



**Bright Spots**  
**BUMPHEAD PARROT**  
**FISH SPAWNING**  
**AGGREGATIONS**



**MAKING WAVES**  
**INTERNATIONALLY**



**ENVIRONMENTAL**  
**AWARD**



**ON THE HORIZON**  
**SUMMER INTERNSHIP**  
**PROGRAM**

# GRATITUDE REPORT

We are proud to share our 2017 Gratitude Report that highlights some of our most notable activities since the beginning of the year. We thank you, our donors and partners, your generous support made these efforts possible.



## Your support made this possible

Thank you, it is because of your support that this building is now complete and fully operational. In 2015, PICRC began the construction of a new facility and in 2017 it was completed. The building cost over one million dollars and now, thanks to your tremendous support, the new facility is open and ready for business.

**Tommy E.**  
**Remengesau Jr.**  
**Building**



On April 18, 2017, we held a ribbon cutting and naming ceremony for the new facility at PICRC. Present at the ceremony was His Excellency, President Tommy E. Remengesau Jr., who showed his support with a special remark congratulating PICRC for the success of the new building. Reiterating the important role PICRC holds in marine research, President Remengesau stated: “Palau is already contributing to the world in the area of environment and marine science research and study. And we will continue to move forward in achieving a sustainable environment for our future generation.”



President Remengesau was a key visionary in the foundation of PICRC and has remained a leading supporter since PICRC opening in. In tribute to his continued support of marine conservation and PICRC the new facility was honorably named the Tommy E. Remengesau Jr. Building. President Remengesau, who was unaware of PICRC’s tribute, expressed his deepest gratitude to the PICRC Board and Management for honoring him with the name of this new building.

The Tommy E. Remengesau Jr. Building, is a significant milestone for PICRC. This long standing

dream provides even more than just office spaces and accommodations for visiting researchers. In addition, the facility will support PICRCs efforts in reaching greater financial stability with an estimated annual income of \$100,000.

PICRC staff, board members, and friends are all incredibly grateful to President Remengesau, Republic of China, and you the local donors and international donors whose large contributions made this dream a reality. In opening the ceremony, PICRC Board of Directors Chairman Noah Idechong truthfully, remarked, “This building was made possible by partnerships such as the partnership with the Republic of China who contributed \$400,000. Businesses from the private sector, individual donors, and government who contributed to the remaining 60% to complete this new building. We are thankful for these contributions and these ongoing partnerships.”

The building consists of the following:

- two office spaces
- six single studio apartments
- one two bedroom apartment
- one conference room (capacity for fifty people).

The two office space houses the Protected Area Network Fund Office.

The conference room is available for use for meetings. Please contact us at Tel:488-6950, for more information.

## *Making waves in the International Arena*



During the beginning of March 2017, the CEO of PICRC, Dr. Yimnang Golbuu attended the “Healthy Oceans, Resilient Islands” meeting in Brussels, Belgium. Because of PICRC’s work and expertise in marine conservation, Dr. Golbuu was invited as an expert to give a presentation on PICRC’s research and how it can be applied to the Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) process. Dr. Golbuu presented on the design of ecologically connected networks of Marine Protected Areas (MPAs) in Palau and how PICRC conducted this research. In his presentation, Dr. Golbuu discussed the importance of connectivity to MPA design and effectiveness within the Protected Areas Network (PAN).

## Leading Conservation Forward



Visionary Award to President Remengesau

This year, at the 16th Anniversary celebration, CEO Dr. Yimnang Golbuu awarded the Visionary Award to President Tommy E. Remengesau, Jr. In his speech, Dr. Golbuu explains, "President Remengesau has inspired generations of Palauans, showing us and the world that though we are a small island with a small population, we have big and powerful ideas that will protect our environment, improve our lives, and change the world."

Over the past decade and a half, President Remengesau has brought Palau to the international stage, with visionary initiatives such as the Micronesia Challenge and the Palau National Marine Sanctuary. These are bold and immense steps that our President has taken towards

conservation and management of our marine resources. Moreover, these initiatives, not only benefits us, but they also inspire our neighbors, and the rest of the world to take similar bold actions to protect our planet.

Furthermore, as Dr. Golbuu had said in his speech, on the night of the fundraising, President Remengesau will be the first and last to receive the Visionary Award. Like in sports, when a great

player retires, so does his number. Thus, next year, PICRC will start a new award and name it "President Remengesau Environmental Award."

The "President Remengesau Environmental Award" will go to the individual who has shown great initiative and leadership in environmental conservation and preservation efforts. Nominations for this award will be made open by August.

## New scientific study highlights the effectiveness of Palau's Marine Protected Areas

Over a half century ago, Palau established its first Marine Protected Area (MPA), the Ngerukewid Island Preserve. Since then, Palau has created the Protected Areas Network (PAN), the first ever Shark Sanctuary, and the Palau National Marine Sanctuary.

Far before the adaptation of MPAs, however, Palauans demonstrated strong marine stewardship. Traditionally, when reefs faced threats, chiefs would impose a *bul*, or harvest moratorium to allow resources the chance to recover. In time, fisheries management has evolved through the combination of traditional knowledge and the establishment of MPAs.

In a paper published in the scientific journal, PLOS ONE, scientists from the Palau International Coral Reef Center along with collaborators from the National Geographic Society's Pristine Seas Program, the Fisheries Ecology Research Laboratory at the University of Hawaii, the Centre d'Estudis Avancats de Blanes, Spain, and the Marine Science Institute at the University of California, Santa Barbara, investigated the effectiveness of MPAs in Palau. Authors of the paper, "Size, age, and habitat determine effect of Palau's Marine Protected Areas", include Dr. Yimnang Golbuu, Marine Gouezo and Dawnette Olsudong from PICRC along with collaborators, Dr. Alan Friedlander, Dr. Enric Ballesteros, Dr. Jennifer E. Caselle and Dr. Enric Sala.

Through this study scientists determined that Palau possesses some of the best preserved and managed coral reefs in the western Pacific. According to Dr. Alan Friedlander, the lead

*Return on your investment*



**Leading conservation forward through research for coral reef stewardship and resource management.**

author of the study, “The biggest lesson to take away from this study is that with traditional knowledge and local engagement, the extensive network of MPAs in Palau provides important conservation and tourism benefits to the Republic, and likely provides fisheries benefits beyond their boundaries.”

During this study, researchers selected a group of MPAs within the PAN that were strictly no-take zones. They compared the marine communities found in these sites to the ones found in similar unprotected areas. On average, fish biomass in the MPAs was two times higher than in adjacent non-protected areas. Furthermore, the average biomass of top predators (groupers, sharks, jacks, snappers) was five times higher on average in the MPAs compared with areas open to fishing.

Size and age were the most important determinants of MPA success, with larger and older MPAs having the greatest amount of fish. A larger network of MPAs may benefit nearshore fisheries of the entire country by giving larger spawning adults protection and the potential to overflow into nearby fished areas. Larger protected areas contain a greater habitat diversity, which helps to conserve the entire ecosystem. In addition, the longer these areas are protected the more time the species have to mature.

“The results from this study is great news for Palau and demonstrates that if you put efforts into protection, you can see the benefits”, according to Dr. Yimnang Golbuu, CEO of PICRC and one of the co-authors of the study. “The state governments and local communities that manage these protected areas, the Protected Areas Network (PAN) Office and PAN Fund and other partners that support these protected areas should be congratulated for their success. By working together, we have demonstrated the value of protected areas to the world and the scientific community.”

You can download a free copy of this paper at <https://doi.org/10.1371/journal.pone.0174787>

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 PALAUINTERNATIONALCORALREEFCENTER-PICRC

## January - June 2017 Activities



75% of the  
students in Palau  
(School Year 2016 -  
2017) have been  
reached through  
awareness and  
outreach efforts.

## 2018 Arts & Tides Calendar Winners

One of the popular activities undertaken by the Education and Outreach Program is our annual Arts & Tides Calendar Contest. Each year, PICRC carefully chooses a theme for the Arts and Tides Calendar to bring attention to some of the research being conducted at the Center. Since PICRC opened in 2001, this contest has continued to raise awareness on important issues relating to marine conservation. In addition to the theme, the calendars also feature local tides, moon phases, closed and open fish seasons, information on regulated marine species, and national holidays. The theme for the 2018 Arts & Tides Calendar is, “Taro Fields Protect Coral Reefs”. As Palau faces environmental issues, such as increased sedimentation, taro fields play a significant role in mitigating environmental degradation of coastal marine areas. Results from a study conducted by PICRC and its partners in 2012 showed that taro fields can trap up to 90% of fine sediments during heavy rains. Therefore, taro fields play two significant roles in our environment. Not only do taro fields provide a staple crop for the people of Palau, but they also act as a buffer for marine environments, reducing the amount of sediment that flows into our coastal areas. It is the Center’s hope to promote the use of taro farming, which has the dual benefit of providing food security as well as protecting coral reefs from impacts of soil erosion. This year a total of 1322 students submitted their artwork.

Congratulations to the first prize winners of the art contest: Tiara Teruko Inosencio (Grade 1, GBH), Faith E. Remarii (Grade 2, Ngaremlengui), Jowenna Augustine (Grade 3, GBH), Mcdeevon Shiro (Grade 4, Ngaremlengui), Emi Yonezawa (Grade 5, Maris Stella), Zanna Ise (Grade 6, Koror), Tasarla



M. James (Grade 7, Airai), Zachariah T.B. Charles (Grade 8, Koror), Kazumi Chibana (Grade 9, PMA), Ailan Flowers (Grade 10, PMA), Dylan Tellei (Grade 11, PMA), Emeraldil Renguul (Grade 12,

PHS). All first prize artwork will be featured inside the calendar, with each grade representing one calendar month. Each of these students received \$75 cash prize along with a certificate.

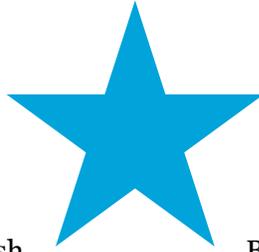
The overall winner of the 2018 Arts & Tides Calendar, (artwork pictured below) was Da Yeon Han (Grade 11, PMA)! The overall winning art work will be featured on the front cover of the 2018 Arts & Tides Calendar. The overall winner Da Yeon Han received a \$100 cash prize along with a certificate.



All the art work were most exceptional and shows the talents of these young amazing artists. We would like to offer a huge thank you to you our donors who throughout the years have continued to make the Arts and Tides Calendar possible. It is because of your generous support that we are able to continue this tradition.

The 2018 Calendar will be ready for distribution and available for sale at the PICRC Aquarium Giftshop in November this year. The calendar will also be distributed to our sponsors and endowment program members.

# Bright spots



# from the Field

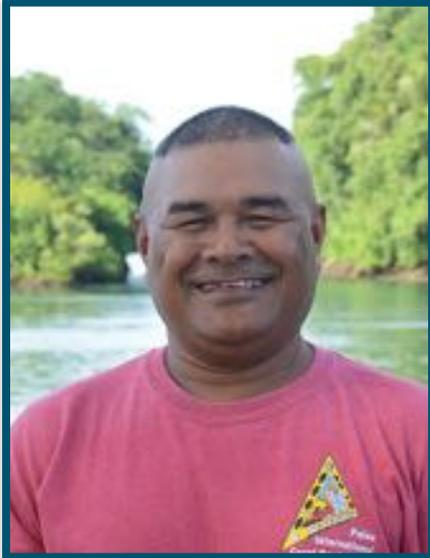
A recent paper in the “Journal of Fish Center, University of Queensland and Research Organisation (CSIRO) Oceans and Atmosphere, reported for the first time ever, the largest

Biology”, by Palau International Coral Reef Commonwealth Scientific and Industrial



mass spawning aggregations of Bumphead Parrotfish (kamedukl). The spawning of the giant parrotfish in Palau is the biggest recorded in the world. There are only two previous reports of bumphead spawning in the scientific literature, from the Great Barrier Reef in Australia and Wake Islands. Both of these studies reported the number of kamedukl spawning ranging from 50-100s. The study by PICRC and colleagues reported spawning of kamedukl in Palau with numbers in the thousands.

The new paper by PICRC research staff Mr. Geory Mereb and colleagues from Australia, including Dr. George Roff, Dr. Christopher Doropoulos, and Professor Peter Mumby, demonstrates the value of local knowledge and collaboration with other researchers. With Mr. Mereb’s expertise and local knowledge, and his colleagues’ scientific knowledge, they were able to report for the first time ever in



**Mr. Geory Mereb,  
Research Assistant**

scientific literature, the biggest spawning aggregation in the world. While many people in Palau know about this aggregation, it was not known to science. This collaboration and partnership was able to bring different expertise and knowledge together to report this amazing discovery to science.

The report of the kamedukl spawning is not the first time local knowledge has surprised the scientific world. When world-renowned marine scientist, Dr. Bob Johannes, visited Palau in the 1970s, he was surprised at the knowledge of Palauan fishermen about aggregations of fishes such as groupers and rabbitfishes, which at that time, was unknown to science.

This study in Palau has implications for conservation and management of kamedukl throughout the Pacific. While Palau has a total ban on the harvesting, kamedukl are often targeted by spearfishing at night. Before and after mass spawning events in Palau, kamedukl sleeps in large numbers. Identifying additional aggregations of kamedukl in other Pacific island nations and putting special enforcement focus on them will help prevent poaching and harvesting.

In responding to the new scientific paper, PICRC CEO, Dr. Yimnang Golbuu stated, “PICRC is uniquely qualified with its Palauan researchers to merge local and traditional knowledge with scientific knowledge and provide new insights about our marine environment that would help us better manage and conserve them. With our network of leading researchers from around the world, including the co-authors of this study, PICRC continues to study and report on knowledge that not only contributes to management and conservation efforts here in Palau, but throughout the region and the world.”

For a copy of this paper or any other PICRC publications, please contact Ines Kintoki at the PICRC library by e-mail at [ikintoki@picrc.org](mailto:ikintoki@picrc.org) or call her at 488-6950.

## Building Capacity in the Protected Areas Network (PAN)

From the 7th to the 17th of February, the Palau International Coral Reef Center hosted a PAN Ecological Training Course for Koror State conservation officers and rangers. This was the largest PAN training course held by PICRC and was made possible because of the collaboration among Palau Community College (PCC), Protected Areas Network Office (PAN O) and Palau Coral Reef and Island Ecosystem (P-CoRIE) project.

PICRC researchers taught the course and covered techniques on surveying methods for the conservation officers and rangers to apply when monitoring Koror State PAN Sites. The participating rangers and officers earned certificates of completion after finishing 53 hours of training. During the course they gained the necessary skills to monitor MPA's, develop sampling designs, measure the

effectiveness of MPA's, through ecological and socioeconomic surveys, and the skills to assess tourism impacts.



The Palau Protected Areas Network (PAN) was created through national law in 2003 to defend the country's biodiversity. Ensuring effective monitoring of these sites is essential for informed management of the sites. Aside from providing a reliable source of food and sustaining continuous economic growth, coral reefs act as a buffer to the shorelines protecting against storms and erosion. Monitoring and surveying MPA's will allow us to see how effective they are in reducing the impact of overfishing and enhancing resilience and productivity.

## On the Horizon - Upcoming Activities

June 5th marked the start of the Palau International Coral Reef Center (PICRC) Summer Internship Program. Six interns will be at PICRC for a month and a half long internship. The interns will be



**2017 Summer Program Interns - Pictured left to right. Maikani Andres, Yubee Isaac, Kaylee Giramur, Onglibl Lakobong, Kelutel Yoshiwo, and Itungelbai Bells.**

mentored by PICRC researchers at the Center. During the internship, they will gain hands on experience in the field and in the lab. This is the second summer PICRC has offered this program. This summer internship program is being supported by Blue Bay Petroleum Incorporated.

The students selected for this year's internships include Maikani Osismereng Andres and Onglibl Diana-Rae Lakobong, Environmental and Marine Science majors from Palau Community College; Itungelbai Bells and Kelutel Darrin Yoshiwo, Marine Biology majors from University of Guam; Kaylee Giramur, an Environmental Studies major from Chaminade University of Honolulu; and Yubee K. Isaac, an Environmental Studies major from the University of Hawaii at Hilo.

This six-week immersion program gives PICRC interns the chance to gain field and lab work experience, practice report writing skills and develop lasting professional contacts. The program also allows students to broaden their knowledge of marine ecosystems and conservation efforts in Palau. Additionally, as part of the Summer Internship program, the students are required to participate in a Cultural Immersion Program to acquire local knowledge to understand how Palau's history plays a role in today's marine conservation efforts and for the future of Palau. This year the cultural immersion program is run in collaboration with Camp Ebiil where the interns will work as coordinators for 10 days alongside Palau Cultural Instructors.

The purpose of these internships is to help students fulfill school requirements and give them a chance to explore potential career paths. Through this internship, students gain a deeper understanding of current conservation efforts in Palau. It is the hope of the Center that upon completing their degrees these students will return to work in Palau and contribute to conservation efforts here at home.





We appreciate and value your partnership





## Message from the CEO

Dr. Yimnang Golbuu

Greetings and Good day to you our important donors and partners.

Your funding support since the Annual fundraising event on January 18, 2017, has helped the Center continue its work to support conservation and management efforts here in Palau. The research and educational programs include: Assessments of fish stock status in Palau, monitoring in fish aggregation sites, assessing tourism impact on reefs, coral reef and Marine Protected Areas monitoring, typhoon recovery research, ocean acidification and coral bleaching research, capacity building programs and internship programs and educational outreach. The funds that support PICRC's work are invested back to Palau. So your support to PICRC not only support the work that is being done at the Center but it is an investment into the economy of Palau. The Palau International Coral Reef Center is your center and we will continue to work hard to ensure that the Center continues to be a worthwhile investment for you and the people of Palau.

Your partnership is valuable and important to us.

Kom Kmal Mesulang.

# THANK YOU

LET US KNOW HOW WE CAN HELP YOU MAKE A DIFFERENCE TODAY.

Palau International Coral Reef Center (PICRC)

P.O. Box 7086, Koror Palau 96940

email: [picrc@picrc.org](mailto:picrc@picrc.org)

website: [www.picrc.org](http://www.picrc.org)

Facebook: [www.facebook.com/palauinternationalcoralreefcenter-picrc](https://www.facebook.com/palauinternationalcoralreefcenter-picrc)

office tel: 680 488 - 6950

fax: 680 488-6951