PICRC WAS BORN OF THE SEA, PUT THERE BY THE PEOPLE OF PALAU

The Palauan people created PICRC, with wings to discover the world. Yet as we strive for greatness—to be a global Center of Excellence—the call of home reminds us that we belong to the people. We know that our true purpose is to support efforts here at home to conserve our way of life by living in harmony with nature. We don’t do that alone, but rather as a family working together and supporting each other. Our achievements are the people’s achievements.

This is a story of our small center, from a small island, from a far-flung place thrown in the sea, that is making ripples felt all across the world. As we grow and spread our wings to soar over the seas to new places, we do so knowing that our communities are right with us. They are part of our journey. This is the story of Palau’s People.
2013 and 2014 were successful years for us at the Center. We grabbed hold of opportunities to form vast partnerships, modernize our equipment, and grow our capacity. We tackled conservation and research needs arising from topics as diverse as erosion to ocean acidification. We gained international prestige and made global impacts. We lifted off the surface of Palau’s waters and soared across the world.

Yet, our success did not come out of thin air. Our successes in the past two years grew from the past and were rooted in our history and culture, from PICRC’s 12 years in existence, to Palau’s nearly 60 years of “modern” conservation, to our culture’s conservation ethic that stretches back for eons.

Palauan respect for each other and honor for our natural environment inspires us at PICRC and enables us to shine. For we are more than a research institution. Our goal is not just to create data, but rather to make an impact, and to help others conserve our culture and our resources. Palauans are willing to accept new findings, able to make sense of even the most complex and modern of topics, and game to applying them in their practices. We collectively hold a conservation ethic that says that we should always save some of what we have for the future. These are the roots of our success.

Conservation in a changing world is not easy. When climate change sends super typhoons and acidic waters, when technology bring us faster boats and more accurate navigation, when multiple but highly differing options for land use—be it hotel or house or farm—all offer viable benefits, then we absolutely do need studies and data to make informed decisions. At PICRC, we need our roots, but we also need to soar and explore and discover answers to our pressing needs. We are so thankful that Palauans support us and that Palau, as a nation, is a place where conservation has meaning.
In this report you will find that we have much to be thankful for. We have established many new research partnerships that have expanded our research capacity. In the past two years we have gained the ability to study diversity at the genetic level, examine fisheries with stereo-video techniques, and model currents, aggregation sites, and bleaching recovery. We have transferred our new skills to others.

We are particularly thankful for the financial support of the Palauan people. In 2014, thanks to a generous allotment from the OEK, we are able to clear a long-standing debt to the Palau Public Utilities Corporation. We were proud to be able to honor our commitment to PPUC, a collective national resource, and also joyful to emerge completely from our earlier financial challenges. It is wonderful to feel both the support of a community and the freedom to fly. It shows that our successes—past, present, and future—come from the people. You give us the roots to soar.

We will continue making Palau proud. Your children at PICRC are hard at work, either here in country or overseas working on graduate degrees, as three PICRC staff are doing. With your help in the next two years, we will expand our research facilities, identify climate resistant areas, work with communities to improve the status of fish populations, minimize the impact of tourism on coral reefs, and fill the PAN with a representative network of MPAs that fully protects Palau’s natural heritage. We look forward to soaring with you.

Yimnang Golbuu, Ph.D.  
Chief Executive Officer  
Palau International Coral Reef Center
Palau is a world of vast treasures and tiny wonders. Our reefs—with the highest diversity in Micronesia—extend for miles, while the tiniest of organisms cause our Rock Islands to topple. This dichotomy extends to our people as well. We are a strong people, who travel far and wide to share loudly and proudly our cutting-edge techniques for conservation. We are also a people of quiet support, who stay awake through the night to continue traditions that stretch back for eons, and that give us our strength. Our conservation ethic, the bul, shares the same quality. It carries the weight of a chiefly proclamation, and is brought to life by the quiet restraint of a fisher or farmer.

Scattered at the westernmost edge of Micronesia, the Palauan archipelago consists of 20 large islands and 566 smaller ones, spread out over a distance of over 800 km. With 425 known species of reef-building corals, 1,387 shallow water fish, unique marine lakes with stingless jellyfish, isolated populations of marine mammals, and diverse ecosystems ranging from reef to mangrove, Palau’s biological richness rivals that of the world’s most diverse coral reefs.

The marine environment forms the basis of Palau’s tourism industry as well as its subsistence economy and culture. Palau’s conservation methods are as varied as is the nation itself, involving everyone from the President to school pupils. In Palau, people are as much of the conservation story as parks and fish. Thus, many current efforts are focused on capacity, understanding, and policies.
Our Vision

People empowered with science and knowledge for effective marine conservation and management.

Our Mission

To guide efforts supporting coral reef stewardship through research and its applications for the people of Palau, Micronesia and the world.
PICRC soars because the Palauan people give us lift.

PICRC is rapidly becoming a global force in marine research, conducting studies across the region and attracting collaborations with prestigious universities such as Woods Hole Oceanographic Institution, MIT, Stanford University, Penn State, National Geographic, University of the Ryukyus, University of Pennsylvania, University of Queensland, and James Cook University. The people of Palau want this research, support the collaborations, directly donate and lobby for the financing, participate in the process, and implement the findings. PICRC is a growing global success because it does not stand alone.

The relationship is symbiotic. We help people gain the skills and information they need to improve conservation and solve problems, which further bolsters our global reputation as a relevant research institution capable of producing robust results that have real-world utility. As the Palauan people's information needs grow and conservation techniques mature, it pushes us to be cutting-edge and innovative.

We are proud of our contributions to global scientific literature. We are even prouder of our dedication to using our findings at home. After many years of research towards developing an MPA Monitoring Protocol, in 2013 and 2014 we trained conservation officers in its use and data analysis. We also partnered with the PAN Office and the Palau Community College to teach marine ecology, expecting trainees to understand both theory and practice, and offering a formal Ecological Monitoring Certification. A collection of studies indicated that fish populations were declining or shifting in composition, so in 2014 we started an aggressive campaign on sustainable fishing. The campaign even empowered children with the ability to influence others and the knowledge they need to build a sustainable nation. We published papers on the sediment trapping capacity of taro patches and mangroves, and then brought together communities for two symposia on the relationship between nature and human society and on connectivity of ecosystems. Each time we provided information and skills to the people, we pushed them to implement findings and improve conditions.
Palauan faith in our abilities pushes us to innovate

At the end of 2014 PICRC emerged as a contending leader among global research institutions. This was in part due to PICRC’s embrace of cutting-edge technologies and experimentation with new fields and topics. In 2013 and 2014 PICRC was innovative in ways that expanded the horizons of conservation in Palau. The Center opened the first DNA Lab in Palau in 2014, paving the way for detailed analysis of biodiversity at the genetic level. In late 2014 the DNA Lab was combined with facilities at PCC.

PICRC used new technology to push the boundaries of its programs to improve data collection. In its monitoring programs, PICRC began using a new technology—Diver-operated stereo-video systems—to measure fish underwater. PICRC then partnered with National Geographic Scientists on a “Pristine Seas Expedition” to study sharks and pelagic fish using mid-water stereo-video camera systems. In 2013 PICRC expanded research on grouper aggregation sites to include current modeling with James Cook University, built predictive computer models on coral recruitment and reef recovery with the University of Queensland, and mapped seafloor topography to create a bathymetric chart with the Korea Institute of Ocean Science and Technology. In 2014 PICRC expanded its robust socioeconomic monitoring studies to include tests of new human well-being indicators and the Micronesia Challenge socioeconomic indicators of effective conservation.
PICRC grew as a world leader in climate change research. In 2013 PICRC was awarded a highly competitive multimillion dollar partnership with the Government of Japan’s Science and Technology Research Partnership for Sustainable Development. Along with the University of the Ryukyus, PICRC began assessing responses to climate change. PICRC mapped climate change resilient areas in the Federated States of Micronesia and partnered on a highly technical study of ocean acidification on corals with Woods Hole, and partnered with Penn State University, the University of Delaware, and the University of Georgia on a study funded by the US National Science Foundation to study effects of climate change on coral reef endosymbionts.

The growth in partnerships and collaborations between PICRC and institutions around the world is a testament to the Center’s important regional and international role in conservation research and its recognition as an internationally relevant coral reef research institution with unique expertise. Throughout all of the advancements, growth, and adoptions of new methods and equipment, Palauan communities showed their support. They sent their children to observe, their youth as interns to experiment, and worked patiently with PICRC to understand and adopt new findings and ways of thinking.
Our roots remind us of our purpose: our environment and way of life

Paramount in our mission is to support conservation and management, using the results of our studies. This creates an iterative cycle that connects our communities and our researchers. We identify research needs from our communities, conduct relevant research, interpret the findings and apply real-world meaning, help communities design and test real-world actions based on those interpretations, and then measure the results. Evaluation from the community feeds back to our research needs.

In 2006 Palau’s leaders imposed a *bul*, or harvesting moratorium on *maml* (Napoleon Wrasse) and *kemedukl* (Bumphead Parrotfish). Based on the community’s need to understand more, PICRC conducted research on the impact of the closure, both on the fish and on society, assessing such things as potential revenues and fish stock. After interpreting the data, PICRC recommended maintaining the closure for *maml* and *kemedukl*, and in 2014 PICRC met with the Rubekel Belau (Council of Chiefs), Belau Boaters Association, and Political and Traditional Leaders at the Ocean Summit to discuss the study and its recommendations. PICRC also presented study results of sea cucumber population recovery inside and outside marine protected areas. During 2014’s First Mesei Forum, PICRC researchers presented research on the importance of taro fields in controlling sedimentation into marine environments.

PICRC is dedicated to improving the management of MPAs, particularly within the Protected Areas Network (PAN). PICRC continued monitoring MPAs to identify gaps in the PAN. PICRC’s long-term monitoring program targeting MPAs throughout Palau, plus its responsive, intensive studies following events such as Typhoon Haiyan provided information on the effectiveness of conservation regimes. Research regimes mirror the needs of the people, and continually serve as a reminder that the Center’s studies always serve a greater purpose.
Climate Change Impacts and Responses

In 2013 and 2014 PICRC moved into the forefront as a global leader in research on the impacts of and responses to climate change in the Pacific. PICRC’s efforts have increased the prominence of Palau as a global research hotspot, and many institutions from around the world sought collaborations with PICRC.

PICRC collaborated with the University of Queensland (UQ) on a project to understand how Palau’s reefs will respond to the changing oceanic conditions associated with climate change. UQ Researchers were based at PICRC as resident scientists, allowing for a mutually beneficial mentoring relationship to grow between the two organizations. As part of the study researchers examined how coral recruitment drives reef recovery and resilience. This included building computer models to predict how biological and physical variables may interact with coral recruitment.

Through a partnership with Pennsylvania State University, the University of Delaware, and the University of Georgia, in 2013 PICRC began a 3-year NSF-funded study on the physiology and ecology of coral endosymbionts that can tolerate stresses such as rising ocean temperatures. After the first year studying the symbiosis of coral reef polyps and the zooxanthellae that live inside them, researchers found that because many reefs in Palau are diverse and abundant, they appear to be faring well in the face of global climate change.

In 2013 PICRC reported on the results of long-term monitoring at Helen Reef, conducted in partnership with the Florida Institute of Technology (FIT). Results indicate that coral and fish at Helen Reef are healthy and so far have been resilient to thermal stress.

PICRC partnered with the Woods Hole Oceanographic Institute (WHOI) to study the effects of ocean acidification on corals. Through this relationship, PICRC’s CEO, Dr. Yimnang Golbuu, was asked to serve on a PhD Committee for a student in a joint program with WHOI and the Massachusetts Institute of Technology (MIT).

PICRC assisted conservation partners in the region to better plan for global climate change. Collaborators from PICRC, the University of Guam, the Pacific Marine Resources Institute, Yap EPA, and the Kaday Community and Cultural Development Organization investigated nearshore seagrass habitats in Yap to better understand watershed pollution. The study, which found that as macroalgae increased, seagrasses decreased, was published in the prestigious Marine Pollution Bulletin and provided Yap with information needed to optimize its responses to climate change. In 2014 PICRC also released the results of many years of regional work in the form of maps of resilient areas across FSM.

Weather models indicate that conditions in 2015 may result in a coral bleaching event in Palau. With this advance information, PICRC altered its survey schedule for its Long-Term Monitoring Program. PICRC surveyed its 22 permanent monitoring sites in 2013 and 2014, usually only surveyed every two years, so that it can compare the sites before and after the possible bleaching event. This may identify temperature tolerant corals and areas that are more adaptive to thermal stress.

P-CoRIE

In 2013 PICRC began a 5-year partnership project funded through a highly competitive grant from Japan’s Science and Technology Research Partnership for Sustainable Development Program, funded by the Japan International Cooperation Agency (JICA) and the Japan Science and Technology Agency (JST). The project, entitled Palau Coral Reef Island Ecosystem Project (P-CoRIE) partners PICRC with the Palau Community College and the University of the Ryukyus. A Project Coordinator and three postdoctoral fellows from Japan are based at PICRC and work on joint planning and research. The project is responding to the threat of global climate change.

Through P-CoRIE, PICRC established the first DNA lab in Palau, which greatly expanded local capacity to study marine biodiversity at the genetic level. P-CoRIE also
provided PICRC with a new boat and equipment. Topics of study include ecosystems services, tourism development and its impacts on coral reefs, and the long-term status of coral reefs and associated ecosystems; these will consider the impacts of climate change. In addition to field research, through P-CoRIE PICRC brought together partners for symposiums on connectivity between nature and society and with ecosystem services. The project also supports graduate studies for two Palauan students.

**Sustainable Resource Use**

PICRC’s research supports effective conservation. PICRC continued a stock assessment with the University of Hawaii to evaluate the recovery of Napoleon Wrasses (maml) and Bumphead Parrotfish (kemedukl), both high-value food fish that are also important to Palau’s diving industry. A moratorium on their harvest was established in 2006. The study found that the populations of both maml and kemedukl were stable but still recovering from the earlier period of overfishing. PICRC also conducted sea cucumber surveys to assess their recovery after a period of overharvesting. Results showed that outside protected areas, the number of sea cucumbers were very low and not recovering well. These results indicated that MPAs worked as designed and that populations inside protected areas were in good condition.

With UQ, PICRC examined the effects of spearfishing on roving herbivorous fish in Palau, Pohnpei, and Guam. The study found that during closures of these fisheries, fishing pressure was skewed toward particular species and smaller fish. The study recommended alternative fish that might sustain diverted fishing pressure.

PICRC collaborated with James Cook University to develop a current model for grouper spawning and aggregation sites (SPAGs). This is part of an ongoing effort to discover the spatial and temporal characteristics of SPAGs.

In 2014 PICRC was proud to partner with National Geographic scientists on their Pristine Seas Expedition. The team studied pelagic sharks and fish, as well as reefs, using advanced mid-water stereo-video camera systems.

PICRC also tested the downstream impacts of certain Best Practices on land, such as the traditional practice of passing streams and waterways through taro patches and maintenance of mangroves. Taro patches and mangroves were found to be effective at trapping fine sediment.

**Supporting the PAN and the Micronesia Challenge**

Supporting effective conservation in Palau and across Micronesia is a priority for PICRC, and in 2013 and 2014 many research activities directly supported local states and communities in their efforts to use the best available information to make decisions. PICRC maintains data from Palau and the region, and in 2014 PICRC improved its data management systems.

PICRC’s Long-Term Monitoring Program at 22 permanent sites throughout Palau supports local conservation. PICRC surveys sites every two years and uses the information to develop a State of the Reefs report. In late 2012 PICRC had surveyed one-half (11) of these sites before Typhoon Bopha, a rare super typhoon, hit Palau, destroying reefs and homes. PICRC resurveyed these sites and the remaining ones in early 2013, providing a rare and immediate snapshot of the impact of the typhoon on the reef. PICRC also modified its monitoring schedule in 2014 in preparation of a possible coral bleaching event in 2015.

In 2014 PICRC started a meta-analysis of its existing data to fill gaps for a proposed comprehensive MPA network to ensure representativeness of critical sites within the PAN. PICRC meets annually with state leaders to identify high priority research needs and supports as many local research needs as possible given capacity constraints. In 2013 PICRC analyzed data and distributed a report on the effectiveness of the Teluleu MPA, finding that fish density and biomass was significantly higher inside the MPA than outside. In 2013 and 2014, PICRC conducted a comprehensive baseline survey of Angaur’s MPA in support of its PAN application and surveyed the Ebil MPA with the crew of the Okeanos Pacific Voyager. With local partners, PICRC conducted a baseline assessment
“We are fortunate to have the Palau International Coral Reef Center, with Palauan scientists who conduct research that is important to our lives. They provide advice to us as policymakers so that we can make decisions that will help sustain our ocean resources for our future generations.”

His Excellency Tommy E. Remengesau, Jr.
President of the Republic of Palau
2014 State of the Republic Address

at Ngeruangel Atoll and at Ngerumekaol in Koror, and surveyed sea cucumbers in Ngardmau. In late 2014 PICRC released a robust fisheries monitoring plan for the Northern Reefs.

PICRC also supports the Micronesia Challenge (MC). It leads effectiveness monitoring in MC jurisdictions. To ensure consistent results, PICRC conducts the monitoring, but trains local researchers and partners through the process. Socioeconomic surveys offer an important evaluation of the short-term effectiveness of the Micronesia Challenge. PICRC led the development of socioeconomic indicators for the region, and in 2013 PICRC worked to ensure that indicators worked at the local level in Ngardmau, at the national level in Palau, and at the regional level. To do so, PICRC collaborated with the University of British Columbia Fisheries Centre on a pilot project to formally test the Micronesia Challenge Socioeconomic Indicators. During its surveys in Yap as part of a climate change project, PICRC also worked with local partners to assess food fish size and number, coral communities, and prevalence of coral disease across 56 sites. Yapese leaders will use this information to optimize their conservation strategies.

Responsive Research

PICRC maintains enough flexibility to respond to limited threats, opportunities, and needs. In 2013 PICRC worked with FIT to survey a grounded vessel in the Ngederrak MPA and continued serving as Project Lead for a Regional Cooperative Agreement to understand possible radioactive contamination following the 2011 Fukushima Daiichi Nuclear Power Plant accident in Japan. In 2013 PICRC took advantage of an opportunity to partner with the Korea Institute of Ocean Science and Technology on a three-week study of high-resolution seafloor topography and surface sediment distribution, used to create a bathymetric chart of Malakal, Palau’s main shipping harbor. In 2014 PICRC published a study examining the impact of Typhoon Bopha on reefs, finding that in sites that had experienced a large bloom of seaweed there were few to no coral recruits or baby coral.
Publications

Publications in Peer-Reviewed Journals


Technical Reports and Publications


## Current Collaborators

### United States

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<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Dr. Anne Cohen</td>
<td>Woods Hole Oceanographic Institute</td>
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<tr>
<td>Dr. Robert B. Dunbar</td>
<td>Stanford University</td>
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<tr>
<td>Dr. Stephen R. Palumbi</td>
<td>Stanford University</td>
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<tr>
<td>Dr. Alan Friedlander</td>
<td>University of Hawaii</td>
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<tr>
<td>Dr. Les Kaufman</td>
<td>Boston University</td>
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<tr>
<td>Dr. Todd C. LaJeunesse</td>
<td>Pennsylvania State University</td>
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<tr>
<td>Dr. Don McCorkle</td>
<td>Woods Hole Oceanographic Institute</td>
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<tr>
<td>Dr. Gustav Paulay</td>
<td>University of Florida</td>
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<tr>
<td>Dr. Robert Richmond</td>
<td>University of Hawaii</td>
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<tr>
<td>Dr. Rod Salm</td>
<td>The Nature Conservancy</td>
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<tr>
<td>Dr. Robert Steneck</td>
<td>University of Maine</td>
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<tr>
<td>Dr. Alison Sweeney</td>
<td>University of Pennsylvania</td>
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<td>Dr. Amanda Holt Jones</td>
<td>University of Pennsylvania</td>
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<tr>
<td>Dr. Sanaz Hahidinia</td>
<td>University of Pennsylvania</td>
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<tr>
<td>Dr. Shu Yang</td>
<td>Florida Institute of Technology</td>
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<tr>
<td>Dr. Robert van Woesik</td>
<td>NOAA</td>
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<tr>
<td>Dr. Supin Wongbusarrakum</td>
<td>The Nature Conservancy</td>
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<tr>
<td>Dr. Elizabeth Mcleod</td>
<td>University of Delaware</td>
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<td>Dr. Mark Warner</td>
<td>University of Georgia</td>
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### Oceania

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<tr>
<td>Dr. Rajesh Chandra</td>
<td>University of the South Pacific</td>
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<td>Dr. Elisabeth Holland</td>
<td>University of the South Pacific</td>
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<tr>
<td>Dr. Peter Houk</td>
<td>University of Guam</td>
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<td>Dr. Laurie Raymundo</td>
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### Australia

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<tr>
<td>Dr. Christopher Doropoulos</td>
<td>University of Queensland</td>
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<td>Dr. Goerge Roff</td>
<td>University of Queensland</td>
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<tr>
<td>Dr. Alyssa Marshall</td>
<td>University of Queensland</td>
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<tr>
<td>Dr. Karen McNamara</td>
<td>Australian Institute of Marine Science</td>
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<tr>
<td>Dr. Katharina Fabricius</td>
<td>The Nature Conservancy</td>
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<tr>
<td>Dr. Alison Green</td>
<td>Southern Cross University</td>
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<td>Dr. Peter Harrison</td>
<td>University of Queensland</td>
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<td>University of Queensland</td>
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<td>Dr. George Roff</td>
<td>James Cook University</td>
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<td>Dr. Rebecca Weeks</td>
<td>James Cook University</td>
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<td>Dr. Eric Wolanski</td>
<td>James Cook University</td>
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### Asia

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<tr>
<td>Dr. Hajime Kayanne</td>
<td>University of Tokyo</td>
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<td>Dr. Haruko Kurihara</td>
<td>University of the Ryuku</td>
</tr>
<tr>
<td>Dr. Kaoruko Miyakuni</td>
<td>University of the Ryuku</td>
</tr>
<tr>
<td>Dr. Takashi Nakamura</td>
<td>Tokyo University of Marine Science and Technology</td>
</tr>
<tr>
<td>Dr. Hideo Ohba</td>
<td>Akajima Marine Science Laboratory</td>
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<tr>
<td>Dr. Mokoto Omori</td>
<td>University of the Ryuku</td>
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<td>Dr. James Reimer</td>
<td>University of the Ryuku</td>
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<td>Dr. Makato Tsuchiya</td>
<td>University of the Ryuku</td>
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In 2014 PICRC partnered with the Conservation Strategy Fund to provide training on Economic Tools and conservation economics that PAN Managers need to manage PAN funds. Instructors from the course came from such varied places as Harvard University, University of British Columbia, Gordon and Betty Moore Center, SPC, and SOPAC.

As part of its effort to increase representativeness of the Palau PAN, in 2013 PICRC held a workshop targeting agency and government personnel on planning and designing protected areas networks. In late 2014 PICRC held a workshop that took a broad perspective, working with local Conservation Officers to identify management needs and gaps in the PAN. PICRC worked with each local officer to develop individual Capacity Building Plans.

Increasing Palau’s Self-Sufficiency

Palau became an independent nation in 1994 and began down its path towards complete self-sufficiency. PICRC has been part of that story since the beginning. In 2013 and 2014 PICRC made significant contributions to the capacity of local Palauans to be able to manage their own resources without relying on outside assistance. The opening of Palau’s first DNA laboratory at PICRC was a major achievement as all genetic analyses had been done off-island. The DNA lab, opened with nearly $100,000
worth of equipment, was established through a joint collaborative research project between PICRC and the University of the Ryukyus. In particular the DNA lab will increase Palau’s ability to make informed policy decisions in the face of global climate change. In addition, in 2014 PICRC offered a training on Coral Taxonomy for staff and partners.

In 2014 PICRC improved its Data Management Systems. PICRC offered and staff participated in training on Data-bases and the Access Program. PICRC also trained staff and partners on Technical Writing for journals.

PICRC established friendship relationships with aquariums in Japan as part of its efforts to improve its management of the Palau Aquarium. PICRC Aquarists traveled to Japan to learn first-hand about modern energy-saving technologies and improved husbandry. In 2014 staff also learned how to use techniques such as Diver-Operated Stereo-Video Systems and the Convention on Biological Diversity (CBD) Marine Spatial Planning process. In 2014 PICRC and EQPB staff participated in a training through the P-CoRIE Program on using high performance equipment to test marine water quality. PICRC’s Head of Research and Aquarium Department attended a workshop on Access and Benefit Sharing of genetic resources, as part of Palau’s effort to comply with the Nagoya Protocol of the CBD. PICRC also improved its capacity to conduct socio-economic surveys through a project funded by the Micronesia Conservation Trust.

In 2014 PICRC hosted participants from the Marshall Islands, Tuvalu, Mauritius, Kiribati, and Palau for a Training Course on Conservation and Sustainable Use of Coral Reefs and Other Coastal Systems, as part of a three-part JICA International Training Program.

**Guiding Future Scientists and Scholars**

In 2013 PICRC started a new volunteer/intern program that attracted excited experts and novices from throughout Palau and the world, including Austria, Thailand, Japan, France, and the USA. The program allowed many young people the opportunity to get hands-on experience with marine research and conservation, and allowed for information exchange with PICRC staff.

PICRC continued its practice of hosting youth at the Center, hosting High School Seniors for Career Practicums, Summer Work, and Work-Based Activity Programs, hosting PCC Research Interns, and pairing PCC Environmental Science Students with research mentors at PICRC. PICRC taught a class at PCC on MPAs and DNA and hosted the PCC Marine Biology Class for a lecture at PICRC.
Education and Outreach

Making Science Accessible, Relevant, and Enjoyable

PICRC goes to great lengths to bring its findings—no matter how complex—to the public. In 2013 PICRC implemented several new measures to bring science to the public in modern, even entertaining ways. The Aquarium After Dark series included evening presentations from local and visiting researchers, a social hour, and free admission to the Palau Aquarium. PICRC also increased its use of the Internet and social media to communicate, with regular updates to its blog and Facebook feed, a digital newsletter, and press releases to online newspapers throughout the Pacific. PICRC is mandated by law to be the central repository of all materials that arise from research in Palau, and in 2014 PICRC’s library had over 1,000 indexed digital documents available to the public. PICRC updated its website, picrc.org, to include current information, events, and online resources. A 2013 contest to design a new logo for the Palau Aquarium engaged both young and old in communicating the culture and environment of Palau.

Empowering Leaders to make Informed Decisions

PICRC continued its outreach to communities and leaders to ensure that they had access to the best available information. PICRC met with the Council of Chiefs to discuss research findings on changing composition and size of fish populations, gave a presentation to the Koror State Government on coral recruitment and reef recovery, presented the results of socioeconomic surveys and sea cucumber surveys in Ngardmau, and held community meetings in locations where research findings were available. PICRC also offered numerous daytime technical presentations on topics as varied as persistence of reef corals in a changing climate, recovery of reefs after typhoons, and Fukushima radioactive releases.

Inviting In-Depth Exploration of Current Research

PICRC offered the public and partners the opportunity to examine certain topics in depth. In 2014 PICRC partnered with PCC, JICA, and the University of the Ryukyus, as part of the P-CoRIE Project, to offer a symposium on Connectivity between Nature and Human Society. Also as part of P-CoRIE, in late 2014 PICRC offered a symposium on the connectivity between mangrove and coral systems with reference to ecosystem services. With support from the Australian Small Grants program, in 2014 PICRC began an in-depth community outreach project to raise awareness of overfishing, with emphasis on schools and updated displays in the Palau Aquarium.
Growing the Next Generation of Scientists

PICRC offers free tours to school groups, and in 2014 PICRC offered free admission to all students in Palau, including those at PCC. Almost every preschool through college student in Palau visited the Palau Aquarium in 2013 and 2014. PICRC offered a Science Explorer Summer Camp and a Summer Expedition, lectured the Koror State Government’s Youth Eco-Awareness Program, continued its popular Arts and Tides Calendar art competition, and participated in the Youth Day Festival. PICRC proudly hosted students from other countries, including the Republic of China International Youth Ambassador Interactive Program. In May 2014 PICRC’s CEO Dr. Yimnang Golbuu gave the PCC Commencement Address to an audience with students from all over the region.

Educating the World About Palau

In 2013 Dr. Golbuu was invited to present at the 14th Meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea. Dr. Golbuu also spoke at Our Oceans 2014, hosted by the United States Department of State, an event that featured Palau’s President Tommy E. Remengesau, Jr. and US Secretary of State John Kerry. Dr. Golbuu’s presentation was aptly titled: “Why are coral reefs in Palau thriving despite ocean acidification and what can we learn to help reefs in other parts of the world survive?” PICRC researchers presented at numerous conferences, including the prestigious 3rd Asia-Pacific Coral Reef Symposium, a UNEP Workshop on Coral Reef Resilience, and contributed to presentations in Vanuatu for a University of South Pacific European Union Global Climate Change Alliance Project. In 2014 PICRC partnered with National Geographic Scientists on the Pristine Seas Expedition and documentary series. PICRC also doubled the number of journal articles it published in peer-reviewed journals in one year between 2013 and 2014 compared to one year between 2011 and 2012. It also increased the number of Technical Reports published.
Left top and bottom © Susy Gritzsch Views of the Palau Aquarium. Right top, The new Palau Aquarium logo was designed by Denise and Michael Ajimine. Right bottom, PICRC’s new mural was painted by Sacha Sukasam, an interning artist from Thailand.
The People’s Aquarium

The Palau Aquarium is the only public aquarium in the region. In 2013 and 2014 PICRC truly embraced this opportunity, turning the Palau Aquarium into a premier destination. The Aquarium hosted notable visitors such as Prince Albert of Monaco in 2013 and the First Ladies from Pacific Island Forum Countries in 2014.

With assistance from the US Civic Action Team and the US Embassy, in 2013 PICRC installed a Touch Tank and improved its exhibit pathways to make them wheelchair accessible and to access the waterfront. PICRC updated content on its displays and installed Touch Panels with continually updated information. Through the P-CoRIE Project PICRC signed a Memorandum of Friendship and Cooperation with the Port of Nagoya Public Aquarium, the biggest aquarium in Japan, to learn modern techniques. Aquarists from PICRC also attended trainings at the Aquamarine Fukushima in order to open a new Goby exhibit.

Despite the modern advancements, the Aquarium remembered its roots by installing a new display on traditional, non-commercial fishing and Palau’s cultural conservation ethic. In addition to offering free tours to school groups, in 2014 PICRC announced that the Palau Aquarium would be free for all students in Palau. The Palau Aquarium played a key role in making science accessible for all people—young and old—and for inspiring a love of nature and desire to conserve.
World-class Facilities and Location

PICRC welcomes visiting scientists with access to pristine sites and an environment conducive to reflection and discovery. Rental facilities include labs, meeting space, classrooms, apartments, and transportation. Research Assistants with a wide range of expertise are available. PICRC has three boats ranging from 20 feet to 27 feet in length. PICRC received a new 27-foot boat in 2014 through a partnership with the Japan International Cooperation Agency (JICA) and the University of the Ryukyus to work jointly on the Palau Coral Reef and Island Ecosystem (P-CoRIE) Project. There is a research library with rare books, a digital collection, and current journals. In 2014 PICRC offered over 1,000 digital articles to the public for free. In 2014, with the help of Palau’s Congress, PICRC emerged completely from its 2010 financial challenges. After clearing long-standing debts PICRC set its sights on the 2015 groundbreaking for a new $840,000 building that will serve as a Research Extension Facility.

Built on an 8,250 square meter pier surrounded by rock islands, PICRC houses the research facility in addition to the Palau Aquarium, PICRC’s interpretive division, and an administration complex. The Research Department is housed in a two-story building of approximately 640 square meters. The first floor includes a dry lab, wet lab, specimen room, three in-house researcher offices, a student-training laboratory, weather stations, and shower rooms. The second floor houses the library, meeting room, three apartments for visiting scientists, restrooms, laundry room, and lounge area with basic kitchen. The outside area consists of a covered patio with running seawater tables, holding tanks, and an outside shower. Treated fresh water from the city supply is provided to the building. The local power is rated 110v. PICRC provides a venue for meetings and houses a state-of-the-art Conference Room. An Administration and Engineering Department is responsible for all financial and administrative functions, maintains facilities and grounds (including boats), and ensures security. Education Officers can assist with local public relations and communications responsibilities.

Rental fees are competitive, directly support our mission to use science to improve conservation and management, and are part of our long-term plan to achieve financial self-sustainability. The Palau International Coral Reef Center began operations on January 18, 2001. PICRC is an autonomous government corporation with non-profit status under applicable laws in Palau.
“I’ve been returning to PICRC for more than 8 years and find it to be one of the best research facilities anywhere in the world. The staff are wonderful, the labs provide all that we need, and the location provides access to a wide range of ecosystems. I particularly like the efforts PICRC makes to disseminate research to local Palauans.”

Professor Peter Mumby
Australian Research Council Laureate Fellow,
Pew Marine Fellow,
President of the Australian Coral Reef Society
2013 and 2014 Donors

FY2013 National Appropriations
The Olbiil Era Kelulau
Palauan Taxpayers

2013 Grants and Contracts
PEW Foundation
The David and Lucile Packard Foundation
Micronesia Conservation Trust
US National Oceanic and Atmospheric Administration through
The University of Hawaii
The European Union through
The University of the South Pacific (Global Climate Change Alliance)
The Nature Conservancy
Protected Areas Network Fund

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The European Union through
The University of the South Pacific (Global Climate Change Alliance)
The Nature Conservancy
Protected Areas Network Fund
Thank you to our aquarium visitors, gala attendees, and other supporters.
Your support helps us Soar.

2013 DONORS
IP&E Palau Inc.
Koror State Government
Palau Pacific Resort
Shimbros International Inc.

2014 DONORS
Carp Corporation
Mingles So Thai
Bank of Guam
Dolphin Pacific
Mobil Topside
Cliffside Hotel
Melusch-Dil
IP&E Palau Inc.
Palau Pacific Resort
Palau Royal Resort
Sun’s Flower Shop
Rose Garden Resort
Palau Pacific Resort
Eusylfa Beauty Shop
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Palau Plantation Resort
Blue Bay Petroleum Inc.
Joanna Rose Beauty Salon
Surangel & Sons Company
Best Coffee & Donut House
Hiromi’s Beauty Shop & Massage
The Asia Pacific Group Morgan Stanley

2013 DONORS TO THE ARTS & TIDES CALENDAR
European Union
Western Caroline Trading Company
Embassy of the Republic of China (Taiwan)
Neco Plaza Corporation
Surangel & Sons Company
Surangel’s Construction Company
Palau Royal Resort
Sun’s Flower Shop
Rock Island Tour Company
Blue Bay Petroleum, Inc.
Palau Pacific Resort
Impac Tour
DFS Palau Limited

2014 DONORS TO THE ARTS & TIDES CALENDAR
IP&E Palau Inc.
Western Caroline Trading Company
Embassy of the Republic of China (Taiwan)
Neco Plaza Corporation
Mason’s Hardware Do it Center
Palau Royal Resort
Surangel’s Construction Company
Papago International Resort
Sun’s Flower Shop
Palau Pacific Resort
Blue Bay Petroleum, Inc.
Impac Tours
Rock Island Tour Company
Splash Palau
Koror State Youth Council
Emaimelei Restaurant
Belau Medical Clinic
## Statement of Revenues and Expenses

### Years ending September 30, 2013 and 2014*

<table>
<thead>
<tr>
<th>OPERATING REVENUE</th>
<th>FY 2014 (US$)</th>
<th>FY 2013 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Revenue</td>
<td>324,470</td>
<td>577,677</td>
</tr>
<tr>
<td>ROP Appropriation</td>
<td>400,000</td>
<td>357,000</td>
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<tr>
<td>Contract</td>
<td>142,233</td>
<td>69,700</td>
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<tr>
<td>Giftshop Sales</td>
<td>45,738</td>
<td>35,125</td>
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<tr>
<td>Admissions Fees</td>
<td>50,116</td>
<td>49,645</td>
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<tr>
<td>Facility User</td>
<td>75,165</td>
<td>42,876</td>
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<tr>
<td>Donations</td>
<td>38,602</td>
<td>44,523</td>
</tr>
<tr>
<td>Boat Rental</td>
<td>35,967</td>
<td>28,711</td>
</tr>
<tr>
<td>Fundraising</td>
<td>28,907</td>
<td>1,534</td>
</tr>
<tr>
<td>Research Facilities</td>
<td>25,616</td>
<td>63,850</td>
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<tr>
<td>Education/Training Fees</td>
<td>2,230</td>
<td>13,966</td>
</tr>
<tr>
<td>Interest Income</td>
<td>13,357</td>
<td>938</td>
</tr>
<tr>
<td>Other Income</td>
<td>57,151</td>
<td>26,154</td>
</tr>
</tbody>
</table>

**Total Operating Revenue**

<table>
<thead>
<tr>
<th>FY 2014 (US$)</th>
<th>FY 2013 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,239,552</td>
<td>1,311,698</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>FY 2014 (US$)</th>
<th>FY 2013 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries, wages, fringe benefits</td>
<td>462,009</td>
<td>439,335</td>
</tr>
<tr>
<td>Depreciation</td>
<td>216,798</td>
<td>164,956</td>
</tr>
<tr>
<td>Utilities</td>
<td>109,591</td>
<td>93,063</td>
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<tr>
<td>Professional Fees</td>
<td>67,053</td>
<td>82,339</td>
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<tr>
<td>Supplies &amp; Printing</td>
<td>106,382</td>
<td>72,516</td>
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<tr>
<td>Maintenance &amp; Repairs</td>
<td>36,472</td>
<td>47,324</td>
</tr>
<tr>
<td>Travel</td>
<td>31,071</td>
<td>36,873</td>
</tr>
<tr>
<td>Fuel</td>
<td>39,094</td>
<td>29,750</td>
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<tr>
<td>Merchandise</td>
<td>29,261</td>
<td>25,019</td>
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<tr>
<td>Insurance</td>
<td>16,252</td>
<td>9,698</td>
</tr>
<tr>
<td>Communications</td>
<td>8,865</td>
<td>9,102</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>8,957</td>
<td>7,549</td>
</tr>
<tr>
<td>Fundraising/Donations</td>
<td>7,872</td>
<td>170</td>
</tr>
<tr>
<td>Hospitality &amp; Entertainment</td>
<td>3,571</td>
<td>2,887</td>
</tr>
<tr>
<td>Cost of Contract</td>
<td>1,574</td>
<td>33,828</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>25,053</td>
<td>13,261</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>4,440</td>
<td>3,730</td>
</tr>
</tbody>
</table>

**Total Expenditures**

<table>
<thead>
<tr>
<th>FY 2014 (US$)</th>
<th>FY 2013 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,174,015</td>
<td>1,071,401</td>
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</tbody>
</table>

**NET REVENUE OVER EXPENDITURES**

<table>
<thead>
<tr>
<th>FY 2014 (US$)</th>
<th>FY 2013 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>65,537</td>
<td>240,297</td>
</tr>
</tbody>
</table>

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*Both 2013 and 2014 Statements have been audited.*
Revenues, Current versus Previous Reporting Period
(FY 2014 versus FY 2012, percent of total)

Expenses, Current versus Previous Reporting Period
(FY 2014 versus FY 2012, percent of total, excluding Depreciation)
**Guardians of the Mission**

Chairman MR. NOAH IDECHONG  (from February 2014)
Retired Congressman, Conservationist, and Community Leader

Chairman DR. PATRICK U. TELLEI (to February 2014)
President, Palau Community College

Vice Chairman MR. HIROYUKI TANAKA
President and CEO, Dolphins Pacific

Secretary/Treasurer MS. LOLITA GIBBONS
Program Manager, Conservation and Protected Areas, Palau Conservation Society

Board Member MS. ALFONSA KOSHIBA (from February 2014)
ABD Liaison Officer to the Republic of Palau

Board Member MR. WILLIAM CHARLES RAYNOR
Director, Indo-Pacific Division, The Nature Conservancy

Board Member MS. VERNICE YUZI
Associate Professor of Science, Palau Community College

Board Member DR. ROBERT RICHMOND (from February 2014)
Professor and Director, Kewalo Marine Laboratory, Pacific Biosciences Research Center, University of Hawaii

Board Member MR. WAYNE ANDREW
Chairman, Helen Reef Management Project

Board Member MR. ANDREW TABEJOALU (to May 2013)
Principal, Koror Elementary School

Board Member RTERUICH KATSUSHI SKANG (to February 2013)
Traditional and Community Leader

Board Member MS. BERNIE KELDERMANS (to September 2013)
Science Educator

Ex-officio Member HONORABLE ELBUCHEL SADANG
Minister, Ministry of Finance

Ex-officio Member MR. PERCY RECHELLUL
Acting Director, Bureau of Marine Resources, Ministry of Natural Resources, Environment, and Tourism

Ex-officio Member DR. YIMNANG GOLBUU
Chief Executive Officer, PICRC

**Staff and Advisors**

**CHIEF EXECUTIVE OFFICER**
Dr. Yimnang Golbuu

**P-CoRIE PROJECT**
Project Coordinator
Dr. Seiji Nakaya (JICA)

Post-Doctoral Researchers
Dr. Takashi Kawai
Dr. Julien Lorion
Dr. Yuen Yeong

Chief Researcher
Tadashi Kimura

Research Assistants
Anthony Rairamio
Valin Kloulechad

**ADMINISTRATION & ENGINEERING DEPARTMENT**
Department Head and Business Manager
Mingrang Kloulechad (from January 2013)

Chief, Engineering
Randa Jonathan
John Wong (to March 2014)

Accounting Clerk
Joyra Shmull Sam

Receptionist/Store Clerks
Ikertang Tellei (from May 2014)
Arlene Shiro (May to October 2014)
Jenna Mersai (from September 2014)

Maintenance/Technician
Arius Merep

Security Guards
Joel Melas
Benson U. Adelbai
Morton R. Sawaichi

Custodian
Uchelmelis Ngrarchitei (from June 2014)

**RESEARCH & AQUARIUM DEPARTMENT**
Department Head and Communication/Outreach Officer
Geraldine Rengiil (from October 2013)
Carol Emaurois (to April 2014)

Researchers
Kevin Polloi (April 2013 to April 2014)
Shirley Koshiba
Lincoln Rehm (from August 2013)
Marine Gouezo (from May 2014)
Victor Nestor (educational leave)

Adelle Lukes Isechal (educational leave)

Research Assistants
Geory Moreh
Dawnette Olsudong

Database Manager
David Idip Jr. (January to September 2014)

Chief Aquarist
Asap Bukurrou

Aquarists
Jay Oruetamor
Hamilton Kenzio (from November 2013)
Jordan Andres (February to November 2013)
Bensi Skilang (from February 2014)

Assistant Education Officer
Ines Kintoki

Outreach Officer
Jaime Payne (to January 2014)

**UNIVERSITY OF QUEENSLAND**
Postdoctoral Fellow
Dr. Alyssa Marshell

PhD Student
Mark Priest

Research Assistant
Jessica Stella

*Key players at PICRC from January 2013 to December 2014

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Supervisory relationship
Advisory relationship
PICRC pushed its People to soar, giving them skills, contacts, and confidence.

In 2014 PICRC’s Researcher Lincoln Rehm was offered a scholarship to a PhD program. The P-CoRIE Project supported Victor Nestor in his bid for a Master’s Degree. Adelle Lukes Isechal continued her work in Portugal towards a Master’s Degree, supported by a European Union scholarship. Business Manager Mingrang Kloulechad was selected to participate in a year-long Executive Leadership Development Program. Shirley Koshiba (below), published her first peer-reviewed journal article in early 2013. PICRC staff mentored volunteers and interns from all over the world, from PHS and PCC to Princeton.
A Center of Excellence

People Empowered • Science and Knowledge • Effective Conservation and Management

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