties planted in Ngarchelong			
1	Moded	7	Dekong
2	Ungildil	8	Risong
3	Chordiil	9	Redil
4	Iuosech	10	SM 115
5	Modekngai, becheleleu	11	SM 116 (Samoa)
6	Modekngai, bekerkard		

Medicinal Plants from Mesei and Surrounding Areas

In Palauan culture knowledge is personal property (Kesolei 1977). With its oral traditions, one is supposed to take and learn from 'inside the house' from ones' elders and closest relatives (*melubet er a techeraki*) or one goes around gathering information from others, basically researching, (*mengeremodel*). *Omengeremodel* is something which requires building of relationships and trust before one accesses information and knowledge. Typically, an important and lasting relationship is built when something of this nature—learning and building ties and transformation of knowledge happens.



Newly planted after clearing.



Oudachelbai, makeshift coconut frond shade.



One of the many consultation with ReKedul a Mesei.



Workers discussing their work plan.

This project opened up an opportunity for many knowledgeable women and men to talk story and share information with each other which are meaningful and lasting. Typically, such information might not be shared openly to anyone not privy to such information from a particular person. One such important and specialized knowledge is of Palauan traditional herbal medicines. Several discussions naturally occurred as restoration of taro fields and surrounding areas improved the normal biodiversity of the taro fields as traditional agriculture system growing a variety of small grasses, herbs, shrubs and trees which are important herbal medicines. The project has induced vigorous growth of such medical plants—herbs, shrubs and trees. Many medicinal herbs for women, especially, *dechedechomel*, (those which are taken by swallowing) by women who have given birth to a newborn.

More importantly, this project has improved access to collection of herbs and medicinal plants. Herbs, shrubs and plants which appear to be more generic were shared. Only those which were shared openly are indicated below on Table 13 to show another important function of healthy taro fields other than growing the important food staples, *kukau* and *brak*. The list is not exhaustive and not intended to be. It is however hoped that this discussion will propel family members, who are possessors of family about traditional medicinal herbs to pass on to the next generation.

Table 13 List of medicinal plants found in mesei and neighboring wooded areas.*		
Plant (English/scientific)	Areas Found	Ng kerul a Ngerang (medicinal uses)
Iaml	Inside a well cultivated selalo el mesei	Kerrir a redil (For women)
Tiel a uek	Inside a well cultivated selalo el mesei	Kerrir a redil (For women)
Ulekelakel	Inside a well cultivated selalo el mesei	Kerrir a redil (For women)
Cheluached	Inside a well cultivated selalo el mesei	Kerrir a redil (For women)
Uburk	Inside and around mesei areas	Kerul a mad, kerul a basech
Cholumud el redil	Chelius	Kerrir a redil (For women)
Cherechur	Chelius, bong	Skin disease and others
Dechus	Chelius, bong	Sking disease and others
Ngmak er a Belau	chelius	Eye and others
Chebeludes	Tkul a chelius	Kerrir a redil (For women)

Table 13 List of medicinal plants found in mesei and neighboring wooded areas.*		
Plant (English/scientific)	Areas Found	Ng kerul a Ngerang (medicinal uses)
Kerdeu er a Belau	Chelius and wooded areas	Kerrir a redil (For women)
Ngel	Cheliuis, surrounding wooded area, savannahs	Kerul a burk, mad (osenged), hypertension, metacheb, me a lmuut el bebil
Chelodechoel	Cheliuis and wooded areas and savannahs	Skin diseases, also used to clean one's body after dirty work in mesei
Chiutekill (cheberdil)	Easy access to this plant from mesei areas, also found in woods	Kerrir a redil (For women)
Taro corm (uncooked and scraped)	In mesei and gardens all over	Helps to numb one who has been stung by fish

*List is not exhaustive.

Other Unanticipated Results

An interesting and significant outcome of the mesei project is the documenting of the history and lineage of mesei in Ngarchelong. It was a fortunate consequence of spending time with the women from the three regions and learning about how mesei were passed down, or assigned, and the lineage of passage. Dialogue among the women of Ngarchelong has been initiated and continues in light of information that has come about as a result of project work and discussions. Particularly as it relates to the bequeath of mesei, as this knowledge has traditionally been part of the oral history of individual families and *kebliil* (clan). Thus, an unintended outcome of the project has been the initiation of talks to accurately, and formally, to an extent, determine the rightful boundaries and lineage of mesei.



First monitoring with GEF National Coordinator, Kiblas S. (an expecting mother)

An added benefit is that the community is learning about the many health advantages from a diet consisting of taro. It is generally agreed that there is a need to spread the healthy message. Furthermore, it has been recognized that there is great potential for economic benefits that can be garnered from kukau (taro) beyond cultural exchange.

Sustainability

Taro fields' cultivation continue to be the domain of Palauan women. Perhaps there was a time in the early 1970s to early 1980s that reduction of *mesei* farming occurred due to out-migration of young female students to attend off island schools or training. They returned home with their degrees to hold wage jobs. In their marriageable years, young men and women were married, began raising their families and found themselves becoming part of the traditional exchange system within their families and clans. This propelled many to automatically begin to take part in traditional practices one of which is *mesei* cultivation and even dry land gardening. Most women who have been cultivating *mesei* or those who are starting *mesei*, worked with their mothers, and community elders and did learn traditional ways of making *mesei*. Even unmarried women of age find themselves cultivating taro fields. In the case of the 10 states in Babeldaob, more *mesei* these days are being re-cultivated resulting from easy access to properties due to the completion of the Compact Road around the big island.

Several factors in the past two decades appear to contribute not only to transmission of skills but to continuity of taro fields farming or *mesei* making as well as sustainability. Renaissance of Palauan culture due to tourism development and social and political consciousness development has helped cultural revival. Cultural renaissance has contributed to *mesei* making as well as environmental conservation and preservation.

General wealth of the nation, increasing per capita income has helped women in taro fields' development due to increased income. Increased family income as well as easy access to hiring of foreign workers to help in domestic work, gardening and *mesei* work will continue to increase *mesei* making and its sustainability. Easy recruiting of foreign workers typically from the Philippines and Bangladesh has helped farmers increase taro fields development, they have also increased their income through selling of taro corms as well as plants.

Table 14. Nutritional Value per 132 grams of cooked taro

Serving size of 1 cup, sliced
132 grams = 0.29 lbs

	Amt	%DV*
Calories	187	9%
Water	84.2 g	~
Protein	0.7g	1%
Total fat	0.1g	0%
Total Omega-3 fatty acids	18.5mg	~
Total Omega-6 fatty acids	42.2 mg	~
Carbohydrate	45.7g	15%
Fiber, total dietary	6.7g	27%
Cholesterol	0.0mg	0%
Minerals		
Calcium, Ca	23.8mg	2%
Iron, Fe	1.0mg	5%
Magnesium, Mg	39.6mg	10%
Phosphorus, P	100mg	10%
Potassium, K	639mg	18%
Sodium, Na	19.8mg	1%
Zinc, Zn	0.4mg	2%
Copper	0.3mg	13%
Manganese	0.6mg	30%
Selenium	1.2 µg	2%
Vitamins		
Vitamin C, ascorbic acid	6.6mg	11%
Thiamin	0.1mg	9%
Riboflavin	0.04mg	2%
Niacin	0.7mg	3%
Vitamin B-6	0.4mg	22%
Folate	25.1µg	6%
Vitamin B-12	0.00 µg	0%
Vitamin A	111 IU	2%
Vitamin E, alpha-tocopherol	3.9mg	19%
Vitamin D	0.0 µg	0%
Vitamin K, phylloquinone	1.6 µg	2%

* Daily values are for adults or children aged 4 or older and are based on a 2,000 calorie per day diet.

Source: U.S. Department of Agriculture

Nutrition information available for taro leaves as well on the U.S.D.A. website

Health and Benefits of Taro

The past two decades have seen Palau's increased economic development due to vigorous and rapid tourism development and has rendered Palau a wealthier island nation compared to the 1970s and 1980s and even early 1990s. As material wealth increased, the health sector of the nation has documented the alarming increase of prevalence of Non-Communicable Diseases (NCDs) in the nation. Hence the health sector has increased NCDs reduction campaigns resulting in health consciousness of the people and increased consumption of local foods.

To reduce NCD health officials advocate for people and families to build better healthy eating habits, exercise, and develop positive human relationships and get enough sleep. Table 14 on page 41 shows nutritional values of taro corm (kukau). This surprising list of nutritional values per 132 grams of cooked taro, shows how much nutritional value kukau has for one's diet compared to any processed food, like eating compared to rice, and appear to be one of meaningful solution to lowering NCD, provided people eat it.

Beyond the Project

Sustainability of taro fields' development appears to be assured due to vigorousness of mesei making by many women and resource owners. The Bureau of Agriculture, Ministry of Natural Resources, Environment & Tourism, Palau Community College (PCC) Cooperative Research Extension (CRE), Republic of China-Taiwan Technical Mission (TTM) and Palau Community Action Agency (PCAA) have augmented vigorous aspects of research on taro propagation, taro fields cultivation and production in collaboration with the local farmers, which has substantially increased taro fields farming and production and many other aspects of mesei farming.



Otelo-Ngruil traditional well during PALARIS mapping.



Taking care of a grandson while tending to mesei.



Mechas resting after a hard day's work.



Mother takes a break by the stream and son hiding behind.

Technical assistance in various aspects of taro field farming in mesei as well as dry land including technical assistance in soil testing, composting and others which facilitate and enhance farming are positive indicators of sustainability of taro fields cultivation.

Training and facilitating on value-adding for taro corms, stalks and leaves add to the increased demands for cultivation and production of taro not only in mesei but also dry land.

Besides increased demand for and production of *colocasia esculenta*, a notable increased demand for brak, yellow taro, also giant taro (*cyrtosperma*) is hereby noted as well. The practice of eating brak has been accepted to the point that it has become acceptable to include brak in funeral foods and other cultural events. Traditionally the practice was not acceptable before the 1990s.



Husband helps wife's heavy mesei work.

The formation of the Palau-Taiwan Farmers' Association is a positive force which contributes to sustainability of mesei cultivation and taro production as it provides marketing support for farmers. Other women's organizations are working in various ways to help themselves revive and sustain their taro fields. As of this publication, Ngwal, Ngardmau, and Ngaraard States have embarked on taro fields restoration projects within their states.



Packed, raw, and cooked taro using taro corms, kukau, from mesei project.



Young girls tilling mesei, mesalo.



Bai Beam illustration in Krämer featuring taro plants and uek

Oral Histories

Chants, stories, proverbs, genealogies, skills, and knowledge serve as vehicles for documenting taro fields' roles in the lives of the people. The following migration oral histories attest to the origin and sacredness of taro field cultivation as the life and breath of the Palauan people.

Iluochel Migration Story

The following migration story was written in Palauan by Steven Umetaro and translated into English by Julita Tellei of the Palau Resource Institute (Rehuher-Marugg and Tellei 2014:200). *Iluochel's* first mesei in Ngeaur was called Ngerechei (literally, "that of the reef flat") because she accessed Ngerechei through the reef flat. When she went to the Bkulabeluu of Beliliou, she just *miltechii chochil* (literally, "kicked her foot lopsidedly") to begin the mesei work, and that is why the mesei at Bkulabeluu are small and narrow. She continued to Oreor and on to Ngeremlengui. Ngeruuchel in Ngeremlengui was the first mesei where she began applying omesalo techniques for mesei cultivation. She went to Airai, to Ngchesar, to Ngiwal, and on to Ngaraard and on to Ngarchelong.



Women at work in the taro patch, a sketch by E. Krämer as she saw it in 1908. (c) Museum fuer Voelkerkunde Hamburg

The last mesei she made was in Ngarchelong. The name of the mesei was Ngerekei. When she finished making this mesei, she buried her *ngarek* (taro scraper) in the mesei, hence the name "Ngerekei."

Ngerekei Taro Field

While *Iluochel* was in Ngarchelong, she cultivated her mesei in Ollei and named it Ngerekei. When *Iluochel* was in Ollei, she again married someone she did not care for. When she went to her taro field, she would take her time gathering leaves for fertilizer and fixing the soil deliberately and slowly, ensuring she would not go home so early. This is why Ngarchelong mesei

have to be well tended, utilizing *omesalo* technique and using a lot of leaves and grass fertilizers to result in quality taro corms, unlike the mesei in Choll and other places that can be fixed hastily, even carelessly, and yet still yield good taro. It is believed that the Ngerekei mesei is sacred, so it should be well tended all the time and should never be neglected. Walking past Ngerekei mesei, one must remain silent and not make noise.



Semi-matured, one more month before harvesting, close up of taro plant spacing, harvested taro corms and plantings.

The women who own the Ngerekei taro fields say that the actual place name of the taro field is Idelbechong; because Iluochel's taro scraper (*ngarek*) was broken there, they renamed it Ngerekei, the name being derived from "*ngarek*." There is a rock in the taro field against which Iluochel's *ngarek* was broken; the mesei cultivators stay away from this rock.

The First Feast in Palau

Iluochel was in Ollei when her husband Olungiis came to visit. While there, she began preparing for the marriage feast, so they went to get taro from Ngeaur and brought it to Ollei for the feast. After the feast, there were leftover kukau (purple taro corms) in Ollei, and they turned to stone; hence, one can still see the leftover kukau from Iluochel's *mur* (feast). This was the first *mur* in Palau.

Kukau el Bad—Stone Taro

The *Kukau el Bad* (literally, "Stone Taro") story is as follows. Iungel was the sentry of the place called Delbirt to the north. There is a place called *Iungel el Oraterruul*, a place for making fishing gear. This place was so named as it was the place to cut the plants used to make *ruul* (a type of fishing gear) for fishing in the old days. The place called *Orraterruul* is where over twenty rock icons stand, while some are also on the ground and are referred to as *Kukau el Bad*. They are the *kukau*, taro of Belau, and the biggest of them all are said to be *kukau* from Ngcheangel and Ngeaur. Some people say they were remnants of the *kukau* brought for the feast of Iluochel.

Another version of a related story goes that when there is an increase of *uek* (purple swamp hen [*Porphyrio porphyria*]), which eat raw *kukau* in the mesei and deplete the harvest, or when there are diseased taro plants wrecking mesei in Ollei, the old women of Ollei will harvest a taro, one each from their mesei, and bring it to the Iungel. Eating the roasted *kukau* and

ulechouch, roasted coconuts, they keep a vigil to appease the gods. They make their offerings while sitting amid the *Kukau el Bad*, offering their prayers for fruitful and bountiful taro fields. When such offerings are made for a period of time, the *uek* disappear, as do taro diseases.

Ngot er a Iluochel—Iluochel's Mortar

During the Japanese time in Palau, when Hijikata was in Palau, he wrote that there used to be a large flat slab of stone in Mengellakl, which used to be referred to as "*Ngot er a Iluochel*" (the flat mortar of the goddess Iluochel). There are also very old women in Ngarchelong who remember that such a flat rock was located in Mengellakl, but after World War II, the rock went missing, and no one seems to remember the location of the rock even today.



Kukau el Bad in Ollei during high tide, effects of climate change on cultural properties. © Bureau of Arts and Culture, MCCA.

Bedengel a Iluochel—Iluochel's Remains

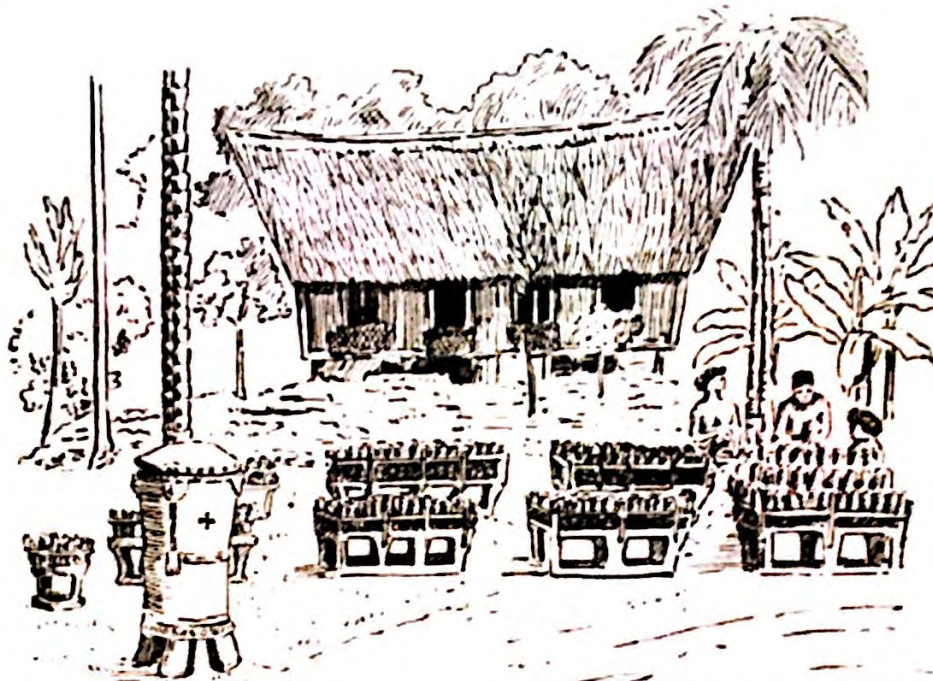
When Iluochel died, there was a symbol of her body left over on the lungel of Ollei. This body of Iluochel is located on the edge of a place near the Kukau el Bad.

Mesei Proverbs

A number of other colorful Palauan proverbs illustrate the essential nature of *mesei* to the Palauan people, such as the following:

- "*A Mesei a uchul a deled.*" Literally, this means, "*Mesei* is the base of our stomach." The stomach is where food settles in to make one feel full. This is another way of expressing the vital importance of *mesei* as the essence of our lives and our livelihood. Elders relate the proverb to the *mesei* known as *lkul a dui*.
- "*A Mesei a uchul a teloched.*" Literally, this means, "*Mesei* is the base of our meal." *Teloched* is the chewed food that is softened and ready to be swallowed. This is the root word of *teloched*, an inclusive plural emphasizing that, collectively, *mesei* is a place where taro is grown for basic sustenance of members of families, clans, and communities.
- "*A ochid a mekleched.*" Literally, this means, "Our feet are our *mesei*." This is what a person exclaims when she walks into a place where meals are served and one can partake of the meal. It can also be applied to resources and goods. It means your feet can be a source of food and resources for you. In contemporary Palau, this proverb is used and understood by many people.

- “*Ailecha di telulechoid er a mesei.*” There are still those stories that can only be told in the mesei (woman to woman) and nowhere else, hence the saying, “*Ailecha di telulechoid er a mesei*” (a reference to something not serious nor important, warranting immediate dismissal). Literally, it means, “It is only gossip of the mesei.”



Preparation of Olketokel for mur (feast), a sketch by Elizabeth Krämer, as she saw it in 1908. © Museum fuer Voelkerkunde Hamburg

Mesei Chants

Rebetii: Idesei

A iukereli...iang!
 Me nguiang el beluu a Idesei,
 El di chelelabel omouachel me a ralm a urrurt er ngii,
 Te kmo ralm a urrurt er ngii me a kibora *mesei*,
 Ea ki rodir a iaml leng telul obengakl,
 Me a telau el chosm a disesei meng buul iiang!
 E lekong, o hui!

Translation:

In praise of the village with great streams where
 clean water runs through.
 They say clean water runs through to the *mesei*,
 one can take the fragrant traditional herbs for ear
 ornaments,
 that is how it goes!

Chesols: Dita el Dung er Uchob

Meng ng ditek el dung er Uchob el kngiluu
 Er ongechel, El me mengedii er a chimak;
 E otengeli er a Ulecharo, E orolii er a Bluu,
 E orolii er a Uleboel, E a obels a ngoura ng ma renguk a
 mlengiulii...ang.

Literal Translation:

Oh my healthy taro plant which I gathered from
 afar and brought close to my heart;
 With my hands, I clustered it to my side; and
 delivered it in the Ulecharo; and
 guided it into the Bluu, then spread it through the
 Uleboel; then the unfortunate taro blight

Transfer of Knowledge

The older women of Ngarchelong today grew up helping their mothers and grandmothers in the cultivation work of the mesei, and that was how they learned effective and sustainable mesei cultivation. Such work not only included grass cutting and mulching, but also included: the process of engineering of waterways and the sustainable balancing the cultivation of the entire plants mix, and functional waterways and flow systems that made up the mesei ecosystem, which if not learned, will be lost.

Mesei Anecdotes

"Yobei Kollaj"

By Motil Timarong

My earliest memories of *mesei* have to do with both of my grandmothers. I would carry Mamang's (grandmother) basket coming back from the *mesei* and watch her balance a basketful of *klab* (raw taro) as we would make our way uphill. It was always, and still is, uphill returning from the *mesei*. My cousins and I would splash in the streams, attempting to catch *cherchur* (fresh water shrimp); catch *amaiong* (dragonflies) with nets made from *temikel* and spiderweb. We would forage and eat from the surrounding trees and plants—*chosm*, *jam*, *budo*, *deb*, *edebsachel*, *guava*. We would practice *omesalou* (turning over the mud), and help Mamang harvest by dragging the heavy, mud drenched taro—roots, leaves and all—from the mesei up to the *eleiuis*. Years later, I replay these memories whenever I trek the path down to Mamang's *mesei*—my mother and her sisters now keep and maintain.

I spent three months in Ngarchelong following my return home after graduate school in the United States. To my great fortune, one of my maternal aunts, whom we affectionately call Auntie Mamang, was in the village at the time overseeing the work of tending our family farms. I would accompany her to various family *mesei* and learn from her during this time, and eventually, we began to describe our time together in the village as my enrollment in "Yobei Kollaj"—Yobei is the name of our home in Ngarchelong and Kollaj derives from the word "college" which at the time, our Bangladeshi farmers pronounced 'kollaj'.

Yobei Kollaj was my re-introduction to *mesei* and ignited the passion I felt to reconnect with my heritage, to strengthen the bond to my mothers and grandmothers. We still refer to my mother and her sisters as the Yobei Kollaj professors and the lessons we have learned from them go beyond the figurative and literal boundaries of the *mesei* that we will one day inherit from them.

Mesei for me became a spiritual experience in the sense that one becomes part of nature. Waist-deep in the mud, working the soil with my hands, feeling the pulse of the earth itself as I commune with the creatures and plants that inhabit the *mesei* and its surroundings. Never before had I felt such a powerful connection to the earth, and to my roots. For me, it is other-worldly and a welcome respite from the tensions of working in the city.



Mrs. Ana Ramarui and Bangladesh farmers, Belal, Hussein, & Haniff, Mersak mesei, 2008



omerort, cleaning harvested kukau, Mersak mesei, Motil, 2008



omeliokl, cooking taro at Yobei, Motil, 2008

Mesei Anecdotes

"Someday"

By Maked Besebes

Mesei cultivation is hard work. One must be ready mentally, spiritually, and physically to own and cultivate mesei. We live in our homeland and are blessed to play the role of managers.

Mesei to me is on my checklist, which I've yet to tackle, hmm... what a world of difference: I live in comparison with my grandmother (Mamang Risong Ngirailid-April). She went to mesei on survival mode. If she didn't go to mesei, her children would not eat, and her husband (Chedam April) will not have his ongraol (starch food) when he went fishing. She had the system down, when to go to mesalou, plant, and harvest.

Between my grandmothers' generation and mine, so much has changed and many barriers have been built between me and mesei. Access, financial, and competing priorities are but a few reasons why I have not been involved in mesei cultivation. Despite the challenges, I am grateful that my mother (Ferista Ngirilid-Besebes), aunts (Kyoko April-Yuri, Lousia April-Ngirakesau, and Marcella April), and cousins (Motil and Irie) are working hard to maintain these age old tradition that is so important to our culture.

Someday when I am ready, they will be my mentors, guiding me just as they have learned from the mothers and grandmothers. For now, I will play my role as a consumer by enjoying eating taro and teaching my two boys (Tekoi and Ongos Rdiall) the importance of eating them.



Bai Beam illustration in Krämer featuring taro plants and uek

Oriikel a Uek (To rid the purple swamp hen):

Discussions of taro fields work whenever Palauan women find themselves, talking usually end up talking about *uek*, the purple swamp hen (*Porphyrio porphyrio pelewensis*). Ngarchelong mesei project discussions were no different. Sharing of techniques or ways to get rid of the *uek* or prevent them from eating the *kukau* comes into discussion and sharing of information of how to solve the problem of *uek* infestation or to prevent *uek* from eating taro corms!



Sharing our taro fields with our mother bird, uek. © Belau National Museum

The following discussion is gleaned from such discussions with mesei workers, *ReKedul a Mesei* and cultivators and experiences of the authors themselves and similar discussions with other women cultivators.

There are multiple ways of dealing with the issue of *uek* eating most of the crops. The following are ways which have been confirmed or reconfirmed during the Ngarchelong Mesei project.

Kukau is food for *uek*, hence, when you harvest or even when you visit your taro fields, talk to the *uek*, address them: "please, whatever you do, eat some and leave some for my children and family." This belief of sharing of your plants with the *uek*, is said to work for others.

For some, cultivators during harvest time, take a few, two or three of their choice harvest, put on the side of *cheleiuis* and say: "here are some for you and children, and leave some for me and my children and family." Treating the *uek* with equal dignity essentially recognizes that they are part of the *mesei* and one need to share their crops with them.

It is said that there are families, women, who possess a technique of ridding of their taro plants from being eaten by *uek*. Such are private knowledge and are not public. However suffice is to say that such techniques entails talking, chanting and even a dancing stance and pertaining to cleansing of the taro fields from being invaded by *uek*. It is encouraged such traditional knowledge be passed down through appropriate family members so they are preserved.

Beodech – This is a type of taro-like plant (*bisech*) with a strong odor, or scent which is said to be repugnant to *uek*. It is believed that when planted around your taro fields, or at the head of the fields, *uek* tend to stay away from eating your taro corms as they do not like the smell. They say when you visit your taro fields, take some of the plants and leaves and throw into your taro fields where taro are growing and this will keep the *uek* away from your taro fields.

Kelalk is a small grass which grows well in the well-cultivated, *selalo*, taro patch. They tend to grow and patch up the immediate areas around the taro plants, kind of making a mesh around the plants. Women have observed that *uek* tend to leave the taro alone when there are *kelalk* planted among and around the taro patches. Two different women of Ngarchelong report that there are two types of *kelalk* in Ngarchelong.

In one such story sharing, an avid and strong woman taro field's cultivator from Airai confirms that has something similar to *kelalk*, except she confessed that she sneaked it into Palau from another island. She says that it seems to work as well.

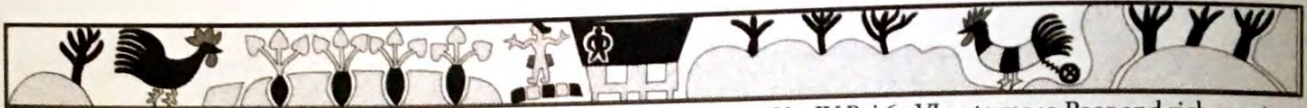
Bright redish, pink ti plant (*Bekerkard el sis*) – It is said from experiences of other women that this bright colored ti plant tends to keep the *uek* away. People say, maybe it is the color and some other similarly colored plants might work as well. Hence there are many taro cultivators who plant this type of ti plant around their taro fields, keeping them beautiful and keeping the *uek* away.

Redish Croton Plant - Similarly, there is a variety of croton plant which have similar colors as the ti plant described above. It is said this might work as well as it is just is colorful.

Yellow trumpet vine – it is reported by others that putting this plant around your *cheleiuis*, taro mounds, will keep the *uek* away.

Scare crow – The use of scare crows around the taro fields in Palau continue to be a popular practice and Ngarchelong women do this as well.

It appears that there a number of techniques which have worked. One might try and experiment. It is believed that to curse the bird causes them to ruin your taro fields. Many women have admitted this practice... "adjoining taro fields with a mean spirited cultivator, cursing the *uek*, gets her taro plants devastated while next field with a cultivator who regularly talks to the *uek* and leaves some taro corms for *uek*, seem to save her taro from being eaten up."



Bai Beam illustration in Krämer Vo. IV Bai 62 VI a story 140 Poor and rich rooster

Mesei Economics

The role of kukau, or taro, in traditional socioeconomics persists through today as Palauan women struggle to meet cultural expectations while trying to establish professional careers. The heavy reliance on imported foods for both everyday needs and social obligation is placing financial strain on many Palauan families. So, there is a strong incentive to revive traditional self-subsistence agriculture including mesei. In fact, there are significant direct and indirect financial benefits to be had from mesei production.

The contribution of agriculture to gross domestic product (GDP) declined from 2.0 percent in 1992 to 1.3 percent in 2005. With emerging health and economic concerns spurring an incentive for import substitution, self-subsistence agriculture has potential to grow into an important aspect of Palau's economy. Furthermore, the development of value-added production chains may even grow the agriculture sector into an important consideration in small-scale export following expansion of the domestic-international market. The domestic-international market is made up of tourists and other foreign visitors who desire to sample local dishes. At this time, taro is primarily used for food, *siukang* (customary events), and trade in small local markets. The demand for taro is growing as the nation continues to actively promote healthy living and consumption with cultural significance.

During the 2011 National Taro Festival "A Mesei a Delal a Telid", it was recognized that there was insufficient data on local supply, demand, and market price determinants to arrive at any meaningful conclusions regarding the role of mesei in our economy. Collection of information that can tell us how much taro is consumed locally is still required to measure demand. However, since that first local taro festival in 2011, work has begun to complete the picture on the supply side of things. Thanks to the efforts of the PALARIS, Palau Community College, Bureau of Agriculture, Palau Community Action Agency (PCAA), Taiwan Technical Mission (TTM) and Palau Resource Institute, there is now a growing amount of information related to the size and span of mesei for Ngarchelong State.

Taro trade is an important economic activity throughout Palau. Today, the traditional way of exchanging taro for other goods and services has evolved into trading goods and services for money, or monetarized trade. Taro farming and marketing remains economically and socially important, particularly in rural villages. In fact, local markets, or '*makit*', play an important role in terms of economic and food security benefits at the local community level. Taro remains an important source of food and income for many rural households. Even though there is supply of taro to larger urban markets, there is opportunity for it to expand.

Urban market surveys are needed to give us an idea of the demand for taro. Surveys are also needed to find out how much supply should be adjusted, if at all, in order to meet demand. There are important economic factors that need to be considered because farmers are influenced by powerful market forces. For example, a family might choose not to invest in large-scale taro production because there aren't enough farmers to tend to the number of mesei necessary to meet large-scale production quantities.

Taro is generally sold to urban markets for value-added consumption or *siukang* (customary events). The price of cooked, peeled, sliced and packaged taro ranges from \$2.25 to \$2.50 per eight ounce package in urban markets. Cooked taro, as is, sells for around \$2.00 per pound whereas raw taro costs \$1.75 per pound. Taro prices decline with distance from urban markets in Koror, and in some village *makit*, cooked taro can be as low as \$1.50 per pound. The price of imported rice is cheaper than taro and so rice is a preferred substitute for taro, especially for those who do not have access to developed taro farms.

As populations grow, overcrowding in the urban center will result in increased competition for food and public services. Which means the price of imported foods will increase. So, promoting subsistence agriculture, including taro farming, becomes important for food security and health. There are considerable constraints to promoting new economic opportunities for taro growers. To overcome these constraints, traditional values and uses of taro should be strengthened. At the same time, effective marketing of taro should be expanded in urban areas not just for locals but also for the domestic-international market. There are some farmers who are growing larger quantities of taro for sale in urban markets. However, the restoration of mesei should expand throughout Palau. Taro could be considered an important source of income for people in areas that have very few income earning opportunities.

Constraints to Production/Cultivation

Below are some commonly stated reasons why there is not more involvement in mesei:

- "Growing taro is for hard working people. Today our young people are getting lazy and looking for the easy way."
- "Young people look for the easiest way to get food, that's why they buy at the store and don't want to farm."
- "There is no time for mesei because of work and family pressures."
- "Lack of means to clear the land and restore mesei to productive condition."
- "The family mesei in Babeldaob are too far away to maintain."

Storage is also a limiting issue in taro marketing. Taro is not storable for more than short periods. It can be kept in the ground for a few weeks but once harvested it must be eaten or frozen after a few days. Therefore, taro must be planted and harvested all year round to assure a steady fresh supply at all times.

Market forces have had a significant impact on the demand and supply of taro. Unless it can be shown to have economic value, production may decline among young farmers even with the revival of mesei. In order to show the implications of economic and market influences on taro farming, more research is needed. Research on the demand for taro among different consumer markets in urban areas, as well as the spending patterns of rural families who market taro. It is also important to find out what the cash income from selling taro is used for, and what the constraints to increasing taro marketing are. This information is needed to determine appropriate strategies to meet increased demand. In addition, what are ways that farmers can reduce prices in order to encourage more taro consumption?

On the demand side, more availability and a lower price for taro relative to imported rice and other available substitutes could well stimulate and increase urban demand and consumption, especially among young people. There appears to be considerable opportunity to market more taro if logistical constraints can be overcome for taro growers in rural areas to access urban markets. Developing an enabling environment for value-added production chains will further expand the domestic uses and consumption of taro and perhaps open up small scale export market opportunities in the future.

Ucherriu Case Study

The Ucherriu Mesei Case Study is a cost-benefit analysis of a small scale mesei in Ngarchelong. Results of the Ucherriu case study show that the direct and indirect benefits of taro production outweigh the costs involved in operating a mesei. In fact the benefits of the self-subsistence aspect of taro farming, in terms of not having to purchase imported rice and from not having to purchase taro, were shown to drive up the average annual return on investment in Ucherriu Mesei. Return on Investment was shown to increase from 2.64% to 25.61%, given the market price at that time, which was \$1.50 per pound for uncooked taro. The case study analysis was based on data collected from the planting, maintenance, and harvesting of Ucherriu Mesei over a three-year period.



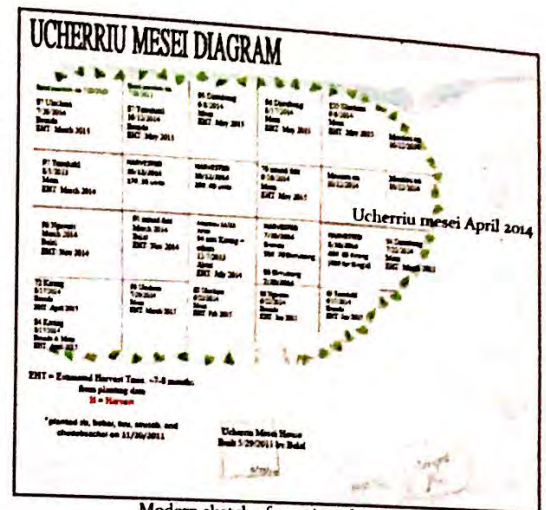
Ucherriu mesei, 2011



Ucherriu mesei, 2014

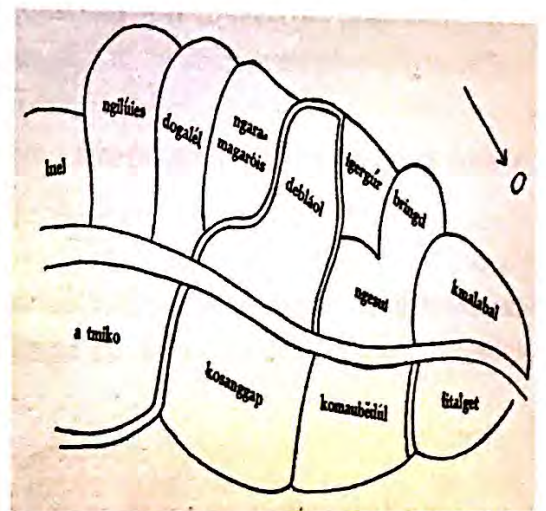
Ucherriu Mesei is located in likdbeluu (Iebukel, Ngarbau) Ngarchelong State. In 2011, three young professional women together embarked on a mesei journey to restore Ucherriu, a mesei that belonged to and was cultivated by their grandmother.

After years of abandon, the mesei had become overgrown with dense jungle. Once cleared and subdivided, there were 22 bluu (individual taro patches/squares) altogether. The total area of the mesei measured at approximately 214 square meters.



Modern sketch of mesei used to track mesei activities

At first, the recordkeeping maintained by the women was to track the costs associated with mesei work so that the burden could be shared equally. This naturally progressed to the subsequent recordkeeping of the number and type of taro planted, the number and weight of harvested taro, and other details. Eventually, what at first began as a way to work off the stress of the daily grind, became a case study. The effort of working the mesei and keeping all the records lent itself to a practical cost-benefit analysis of a small scale part-time mesei operation. Part-time because the ladies could only dedicate weekends, some holidays, and rare times off-from-work to the endeavor.



Mesei designed by Dr. Augustin Krämer, Results of the South Seas Expedition 1908-1910 Vo. III Ethnography (c) Museum fuer Voelkerkunde Hamburg

As of May 2014, Ucherriu mesei was well into its third planting-harvest cycle. A total of 1,466 pounds of taro had already been harvested from the mesei. A total of 913 pounds of harvested taro were considered marketable, although only 585 pounds of raw and cooked taro were sold.

Initial costs associated with Ucherriu included the labor and tools for clear-cutting and building the mesei hut, and the fuel costs to travel to and from Ngarchelong state. Thereafter, the *mesei* costs consisted of farm labor, fuel, mesei tools, and other minor expenses. As of May 2014, three years after Ucherriu was first cleared and became operational, total expenses were estimated at \$1,950—including labor, fuel for travel, and supplies. The average cost per year for Ucherriu mesei was estimated at \$430—including hired farm labor and fuel for travel to and from Ngarchelong.

Revenue from Ucherriu consisted of the income from sales of kukau harvested from the mesei. An additional benefit was the realized savings from not having to buy *ongraol* (starch component of meal). As of May 2014, sales of *kukau* from Ucherriu totaled approximately \$820. The value of *kukau* retained for home consumption was approximately \$1,379. These values are based on the price of raw taro at that time, which was \$1.50 per pound.

The unsold portions of marketable kukau were combined with those retained for home consumption and turned into *belsiich* (pounded taro) or stored in the freezer and cooked for family gatherings. Even the taro leaves were cut from the stems, cleaned, packaged in storage bags and frozen for later use to cook *demok* (soup made from taro leaves and coconut milk).

Other valuable information from the case study was the change in outcome from modifying techniques used in the mesei. For instance, use of *koias* (fertilizer), *dekedek* (cover), and *omesalou* during the second planting cycle resulted in fewer plant losses and increase in pounds harvested.

What this case study shows, and what is perhaps the most significant lesson learned, is that even taken up as a part time venture, mesei is a viable undertaking. Not only for the income derived from the sale of kukau, but perhaps more so because the family realizes the benefit of self-sufficient production.

Yobei Agricultural Development

Yobei Agricultural Development is made up of the Rehuher family farms in Ngarchelong. These farms consist of fruit orchards, vegetable gardens, dry-land gardens, and mesei dispersed in Keiukl and Desbedall. The experience of Yobei Agricultural Development can be used to illustrate another cost-benefit case study at a small scale commercial level.

Yobei farms sells its *kukau* and taro produce in two primary markets, the Farmers Association market in Bethlehem (Bethlehem Makit) in Downtown Koror and the Bengall Makit in Ngarchelong. The Bethlehem Makit takes place bi-weekly on Thursdays, usually during government payday weeks. Yobei farms therefore sells its *kukau* and taro produce bi-weekly during the Bethlehem Makit and weekly on Fridays through Sundays at the Bengall Makit.

During 2014, Yobei Agricultural Development sold 795.5 pounds of cooked *kukau* at the Bengall Makit. The family farm also sold 762.5 pounds of *kukau* at the Bethlehem Makit. *Kukau* revenue accounted for 29% of Yobei farm's total *makit* revenue for 2014. Net Profit for the year from the family farm equaled approximately 30% of the farm's revenues from *makit* sales.

Estimated costs of running a moderate-sized family farm in Ngarchelong include farm labor expenses, fuel, compost, farm supplies, tools and equipment. Annual expenses are estimated as follows:

Expense Item	Qty	Unit of measurement	Total Cost per year	Notes
Farm labor	2	Farmers	4,800	
Fuel	237	gallons	1,045	\$200 per month x 12 for each farmer
Organic compost	25	Sacks	400	3 gal RT x (24+55) at approx \$4.40/gal
Supplies			500	Estimate
Tools & Equipment			500	Estimate
TOTAL			6,945	Estimate

As noted above, revenue from kukau and taro products represented 29% of the family farm's income from makit. Note however that this discussion excludes the volume and value of kukau retained for family use. The opportunity cost of retained kukau represents the savings to the family that is realized because there is no need to purchase kukau—for *siukang* or for home consumption. In this way, kukau from the family mesei may then substitute for rice, which means spending on rice is reduced, and further savings is realized.



Bai Beam illustration in Krämer Vo. IV Bai 29 VI a story 107 Taro delivering Iluochel

Glossary of Mesei Terminology

Bluu-- division within the mesei itself

Brak—yellow taro; giant taro (*cyrtosperma*)

Cheleiuis – Berm or soil mound erected to protect the mesei from heavy rains and flood waters. Small cheleiuis also refer to smaller soil mounds surrounding mesei and keeping water in the bong from coming into mesei.

Chesols-- Song or chant (chanting, sing-song, talking in high or low notes), expressing special messages, feelings and emotions or sentiments for an occasion.

Dait—plant cutting of taro (*colossia esculenta*)

Dechel—marsh land prepared for growing brak

Demok—soup made from taro leaves and coconut milk

Dengul a Ramk – Osechel/nutrition content of compost.

Diaches --refers to mature choice taro (*colocasia*) plants that would be harvested by ochell (senior matriarch clan member) from the Lkul a Dui taro field of the affected clan. Prepared carefully which some say 'to represent the heart, rengul, or the spirit of the deceased high clan title holder'. The 4 to 6 large mature taro corms are cleaned and bundled together with leaves intact and anointed with turmeric and left on a designated part of the olbed, stone platform, until at a designated time during the funeral where a designated matriarch will handle the diaches properly. This practice pertains only to high clan people.

Dibsechi-- literally spearing the soil with wooden stick and planting as if she was planting on dry land garden.

Disechel a Iluochel -- bathing place of Iluochel located in Airai.

Iluochel- literally, already carved open, referring to Iluochel mesei-making activities.

Kebliil—Clan; daughter of Tellebue(in Palauan legend)

Klechedaol--Invited group of travelers or tour group, in this instance reference is to feasting between related villages, allied villages.

Kllaeb-- small water paths dividing mesei sections. Kllaeb help bring water to mesei sections and also provide access for farmer to go into mesei to adjust water flow, weed and thinning

Kukau—corm or root of taro (*colocasia esculenta*)

Lkul a Dui--Lkul a dui is the name of the lineage or clan mesei where taro, colocasia, is planted for the clan titleholder's daily food consumption. Lkul a Dui is typically cultivated by the title holder's wife.

Meliuch --literally, to carve out of or to open

Mengellaeb—Regular maintenance of taro field by diverting water from one section of mesei to the next, weeding, and cutting baby taro plants from mother plants and just observing the plants.

Meruuch – use of a stick for planting kukau or brak in the mesei or dechel. Informally, 'mengeched'.

Metinget – taro patch with dense soil, medecherecher

Mesalo – to grab at (soft substance, e.g., food, earth etc) and squeeze, knead. In this document, to prepare soil of taro field for planting by softening the dirt or soil.

Mesei—Cultivated Taro field

Miltechii chochil-- literally kicked her foot lopsidedly, referring to lluochel stance when she was making mesei in Angaur and Peleliu.

Mur—Feast, banquet, ceremony, celebration

Ngarek-- taro root scraper

Ngerechei –Name of the mesei, taro field, in Ngeaur (Angaur), so named because lluochel accessed Ngeaur by way of the sea or reef flat.

Ngerekei-- a taro field name in Ollei, derived from 'ngarek', taro scraper, so named because lluochel's taro scraper broke in that mesei.

Ngeruuchel—A name of the taro field in Ngaremlengui so named because according to the Legend of lluochel, this is the first taro field where she began the practice of omesalo technique. Ngeruuchel the name of that special mesei in Ngaremlengui, literally means 'where it began'.

Ng seruchel a mesei – After a marsh or an abandoned mesei is cleared and ready to mesalo to become a bona fide mesei, this term 'Ng seruchel a mesei' applies in this situation, a new mesei is going to be developed.

Obechakl--to float away; figuratively refers to properties in Palau there is a change of ownership valuable property from one to another for legitimate reasons and other reasons.

Obuud – less dense mesei soil

Olangebdechel –first harvest after the first cycle of new mesei, selurech el mesei. It is said that typically, special people will receive the olangebdechel, or the farmer will decide who to give to.

Olketokel — taro bench

Olbed -- house stone platform

Omengerakl (cherrakl)- cooperative work among women and people to help in heavy work, in this situation of mesei work.

Omeluchel--Traditional reciprocal exchange of foods and services for money and other valuables, typically among and between married couples' wife's family and husband's family. The wife's family provides foods and services and in exchange, the husband's family and clan ensures they services are paid for.

Omesalo-iaur—Refer to the manner in which lluochel made mesei in Ngeaur (Angaur) sort of careless gardening, she just used wood sticks to hastily make holes to plant taro, hence the term 'omesalo-iaur', to mesalo or cultivate carelessly or hastily.

Ongelungel — taro 'stretcher' or carrier.

Orak -- division within the mesei itself. It is said that traditionally, only very large taro fields had orak and they mostly belonged to high clans. It is said 4 to 6 bluu make an orak.

Rebetii—A type of chant (monotone)

Rengul --Refers to the heart or the spirit of the deceased high clan title holder, possessive of "reng" heart or spirit, his reng or her reng.

Ruul --a type of fishing gear made from vines found in forest or from palm tree fronds.

Sualou -- basket

Toluk -- Palauan Women's money (valuable) made from turtle shells, of hawksbill turtle (*Eretmochelys imbricata*)

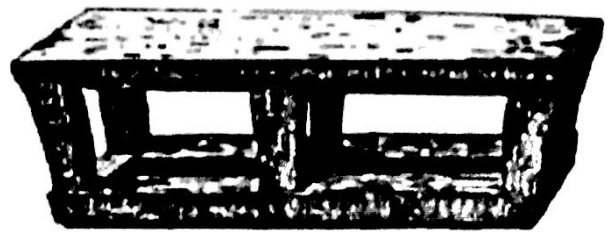
Uek --purple swamp hen (*Porphyrio porphyrio*)

Ulleboel-- division within the mesei itself

Uosech --fruit of a tree in the fig family (*Ficus* sp.)

Ulecharo-- division within the *mesei* itself

Urars-- division within the *mesei* itself



1. Olketokel sketched by E. Krämer 1908. (c)
Museum fuer Voelkerkunde Hamburg

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About the Authors

Faustina K. Rehuher-Marugg (63), M.A., is a mother of two and grandmother of three. She has more than three decades of experiences in the development of the arts, culture and history of Palau. Her knowledge and skills in the fields of museology, anthropology, arts, natural history, and Pacific Studies have contributed to the preservation, development and promotion of Palau's natural, cultural and historical heritage in the Pacific region. Ms. Rehuher-Marugg had served as head of the Republic of Palau Ministry of Community & Cultural Affairs from February to 2009-2012 following her tenure as Director and Curator of the Belau National Museum for over 30 years. She is a recipient of the Micronesian Area Research Center award, University of Guam for her research work in the region as well as one of the founders of Palau Resource Institute, Palau Conservation Society and numerous other cultural bodies regionally and internationally. She has published and presented professional papers widely. As an artist, she has documented Palau's oral history for many years. She holds the title of Dilruk, counterpart of the Ilengelang (10th clan in Mengellakl) in Ngarchelong.

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Motil Timarong-Kewii (35) is a taro cultivator and mother of two from Ngarchelong. She has been cultivating taro in her own mesei, which she shares with cousin Brenda Tarimel and sister Aline Rehuher, since 2011. She has presented on the fruits of their labors, the Ucherriu Case Study, in several agricultural forums, including the first taro festival and the Ngarchelong mesei forum. She is a trained statistician with a Master of Arts degree in Economics from the University of Hawaii-Manoa; and currently, the Bank Examiner with the Republic of Palau Financial Institutions Commission by profession.