

# **Traditional Values in a Modern Setting: Palau's Enduring Marine Conservation Ethic**

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## **Introduction**

Over the past two hundred years, Palau's culture and value systems have rapidly evolved to encounter and incorporate Japanese, European, and North American ideas. But what has remained central to the Palauan identity is an understanding of and respect for the marine environment. I begin by offering some historical context, before reviewing Palau's traditional marine resource management system in detail. I assess two hypotheses: (1) The erosion of the traditional system of governance has led to increased exploitation and degradation of marine resources, and (2) The booming ecotourism industry is responsible for the resurgence of Palau's marine conservation ethic. Despite significant natural losses throughout the period of Palau's colonization, the nation has become a global leader in marine conservation. I conclude that my hypotheses are supported by the available evidence and make some recommendations for Palau's future.

## **A Note on Methods**

My background is in marine science. I am most comfortable with evidence in the form of graphs and numbers. However, one scientist in particular has been critical to my understanding of and appreciation for traditional ecological knowledge (TEK), or as he called it, fishermen's ecological knowledge (FEK). Robert E. Johannes was a tropical marine ecologist who, from the mid-1970s, pioneered the idea of integrating FEK and traditional marine resource management systems of Pacific Island fishing communities with Western concepts of scientific management. In so doing, he highlighted the importance of indigenous knowledge and community-based systems as key factors in marine conservation (Ruddle 2008, 1). Johannes dedicated his life to understanding and documenting Palau's traditional resource management system and to building capacity for Palauans to do this work themselves. His philosophy can be summed up thus, "[Scientists] dismiss [FEK], gained during centuries of practical experience, as anecdotal, although their own specialized knowledge is based largely on studies carried out over much shorter time periods under conditions where being wrong did not involve the risk that they and their families would go hungry" (Johannes 1977). My research relied heavily on Johannes's work and on FEK collected by other scientists, including Robin Putney and Paul Nichols.

## **Global and Historical Context**

The Republic of Palau is an island national situated on the Izu-Bonin-Mariana Arc, the ridge that forms the Mariana Trench. It consists of over 500 limestone islands with a total land area of 456 km<sup>2</sup>, coral reef habitat of 525 km<sup>2</sup>, and 1,136.5 km<sup>2</sup> of lagoon area. Its exclusive economic zone (EEZ) stretches over 600,000 km<sup>2</sup> (*Figure 1*). These staggering figures illuminate the degree to which Palau is an oceanic nation. Indeed, Palauan lifestyles, diets, and religion traditionally revolved around the sea.

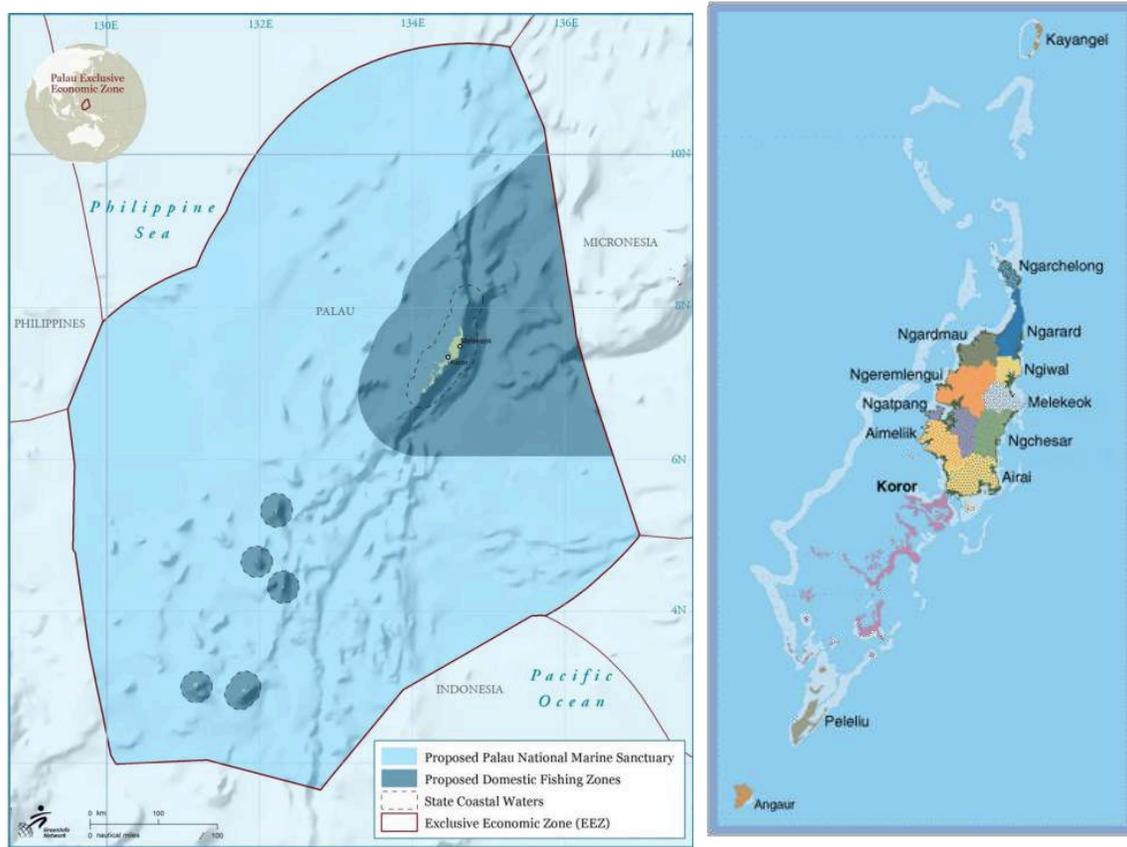


Figure 1: Left: Palau's islands and EEZ, including proposed marine sanctuary borders. Right: Palau's 16 states.

Prior to foreign contact, traditional religion and management under the customary marine tenure (CMT) system were responsible for the development of a marine conservation ethic (**Graham & Idechong 1998, 144**). When and how people first arrived at the islands is unknown, but carbon dating places human civilizations on the islands as early as 1,000 B.C.E (PNCC 2007). European and American contact throughout the 1800's caused the Palauan population to drop significantly due to the introduction of novel diseases (Putney 2008, 1). At the peak of Japanese control, native Palauans comprised less than 10% of the islands' population (PNCC 2007). Along with dramatic decline in the local population came demoralization of the people. As foreigners prospered, locals endured hardships. Palauans considered new, foreign ways as better than their old ways (Barnett 1960, 16) (Putney 2008, 1). Chiefs' power declined, and respect for traditional knowledge diminished (Force, 1960, 76).

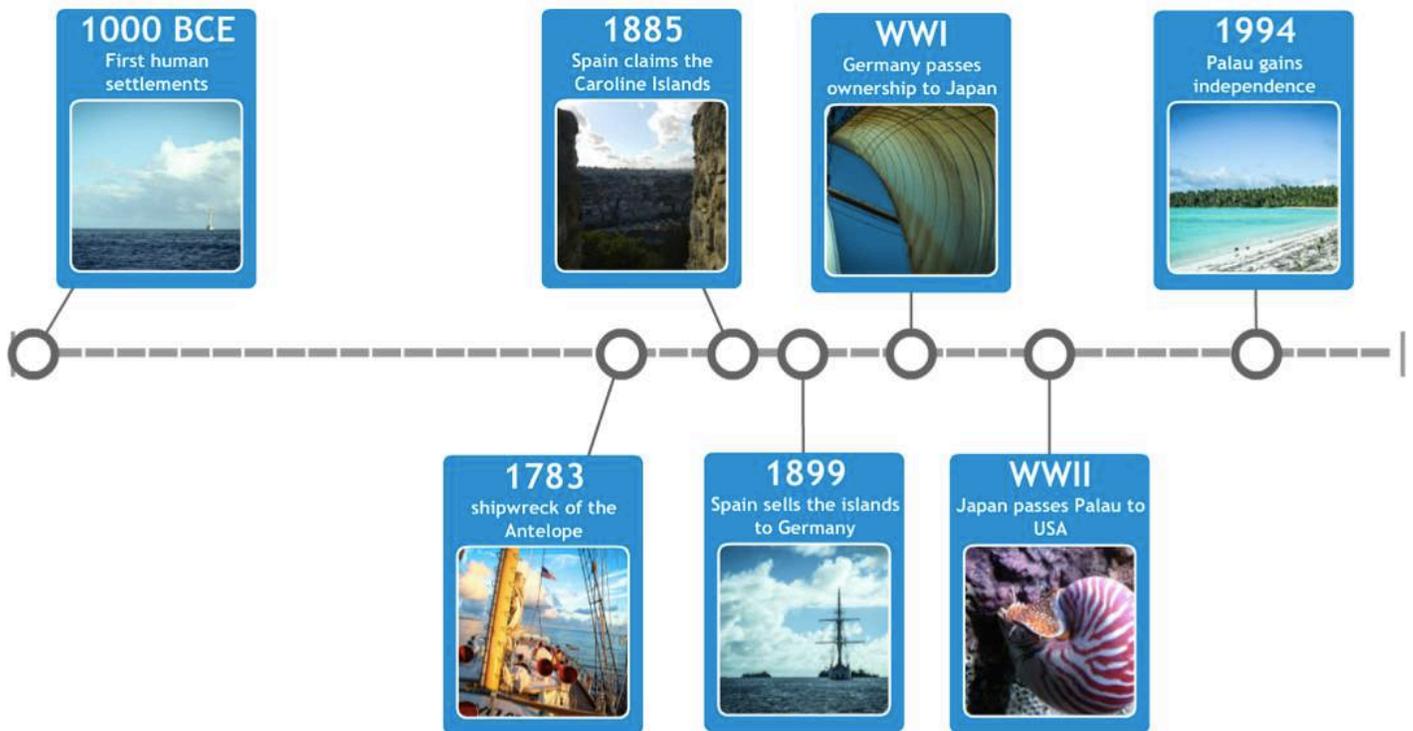


Figure 2: Timeline of Palau's history. By Caroline Ferguson, using ReadWriteThink software. Photographs my own.

## Tourism

Since the establishment of the world's first Shark Sanctuary in 2009, tourism has boomed in Palau (*Figure 3*). Last year, tourism was responsible for nearly 85% of Palau's GDP (news.co.au 2015). Historically, Palau's extensive coral reefs and thriving megafauna attracted dive tourists. Palauan dive sites consistently appear on Top 10 lists (Scuba Travel 2015) (Touropia 2014) (*Scuba Diving* 2015) (Divezone 2015). The nation of fewer than 20,000 inhabitants boasts three dive centers and an ever-increasing number of hotels.

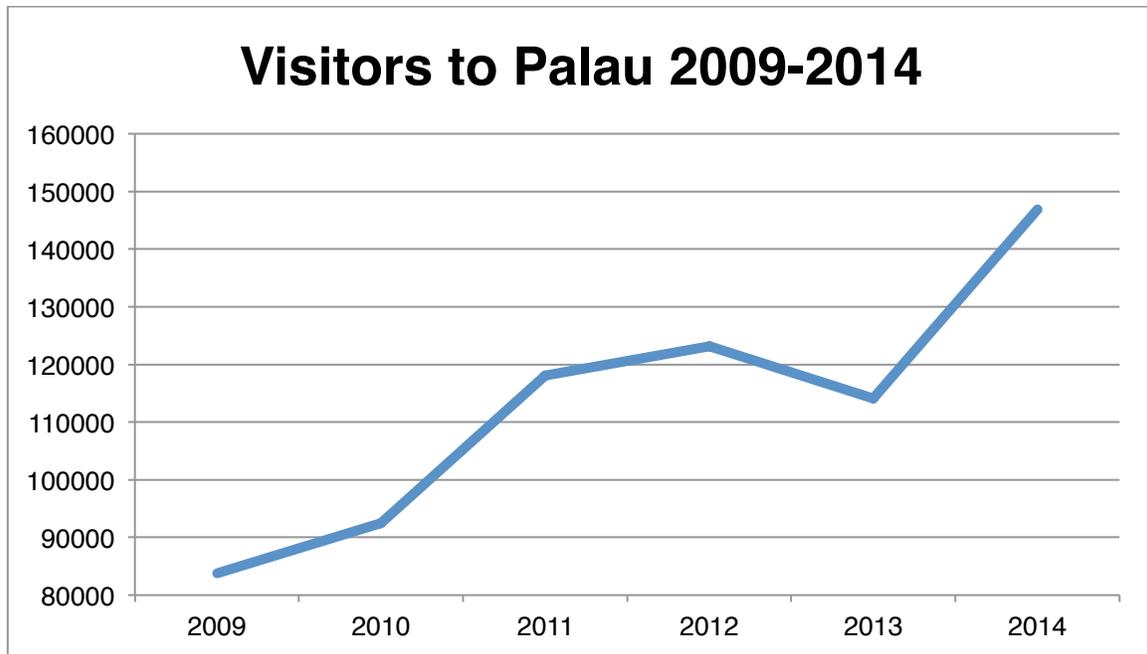


Figure 3: The rise in tourism, 2009-2014. Source: <http://palaugov.org/immigration-tourism-statistics/>

Japanese tourists dominated the market for several decades, followed by Taiwanese and Korean visitors (IMF 2014). However, in just the past few months, the percentage of Mainland Chinese tourists has skyrocketed, a 653% increase so far this year compared to 2014. In 2014, a total of 146,867 people visited Palau (95% for the purpose of tourism); 27% were from Mainland China. By May 1 of this year, 60,885 tourists had visited the islands, over half of whom were from Mainland China. More people from Mainland China have already visited Palau so far this year than visited in total in 2014 (PVA 2015). The rise is attributed to four new charter flights from Hong Kong and Macau (OTV 2015). Many Palauans are displeased with the transition because Mainland Chinese tourists do not spend as much money while in Palau as tourists from other countries, chiefly because they are not divers (news.co.au 2015). Mainland Chinese tourists are perceived as being noisy and disrespectful. “They wreck corals and throw their rubbish in the sea,” complained one Palauan (news.co.au 2015). In response to the overwhelming influx of Mainland Chinese tourists, half the charter flights scheduled to arrive in Palau from China have been cancelled until further notice. President Tommy Remengesau told

reporters, “It will be irresponsible for me as a leader if this trend continues. I am not only looking at the present but, as a leader, I am looking after tomorrow” (news.co.au 2015). I will demonstrate that this thinking is reflective of the traditional Palauan emphasis on sustainability.

## **Traditional Marine Resource Management**

### **Customary Marine Tenure (CMT)**

Palauans traditionally obtained the bulk of their protein from the sea. Terrestrial food supplies were not only limited, but also precarious – typhoons, droughts, and tsunamis periodically destroyed the vegetation (Johannes 1978, 349). Seafood was dependable but clearly not unlimited; Palau’s shallow reefs are more productive and less dangerous than waters offshore, which plunge into the abyssal depths of the Mariana Trench, the deepest place on Earth. Recognizing this, Palauans developed a system common across Oceania: customary marine tenure (CMT). Under CMT, the right to fish in a particular area is controlled by the chief, who regulates the extraction of marine resources in nearshore and outer reef waters. It is in his best interest, and that of the village he represents, to harvest in moderation in order to ensure high sustained yields, the benefits of which are maintained locally (Johannes 1978, 350). Decentralization and communication between villages facilitates a low-cost enforcement system that results in high compliance. For example, the chief of a poacher’s village may be fined by the chief of the aggravated village; the fined chief and his village lose face and may be viewed as untrustworthy in future negotiations, and the poacher that caused the embarrassment is made to pay – today, usually in cash, but in the past, with his life (Johannes 1978, 351). CMT works because it is incorporated into daily life. CMT is not simply a set of regulations designed by anonymous third parties; there is built-in accountability and there are clear, direct benefits.

Palauans had an appreciation for the value of sustainable harvest – and the tools to

generate it – long before Westerners. Until recently, we have viewed the sea as an endless bounty. 19<sup>th</sup> century English biologist T.H. Huxley is quoted as having said, “I believe that probably all the great sea fisheries are inexhaustible; that is to say, nothing we do seriously affects the number of fish.” Unfortunately, we have managed our fisheries according to this philosophy. It is only recently that Western science has attempted to quantify and replicate the value of CMT, often called Territorial Use Rights Fisheries (TURF).

### **Sustainability**

CMT was not the only way in which Palauans traditionally managed their marine resources. In fact, nearly every tool used by Western fisheries management was developed centuries earlier in Palau. These regulations relied on a deep understanding of local marine organisms and ecosystems, as well as an appreciation for long-term sustainability. For example, many reef fish aggregate in large schools to spawn, at times and places well known to local fishermen. During this time, the fish disregard their own safety in a phenomenon Johannes himself coined “spawning stupor” (Johannes 1978, 353). The great number, the predictability, the large size of spawning fish, and the ease of approachability create a situation in which a fisherman could practically collapse a local population of a reef species in a single evening. However, apprenticing Palauan fishermen were taught by elders that catching surplus was wasteful and ultimately detrimental to the stock (Johannes 1978, 353). In the hot tropical climate, fish could not be stored for long periods, and an excess catch that went uneaten could signal hungry nights to come. “Not like now that we go and catch excessively and put inside the icebox, so it stays there until it’s not edible and we throw it away,” said a man from Kayangle (Putney 2008, 52).

This aversion to waste and excess informed every facet of fishing in Palau and was reinforced with shame and public humiliation. Young men, when learning to fish, were not told exactly how many fish to bring home, but they learned that if they brought back more fish than

the family could consume, they would be asked if they were preparing for a customary feast, then forced to go to each house in the village to share (Putney 2008, 56).

Kayangel is a remote atoll, the northernmost state of Palau. Here, sustainability was an especially acute concern, and customs dictated particularly strict rules about waste and subsistence. Traditionally, men did not go fishing every day. Men fished only as often as necessary – about 15 fish every three days to re-supply (Putney 2008, 53). According to elders, there were plenty of fish in the lagoon before WWII. “It doesn’t have to be a long time, not even one hour fishing and we get our *odoim* (protein) and return” (Putney 2008, 53). Now, there are not enough fish in the lagoon to catch for subsistence, and fishermen must venture onto the outer reef. Kayangel State has passed a law that fish caught on the outer reef can only be used for subsistence, not to sell. Older Palauans warn that fishermen should not catch in excess of what they can eat, citing conservation concerns. “If we catch just to bring back and store, there’s no way we can conserve. Instead, they should allow the fish to stay in the ocean until they need more to eat” (Putney 2008, 54). Following the same logic, fishermen would often let some fish free from the nets “in order to provide a continued breeding stock” (Johannes 1978, 353). In Ngarchelong, the northernmost state on the main island Babeldaob, fishermen sometimes went to the outer reef to catch larger fish such as *orwidel* (bluefin trevally), but if these fish became stranded on shore, people would help them back to the water, knowing they herded schools of sardines closer to shore, making them easier to catch (Putney 2008, 55).

There was also a rule in Kayangel that no food from the atoll should be taken outside Kayangel; however, gifts were an important aspect of the Palauan economy (I will discuss gifts further under the subheading “Subsistence Fishing”). So when people sailed to the main island Babeldaob, they would stop along the way at Ngkesol reef to collect clams to bring as gifts (Putney 2008, 53). This practice ensured they did not deplete local resources to provide for outsiders.

## ***Bul*, Taboo, and Other Conservation Measures**

Closed areas, increasingly deployed by the Western and international communities under the term MPA (marine protected area), were instituted for conservation and religious reasons. Known as *bul*, these areas were instituted most often to prepare for a large feast, traditionally associated with funerals, a woman's first birth, or the passage of chief title (Matthews 2004) (Johannes 1978, 353). Unlike MPAs, *bul* were flexible and almost always temporary. Palauans understood that relieving fishing pressure on an area for time would lead to greater production later on. Area closures would also be instated if a chief thought an area was overfished, or to build stocks for surrounding areas (Johannes 1978, 353). These taboo areas were cleverly used even in times of plenty as insurance against future scarcity. For example, fishing in the lagoons was only allowed during bad weather; this guaranteed a safe and sufficient source of food when fishing in outside waters was not possible (Johannes 1978, 353). As recently as the 1950s, leaders in *Ollei* village of Ngarchelong placed a moratorium on trochus (sea snail) harvesting "from the south side of the *Ebiil* channel" (Putney 2008, 57). Nearby villages followed suit by setting their own restrictions on trochus within areas customarily owned by them. In response, every village in Ngerchelong farmed trochus during the moratorium in order to supply subsistence needs without placing additional pressure on the wild population. Once leaders determined the trochus population to have rebounded, the moratorium ended and the channel was re-opened to fishermen (Putney 2008, 57). The practice of aquaculture to supplement wild stocks in Palau pre-dates its Western adoption by centuries.

Size restrictions, though not mandated in most villages, were *de facto* imposed because Palauans preferred the sweet flavor of smaller fish to larger ones (Johannes 1978, 353). Some highly susceptible invertebrate species, however, such as giant clams, were taboo to eat at a certain size (Johannes 1978, 353). In Kayangel, people understood that juveniles needed a chance to mature and reproduce, so fishermen only caught adult fish (Putney 2008, 53). Gear

restrictions, widely and historically applied in Western fisheries, appear to have been much less common in Palau. I suspect this is because gear possibilities were more limited, because surplus was not desirable, or because reduced competition in the CMT model does not create a tragedy of the commons like has been well documented in Western fleets (Hardin 1968). As Western technologies have been introduced, new restrictions have appeared, such as a ban on explosives and chemicals (BMR 2007, 37).

Species restrictions were reinforced by spiritual beliefs and varied by village, household, and even individual. For example, totemic species were considered *delasech* (taboo to eat) (Putney 2008, 60). In *Ngetmel* village of Ngarchelong, people did not eat *matukeoll* (blacktip reef shark) (Holyoak, 2005b, 38). Whether people believed these animals to be a totem ancestor, a god, or a guide animal to direct their way during travel by boat, these animals were not harmed since they were taboo, and were thereby conserved (Putney 2008, 61). “In the past, every household in Kayangel each had its own god...mostly fish,” said one Palauan (Putney 2008, 61). People believed that if they did anything to hurt these animals, someone in their family would become ill or even die (Putney 2008, 61). These traditions have faded with the loss of the traditional Palauan religion (most Palauans now practice Christianity or Modekngai, a syncretic faith that combines the teachings of Christianity with Palauan traditions) (Putney 2008, 61). However, superstitions have, to a greater extent, remained intact. In her discussions with Palauans, Robin Putney uncovered a story from the 1980s that has stuck with elders:

A few informants from Kayangel made reference to the death of a relative in Ngarchelong who was riding his bicycle in the mid 1980s and fell off, fatally hitting his head. A relative of this man hit an *ochaieu* (spotted eagle ray, *Aetobatus narinari*) while driving his father's boat through a shallow channel and then speared the fish. This man was related to the people in a village of Ngchesar State whose totem is the spotted eagle ray. The elders from Kayangel and *Ollei* village in Ngarchelong spread the word among family members at the time of this man's

funeral to respect the spotted eagle ray and not harm it in any way (Putney 2008, 62).

This example illustrates the continued relevance of totems and taboos in modern Palauan life and their indirect role in conservation.

These practices demonstrate the sophistication of Palauans' fisheries knowledge, which extended beyond the race-to-catch mentality to include deliberate conservation measures. Palauan fishermen practiced moderation in catch, as well as conscious conservation in order to ensure the sustainability of marine resources.

### **Subsistence Fishing**

"Subsistence" is a term often used to describe social systems in opposition to "economic" systems. However, subsistence fishing in Palau does and always has involved trade, sales, and gifting; there is no true dichotomy. Today, most Palauans are engaged in the work force. As of 2004, only 5% reported engagement in subsistence activities and only 3% reported they were exclusively involved in subsistence activities, yet "Palauans are unstoppable fishermen," and nearly everyone fishes for recreation or for "a fresh supply of protein" (Matthews 2004, 1). 97% of those surveyed fish and collect for their families, 58% collect for customs, and just over half 53-56% sell a portion of their catch (Matthews 2004, 6). Conversely, custom dictates those involved "exclusively" in subsistence, as well as those in the work force, provide cash (USD) or food as donations at special ceremonies. A 1991 study, unfortunately the most recent available data on the subject, found the annual minimum requirement for custom payments to be USD\$378, and that the amount usually paid per household was over USD\$1000, a significant percentage of income (USD\$5,420.10 per capita in 1991) (CoPopChi, 1997) (World Bank 2015). Additionally, because the need for cash is so great, and catch is at times so abundant, nearly everyone today sells some portion of his catch at some point (Matthews 2004, 2).

## Hypotheses

1. *The erosion of the traditional system of governance has led to increased exploitation and degradation of marine resources.*

I have demonstrated that Palau's traditional resource management system encompassed deliberate conservation measures and have also presented a brief history of foreign influence. I hypothesized that over the past two centuries of foreign contact, the traditional system – including CMT, taboos, and aversion to waste – has eroded, leading to less sustainable practices and the degradation of the marine environment. Because quantitative measurements of reef health are limited, I heavily rely on TEK to assess this hypothesis, the legitimacy of which I detailed under the subheading “A Note on Methods”. I confirm my first hypothesis.

2. *The booming ecotourism industry is responsible for the resurgence of Palau's marine conservation ethic.*

My second hypothesis takes off where the first left off. I hypothesized that the emergence of the ecotourism industry has incentivized Palauans to revive their conservation ethic.

### **Hypothesis 1: The erosion of the traditional system of governance has led to increased exploitation and degradation of marine resources.**

Over two centuries of intense and extensive foreign contact, the native Palauan population declined significantly due to the introduction of new diseases (Putney 2008). With this decline came demoralization of the people (Putney 2008). Palauans considered new, foreign ways as better than their old ways (**Barnett 1960**). The sharpest decline in chiefs' power and in the strength of the traditional management system came during the period of Japanese

occupation, during which Palauans were made to feel ashamed of their traditions “and replaced them with behaviors that suited their goals of a modern, developed Japanese society in Palau” (Putney 2008). Palauans also converted to Christianity or, to a lesser extent, Modekngai, a hybrid of Palauan customs and the Christian faith. With the loss of the traditional Palauan faith came the loss of spiritual associations, such as totemic species and sacred waters. When Palau re-gained its independence in 1994, new ideas fused with tradition to create the Palauan Constitution. At this time, Palau entered into a Compact of Free Association with the US, meaning the US guaranteed financial assistance and disaster relief for at least 15 years; in return, the US was allowed to maintain a military base in Palau (CFA 1993). The Palauan Constitution was modeled heavily on the US Constitution, and the political systems are remarkably similar; however, Palau has maintained to some degree its traditional political system of villages and chiefs, which works in concert with the overlaid Constitutional system. Palau’s Executive Branch consists of President, Vice President, and the Council of Chiefs, which is composed of one traditional chief from each state. The Council advises the President on matters concerning traditional laws and customs, including and especially natural resource management (Palau Constitution, Article VIII, Section 6).

However, older Palauans note a marked decline in respect for chiefs’ power. Younger generations are perceived as being less concerned about conservation of resources, less respectful of CMT, and less knowledgeable of marine ecosystems. *Figure 4* presents perceived differences between past and present interaction with marine resources, from Putney’s 2008 study. I suspect the “Future Development” category would look very different today.

Research Question	Past	Present
Customary Reef Tenure	<ul style="list-style-type: none"> <li>• CMT by village</li> <li>• Respected by entire community</li> </ul>	<ul style="list-style-type: none"> <li>• Western-style laws by state</li> <li>• CMT still respected by elders, not youth</li> </ul>
Enforcement	<ul style="list-style-type: none"> <li>• Chiefs' authority</li> <li>• Village youth clubs</li> <li>• Men watching dock</li> <li>• Entire community monitors behavior</li> </ul>	<ul style="list-style-type: none"> <li>• State Government</li> <li>• State Police</li> <li>• State Conservation Officers</li> <li>• Fish and Wildlife monitor behavior</li> </ul>
Traditional Ecological Knowledge	<ul style="list-style-type: none"> <li>• Wealth of family</li> <li>• Passed on through generations</li> <li>• Used to catch most fish per unit of effort</li> </ul>	<ul style="list-style-type: none"> <li>• Not passed on through generations</li> <li>• No longer necessary to catch fish due to new gear and technology</li> </ul>
Future Development	<ul style="list-style-type: none"> <li>• No development</li> </ul>	<ul style="list-style-type: none"> <li>• Little development/maintain cultural and natural resources</li> <li>• Low-volume/high-end tourism</li> <li>• Increased MPAs</li> </ul>

Figure 4: Differences between past marine resource management and present (Putney 2008, 30).

Ownership (of the exclusive right to fish) is an especially difficult and controversial issue because before WWII, the Japanese Administration intentionally re-distributed title to suit their own needs, including the exportation of fish to Japan (Putney 2008, 37). However, older fishermen still remember where the original designations lie and respect them. One fishermen explained, “One cannot just go anywhere in the reef and set a fish trap because there are particular areas designated for the fish traps of a certain family or house... during traditional times, our fishing areas were separated” (Putney 2008, 38-39). Elders lament that younger fishermen do not respect such boundaries. They see a direct link between the erosion of traditional management practices and the decline in fisheries abundance and health today. One example from Kayangel is particularly illustrative: an elder reported that in 2006, a young man

“collected enough sea urchins to fill a cooler” and sold them in Koror, the capital of Palau on the main island Babeldoab. Though he used to find abundant sea urchins in this area, he now “cannot find any sea urchins and feels that this was a violation of the past moratorium forbidding people to take food out of Kayangel to feed other villages” (Putney 2008, 54). But no law enforces such customary practices, and the young man was not doing anything strictly illegal. The elder worried that “*Rubaks* (men holding one of the ten ranking titles of chief) don’t talk to the children that we have to conserve...maybe they don’t care about these issues.” According to Putney, “many interviewees felt that [the weakening of chiefs’ authority by the new western style of government] is a major contributor to the weakening of past conservation practices in Kayangel” (Putney 2008, 54).

A 2002 study found 31% of fishermen and prominent community members perceived that the inshore fisheries were being harvested at unsustainable levels, and communities perceived their catch to be at least three times smaller than a decade ago (Golbuu et al. 2005, 494). One elder stated that the decline in fish today is due to the types of gear used to catch fish, as well as the jet action from fast boats killing fish eggs in shallow areas and seagrass beds (Putney 2008, 59). He also stated that the taking of too many fish by people, aided by new gear and ice for storage, is causing the decline in the number of fish. “These changes have made it possible to take 200 lbs. rather than 30-50 lbs. of fish in one day” (Putney 2008, 59). The same man worried that the relatively new possibility of selling large quantities of fish at the market incentivizes poaching in protected areas. He believes, “if the government continues this way and there is no increase in chief involvement, the reefs will not be managed sustainably in the future” (Putney 2008, 59).

Limited quantitative data support perceptions that reef health has declined. Field surveys (Maragos et al., 1994), fish aggregation studies (Johannes et al., 1999), and observations by fishermen all indicate a decline in fish populations (TEI, 1999) from 19<sup>th</sup> century levels (Golbuu

et al. 2005, 494). There are countless species on the reefs of Palau, but data are not available for most. I will therefore assess the two species with the most available data (both quantitative and qualitative) and which hold great significance to Palauans: Hawksbill sea turtles and Napoleon wrasse.

### ***Ngasech* (Hawksbill Sea Turtles)**

Hawksbill, green, leatherback, and olive ridley sea turtles are all found in Palau. Hawksbills and leatherbacks are both considered Critically Endangered by the IUCN, greens are considered Endangered, and olive ridleys are considered Vulnerable (IUCN 2015). Available information indicates that hawksbill sea turtles, the species with the most available data, have declined substantially in Palau. Maragos (1991) reports that nesting activity declined to half its former level due to “chronic egg poaching, hunting of adults, tourism, and recreation activities in the rock islands disturbs nesting sites” (Maragos 1991) (Nichols 1991, 81). It is likely these results are translatable to all native species. Palauans understood that sea turtles returned to the same beaches where they had hatched to lay eggs. Though there was no ban on egg collection, they “only collected 100 turtle eggs of a nest of 160 eggs, reburying 60 eggs” (Putney 2008, 12). There is now a law banning all turtle egg collection in Palau, yet poachers are said to collect 100% of the eggs from every nest they find, a stark departure from traditional practices. Elders blame state and national law enforcement and the fact that “customary conservation practices have lost their authority to western-style laws” (Putney 2008, 12). Traditionally, sea turtles are valued for much more than their meat and eggs in Palau. Marriage bowls, known as “women’s money” or *toluk* are made out of turtle shell and represent the private property and wealth of a woman (Nichols 1991, 80). Prior to 1971, the shell of hawksbill formed the basis of an important traditional carving industry for fish hooks, combs, spoons, cups, and ornaments (Nichols 1991, 80). Today, this trade has largely died out, and only a few artisans produce trinkets for sale to tourists.

### **Mami (Napoleon Wrasse)**

Napoleon, or humphead wrasse (*Cheilinus undulatus*) is a large, highly prized reef fish (Figure 5). It is traditionally eaten at large feasts, but it is also sold as a specialty to tourists at local restaurants and has a high export value to Asian markets (Nichols 1991, 71).



Figure 5: Humphead wrasse, at the market and in the wild in Palau. Image 1: Tanya Burnett, via Arkive; Image 2: Tim Rock via Guam & Micronesia Dive Travel ([guammicronesiadivetravel.com](http://guammicronesiadivetravel.com)).

A combination of poisoning and SCUBA-assisted spearfishing is believed to be responsible for the regional decline and localized extinctions of wrasse (Kitalong & Oiterong 1991). Illegal fishing by foreign vessels is also implicated, though instances are poorly documented (Nichols 1991, 73). For example, in 1990, 1.5 tons of this species was confiscated from a foreign vessel operating at Helen Reef, the remote southernmost island of Palau (Nichols 1991, 73). Fishing for Napoleon wrasse is illegal under Palauan law, but this regulation appears to be poorly enforced (Ref. 27 PNCA 1204). Anecdotal evidence from fishermen indicates the species was

once commonly seen in groups of 75 or more, especially around the time of the full moon (Nichols 1991, 74). Such large aggregations are reportedly not seen anymore. Traditionally, fishermen were expected to catch large individuals for special occasions but to refrain from eating humphead wrasse for subsistence. A grown man from Ngarchelong reported he had gone spearfishing alone one morning and returned to the dock with seven *maml*. The chiefs, sitting at the dock, asked him pointedly if he was “planning a custom” and asked why he “had to take all the large fish normally reserved for big feasts” (Putney 2008, 58). They further reminded him that when he goes fishing, “he must be sure the coral habitat where the fish live remains intact”. The man reported feeling “grateful” for the admonishment “because he never fished this way again”. He lamented that “the chiefs do not question the fishermen anymore, due to their lack of authority under the western style of government” (Putney 2008, 58).

### **Hypothesis 1: Confirmed**

I have demonstrated that the erosion of the traditional system has led to the degradation of Palau’s marine resources. The loss of chief authority, the limited knowledge and experience of young Palauans, and the resultant disrespect for CMT, combined with the pressures of the global market economy, have placed incredible stress on Palau’s marine ecosystems. I confirm my first hypothesis and look to reasons for optimism in hypothesis 2.

### **Hypothesis 2: The booming ecotourism industry is responsible for the resurgence of Palau’s marine conservation ethic.**

Under hypothesis 1, I demonstrated that the decline in traditional systems has led to the degradation of marine resources. However, the evidence suggests that Palauans have *not* lost their central ethic of marine conservation. Younger generations are not as knowledgeable as their elders about marine organisms and ecosystems, and they do not have the same

appreciation for the CMT system. Yet Palau is a global leader in marine conservation, pioneering the Protected Area Network (PAN) framework, the Shark Sanctuary, and currently, the elimination of commercial fishing in the entire EEZ. Palau is taking steps to protect its marine environment that no nation has taken before. This leadership can be attributed to: (1) Palau's tradition of sustainability and conservation, and (2) the financial incentive created by ecotourism.

### **Sharks Are Worth More Alive than Dead**

After establishing the world's first Shark Sanctuary in 2009, which banned all shark fishing in Palau's waters, tourists began flocking to Palau in unprecedented numbers (*Figure 3*). Palau is one of the few places on Earth that dive enthusiasts can reliably see sharks. Palauan officials recognized that protecting this vital resource for the future would ensure divers kept coming to Palau. A 2012 study asked tourists their reasons for visiting Palau. Shark diving was indicated as the principal attraction that determined the choice of vacation destination for 21% of the respondents (Vianna et al. 2012, 273). Approximately 71% of divers were unaware of the creation of the Shark Sanctuary prior to their trip. Of the 29% of divers who were aware of the sanctuary prior to their arrival, 42% reported that this was an important factor in their decision to choose Palau as a vacation destination. This study proved that a Palauan shark generates more revenue alive than dead. Annually, shark diving in Palau was responsible for an estimated USD\$1.2 million in salaries to the local community and generated USD\$1.5 million in taxes to the government. Whereas, if the population of approximately 100 sharks that interact with tourists at popular Palauan dive sites was harvested by fishermen, their economic value would total at most USD\$10,800.

Neighboring nations have witnessed Palau's success and have created similar legislation. After Palau created the first Shark Sanctuary, four of the Federated States of Micronesia banned commercial shark fishing and created the five million km<sup>2</sup> Micronesia

Regional Shark Sanctuary (Leahy, 2012). For its leadership in marine conservation, Palau was the recipient of the 2012 Future Policy Award, which is awarded to a country that the World Future Council feels has led by example, enacting policies to create “just, sustainable and peaceful societies” (Reis, 2012). “Palau is a global leader in protecting marine ecosystems,” said Alexandra Wandel, director of the World Future Council, which administers the Future Policy Awards. “Other countries like Honduras, Maldives, Bahamas and Costa Rica are following suit, establishing their own shark sanctuaries or banning shark fishing” (Leahy 2012).

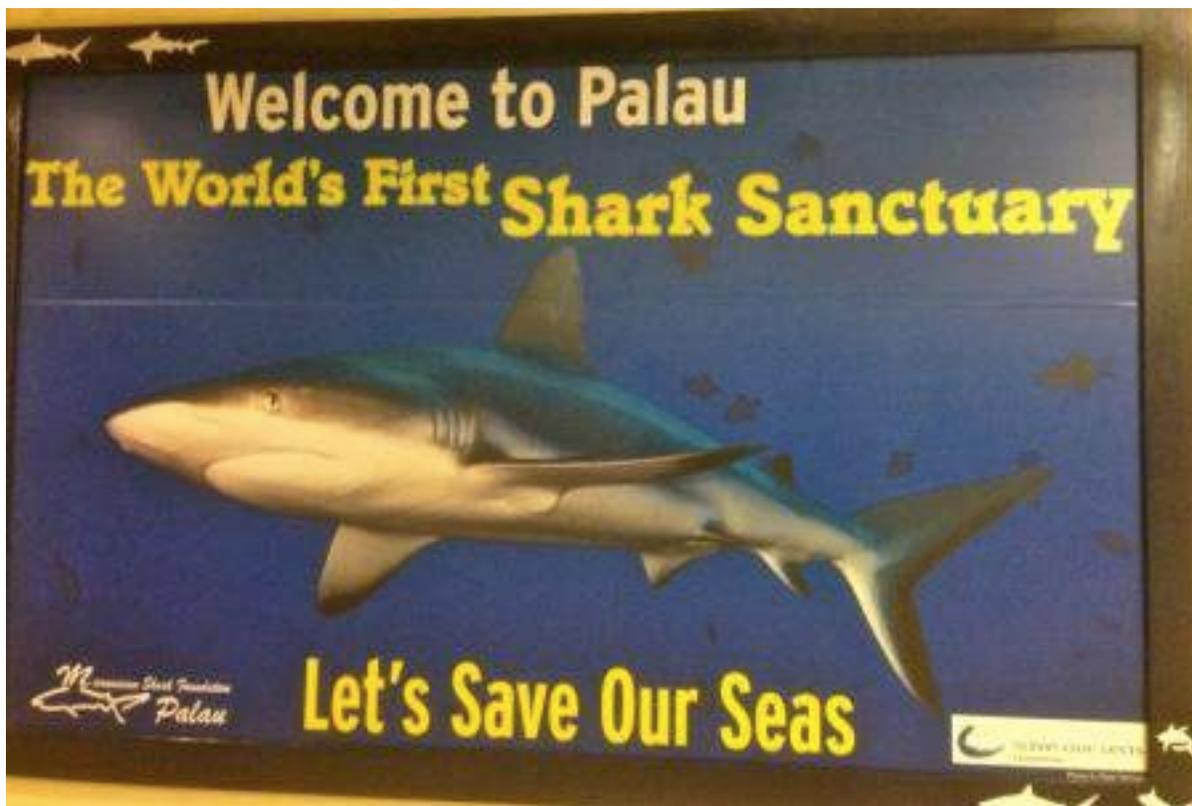


Figure 6: The welcome sign at the airport, one of the first signs a visitor sees in Palau, advertises the Shark Sanctuary. Photo credit: Brenna Schneider.

But banning shark fishing means little if enforcement measures are not in place to ensure the ban is respected. In 2012, a scientific expedition to Palau’s southwest islands revealed that the population of sharks there has greatly declined and that reefs are damaged by commercial fishing activities (Gerundio-Dizon 2013). Scientists were surprised to discover that

closer to Koror, where the population density is highest, sharks are found in much greater abundance. This implies that on the outer islands, enforcement is not keeping up with illegal fishing effort. President Remengesau responded with an intention to increase monitoring and impose harsh fines on perpetrators. "It is very depressing and very frustrating to know that the further you go away from the central part of Palau, the less marine life that you will find. The southwest islands, which are least inhabited, used to have the richest resources of all the states in Palau. But the further you go away to the very remote areas, the less enforcement efforts are there. Therefore they are more prone to poaching and illegal fishing," the president said. "We should impose fines to make it economically hard for people who are caught. Palau needs to improve level of enforcement to avoid fast depletion of our resources" (Gerundio-Dizon 2013). The president has followed-through on such threats before. When Palauan officials and Greenpeace members caught a fishing boat illegally shark finning in Palau's waters, the fishermen were charged \$65,000 and banned them from Palauan waters for a year (Republic of Palau, Office of the President, 2012). In July of 2012, 53 Filipino fishermen were apprehended for illegally fishing in Palau. When they were caught, they were detained for more than a month, and each boat owner was charged \$13,500 (Carreon, 2012). The Palau Attorney General's Office wanted to impose a fine of as high as USD\$100,000 and to confiscate two of the vessels. However, after a plea to President Johnson Toribiong by the embassy, the fines were reduced (Carreon, 2012).

### **Palau National Marine Protected Area**

In 2013, President Remengesau announced he was exploring the possibility of banning commercial fishing in the entire EEZ. Palau currently generates about five million dollars per year by selling fishing permits, which Remengesau believes can easily be recouped through tourism. Compared to revenues Palau is producing from its tourism industry, the president called fisheries money "negligible. It's a drop in the bucket" (Island Business 2013). Additionally,

under the Parties to the Nauru Agreement (PNA), Palau is allotted 500 fishing days, which it can sell to other parties (similar to cap-and-trade). At the current minimum sales price of USD\$5,000 per day, Palau's potential PNA day sales translate to USD\$2.5 million (Island Business 2013). Remengesau believes the toughest feat will be ratcheting up enforcement, which as described above already poses challenges to Palau's existing PAN. The president said that he is working on efforts to increase the surveillance capacity of the patrol team by building a fuel depot on one of the Southwest Islands so the patrol boat doesn't have to come back to the main islands for refueling. Palau is also exploring the option of using drones to monitor the EEZ. The first test of the drones will reportedly be conducted in August (Island Business 2013). Palau is unfortunately somewhat unique in its prosecution of illegal fishermen. It has turned to international NGOs for assistance with monitoring and is the first nation to pilot the new satellite-based surveillance technology Project Eyes on the Seas. This commitment has made Palau a global leader in the fight to protect marine ecosystems and has garnered further tourist attention. This positive feedback loop has the potential to change the direction of marine resource exploitation the world over.

### **Looking Ahead**

Palau has overcome two centuries of colonization and degradation to become a worldwide leader in marine conservation. It is unlikely the power of chiefs or the traditional tenure system will be restored, but it is evident that the people's marine conservation ethic has prevailed. Moving forward, Palau should continue its efforts to protect the marine environment. Ecotourism has largely been a positive force thus far, but looking ahead, Palau should limit and closely regulate tourism so that it does not become another example of foreign invasion. By limiting visitors, incorporating FEK of elders (and teaching younger generations), and turning to the international community for increased capacity, Palau has the potential to maintain its values

of sustainability and conservation in the face of Western appetites. Palau can prove to the world that the ocean is worth more alive than dead.

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