

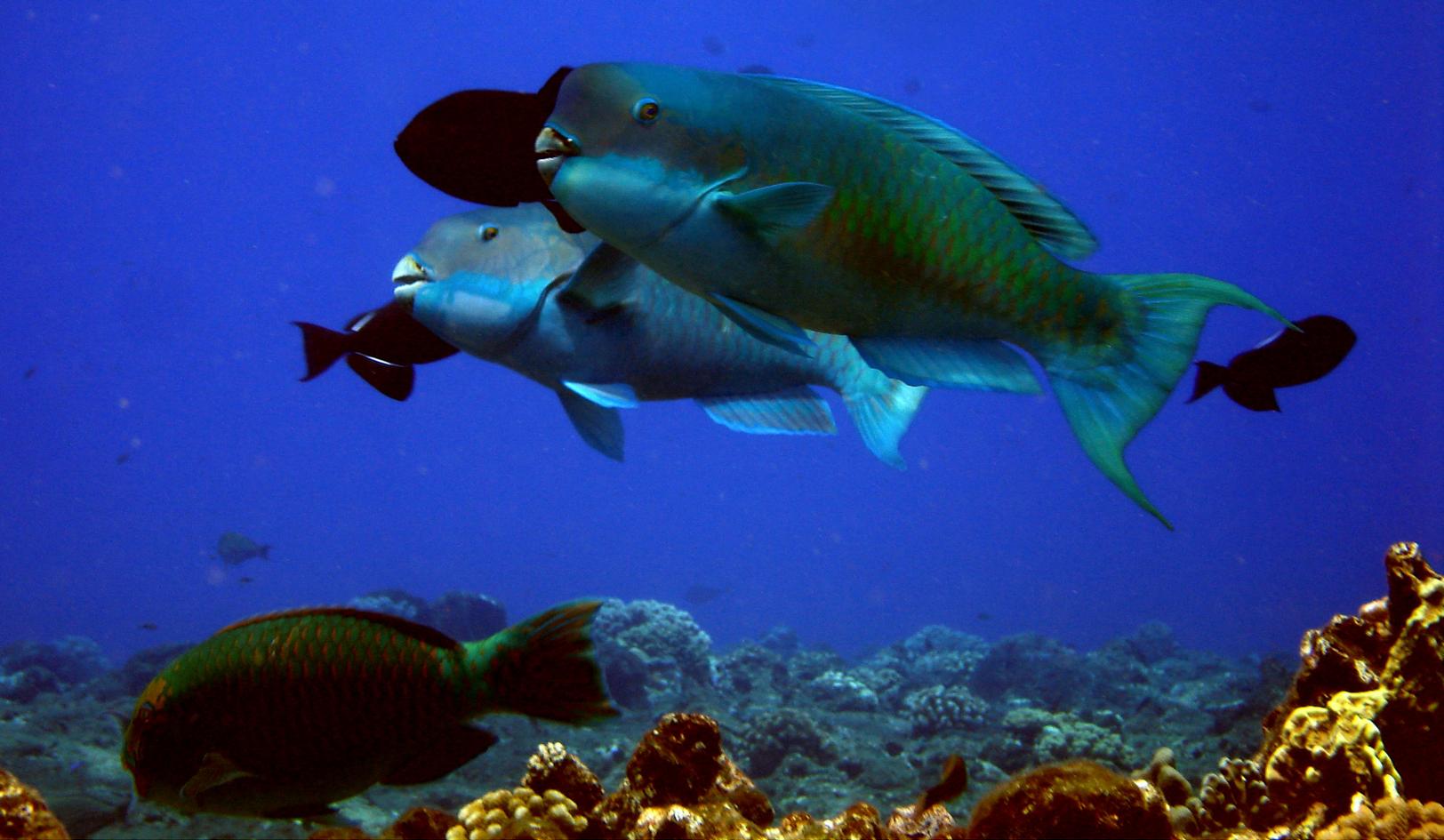
The background of the cover is a photograph of a sunset over a large body of water. The sky is filled with orange and yellow clouds, and the water reflects the light. In the lower right, a small silhouette of a person stands in the water, creating ripples. The overall mood is serene and contemplative.

# *Journal of* **MICRONESIAN FISHING**

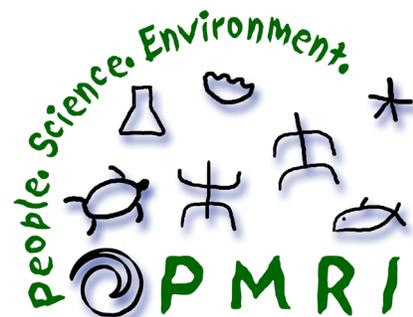
**Winter 2010**

**Fishing in Palau over the past 50 years**  
*a perspective from Clarence “Obak” Kitalong*

**INSIDE: A Wealth of Knowledge from Market Fish Surveys,  
Fishermen Talking Story, The Beginning of an End to Tuna?**



(Above) Parrotfish are a popular food fish on Saipan. Photo courtesy of John Starmer.



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It is dedicated to working in partnership with Pacific nations, states, and communities to assess, monitor, and manage their precious biological resources for sustainable use.

# CONTENTS

## *Journal of* MICRONESIAN FISHING

Cover Photo:

*Cast net fisherman in Palau;*

*Photo Courtesy of John Starmer*

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Fishing in Palau over the past 50 years  
a perspective from Clarence “Obak” Kitalong/PAGE 4  
*INSIDE: A small boy with a passion for fishing*  
*Reflections on Obak’s life in the water/PAGE 5*



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From Catch to  
Kitchen/PAGE 7

Market-based Fish  
Surveys/PAGE 8

Fishermen Talking  
Story/PAGE 12

The Beginning of  
an End to Tuna?/  
PAGE 14

# Fishing in Palau over the past 50 years *a perspective from Clarence “Obak” Kitalong*



*(Above - inset) Fish Market of Malakal, Koror. Photo courtesy of TTPI Archives. (Above) Clarence “Obak” Kitalong proudly holding his catch. Photo courtesy of the Kitalong family.*

## BY CLARENCE “OBAK” KITALONG

I can brag about all of the types of fishing I’ve done for over 50 years. I’ve caught many kinds of emperors, white snappers, and groupers on hand lines that have left cuts and marks on my hands for permanent memories. I shot wahoo, jacks, red and white snapper, and groupers with spearguns. Oh, and I even shot humphead parrotfish and Napoleon

wrasse when it was still legal to do so here in Palau. But, even shooting small rabbitfish (klesebuul) it is a sport in itself that I love and am addicted to.

While these different fishing techniques all give me a similar level of satisfaction, nothing can compare to the art of the ‘throw spear’ to me. I began learning this technique before I began the first grade when I was about 5 years old. The fishing grounds for young fishermen were

the inner reefs, during the low tide. This is where my passion began, with the rest of the kids who ranged in age from six to twenty years old. The older kids would move furthest from shore, leaving the shallow waters closest to land for us. It didn’t matter then though, there were lots of fish to spear and we had luck on our side.

Hitting a moving fish requires mental calculations that are fine-tuned by practice. Through dedicated daily fishing your body and mind

strengthen as you get in shape and learn the patterns and behavior of the fish under different conditions. Eventually, your mental calculations of when and where to throw your spear synchronize, and the fish become easier targets to hit. Learning when to throw your spear often comes through trial and error. For example, sometime you may hit coral and have to bring your spear in for repairs, shortening your fishing activity and giving you night time “homework” to repair your spear for the next day. One thing is absolutely certain, the art of ‘throw spear’ fishing is in your mind constantly, you dream about it at night. There is even a saying that people use, “you are married to the fishing ghost when you always hit your target.”

Eventually you become so sharp and accurate in your aim that you keep hitting your target consistently as you have mastered the behavior of the target fish very well. Your eyesight becomes keen and focused. The others now truly believe you are married to “ESIU” or the goddess of fish! Naturally, you would start to throw your spear at bigger game fish using a bamboo raft, canoe, and in later years, motor boats. Game fish for ‘throw spear’ fishermen are mostly humphead parrotfish and Napoleon wrasse that come in to feed on the productive shallow reef and later migrate to deeper waters. At this stage of expertise, many ‘throw spear’ fishermen begin to use larger and heavier spears to hunt turtles and occasionally big trevally (jacks) and giant groupers. Unfortunately, most of these larger game fish are now becoming less and less in numbers, and rarer to see. Traditional fishing styles, such as the ‘throw spear’ are being used less as well. I used to use my three prong spear for fishing in shallow waters, now I use it more for getting lemons from the tree.

## A small boy with a passion for fishing Reflections on Obak’s life in the water

BY ANN KITALONG

Clarence Kitalong, or “Obak ra Debka”, his traditional chief title, has been fishing Palau’s waters for 51 yrs. At first there were many families with young boys in his native village of Ngetkib, Airai State, that would fish together. But as time went on, he just tagged along with the older boys and learned by doing rather than instruction. “The older boys simply threw the younger boys in the deep water to teach me how to swim”, he stated. Clarence learned to swim—fast. The community taught him most of what he knows about fishing, but every now and then taught himself a thing or two. By the time he was in grade school most of the boys moved to Koror to go to school and work. He found himself the

only young boy that fished and fed the elder widows of the village. They didn’t have a refrigerator so what he caught gave away and kept enough for him and his family. They smoked fish to preserve it and boiled it each day to keep it for the next meal.

Obak now prefers spear fishing but does deep bottom fishing, casting, and cast net fishing. Airai is well known for his favorite fish, ‘meas’ or *Siganus fuscescens*, a tasty rabbitfish that migrate to spawn in the spring but can be found year round. The pre spawning schools of meas are usually found around the 3rd to 6th day after new

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OBAK FISHING

CONTINUED ON PAGE 6



(Above) Malakal Fish Market, sorting the catch, circa 1960s. Photo courtesy of TTPI Archives.

moon. Many men would line up with their cast nets in the spring to catch their share. The fishermen have said the ‘meas’ were so full of eggs and sperms that just by netting them and getting them into our canoe the water would be milky white from their ripe gonads. Obak would spear both ‘meas’ and ‘klesebuul’ and the tasty Napoleon wrasse, ‘maml’. The variety of his catch varies with the seasons, moon phase, and weather patterns.

The biggest catch he got was a big trevally about 92 lbs about 10 years ago. In his early years he could fill a cooler of fish in a few hours time. He fishes for fun and food, but rarely sells fish, and has never fished for direct income. Since he started fishing he estimates that his fish catch rate

has decreased, at least 10 fold. The common fish he notices the biggest declines in are ‘um’, the unicornfish, ‘erangel’, the orange-spine surgeon fish, and ‘meas’ the rabbitfish. He also reflects on big reductions of bumphead parrotfish and Napoleon wrasse. “Today there are laws to protect both these species and in some places I am seeing more, but not like before when there were hundreds in many places”, he shares. Flashlights instead of torches, larger engines instead of canoes, and fish finders instead of local knowledge make fishing easier and are thought to be attributed to the rapid depletion of fish at his fishing spots.

Now, Obak only shares his fishing secrets with his most trusted friends, who he knows will not overfish the

spots. He also shares information with the government resource management agencies. Things like marine protected areas are now becoming more common in Palau, but their traditional counterparts, the ‘buls’, declared no fishing zones by village chiefs, are much more respected and successful. He explains, “even if a little child said they saw someone violate the ‘bul’ that person was punished, now it’s more difficult as people have less respect for modern laws and regulations. The key was mutual respect of a chief’s decision.”

“While we can easily write and talk about fishing, you have to get out there to understand it. That is how you really learn, like me, as a small boy with a passion for fishing.”

*(Below) Clarence “Obak” Kitalong and fishing partners (2009). Photo courtesy of Peter Houk.*



# From Catch to Kitchen

## SPICY CUMIN TUNA WITH GREEN SALAD AND CURRY SAUCE

Contributed by Sam Sablan

### PREPARE THE TUNA

- 1 6 oz. Yellow Fin Tuna Loin
- 2 tspns. Ground Cumin
- ½ tspn. Korean Ground Pepper
- ½ tspn. Turmeric Powder
- 2 tspn. Salt
- 2 tbsps. Olive Oil

Mix dry ingredients together and season the tuna loin. Heat the olive oil in a pan and brown each side of the tuna for 1 minute each side. Let the tuna rest on a plate and chill.

### PREPARE A SIMPLE VINAIGRETTE

- ½ shallots or 1/8 red onions, chopped
- 2 oz. White wine
- 2 oz. Champagne
- ½ oz. Rice Vinegar
- 1 tablespoon sugar
- 1 oz. canola oil
- Pinch salt/pepper

Combine shallots, white wine, champagne, Rice Vinegar, sugar, salt, and pepper in blender and slowly pour in canola oil.

### PREPARE THE CURRY SAUCE

- ½ cup Coconut Milk
- ¼ teaspoon Lemon juice
- 2 tablespoons Curry Powder
- Salt/Pepper to taste

Combine ingredients in a bowl and mix well; chill.



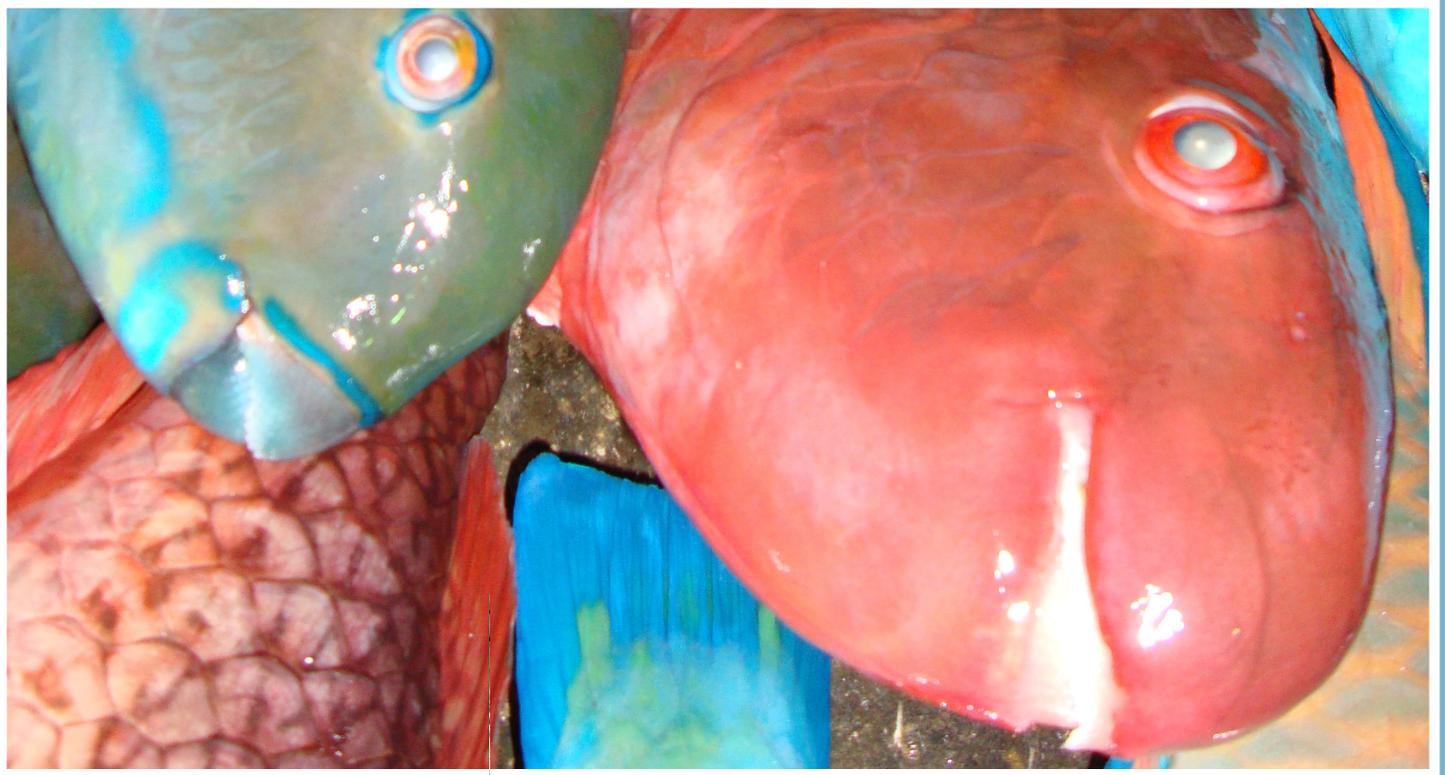
### PREPARE THE SALAD

- ¼ Green Leaf Lettuce, cleaned, chopped, and spinned;
- 3 oz. Spinach
- 1 Red Radish, thinly sliced
- ½ bunch Cilantro leaves
- 2 slices Lime, peeled
- 1 tablespoon Dried Currants or raisins and golden raisins
- 3 oz. Sliced Almonds

### Entrée Set-up

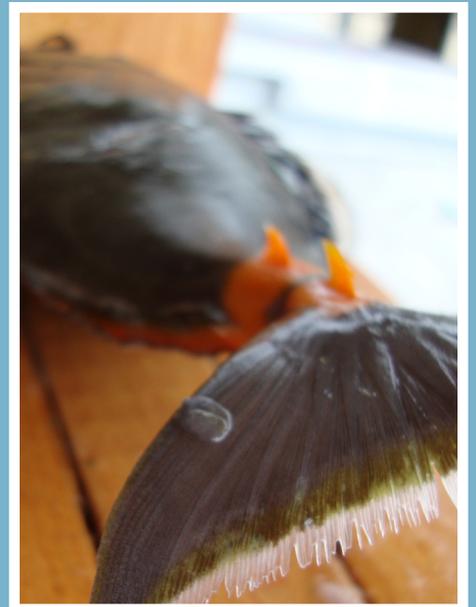
Slice tuna into ¼" slices. Spread Tuna slices on a plate. Combine Lettuce, Spinach, Radish, Cilantro, lime, and currants in a bowl. Mix in prepared dressing with greens. Mix well. Gently pile salads on top of tuna. Drizzle top of salad with curry sauce and sprinkle with sliced walnuts.





# Market-based Fish Surveys

A Wealth of Information for  
Micronesia, But Are We  
Applying the Knowledge?



## BY PETER HOUK

Ask any ecologist what the most important aspect of designing a study is: replication, replication, and replication. The more times you test a theory and gain support from the data, the more (statistical) confidence you have, and the more people you can convince that you are, indeed, right. Some ecologists measure thousands of trees in forests, hundreds of coral colonies on a reef, or follow flocks of birds relentlessly through a forest. However, when it comes to measuring reef fish one big problem arises, we just can't stay underwater long enough to count the fish we need to. No matter how slowly you breathe the air in your SCUBA tank, it will eventually expire. The roving nature of most coral reef fish species requires a lot of replication to generate ideal statistical estimates, but most can't afford the time. This has been the root of much debate and argument surrounding fisheries all over the world. One solution often employed is to generate information from the catches sold in the markets, a sure way to increase our sample sizes.

### What Data are Needed?

Here three pressing questions are introduced that can all be answered through market-based surveys.

1) What is the composition of the catch?

Not all fish are the same. Some eat

*Photos (Opposite Page) Clockwise from top: Parrotfishes for sale; diving fishing market; salesperson at the market; fish on measuring board. Photos courtesy of Peter Houk.*

*This page: (Top right) Unicornfish on measuring board; (Bottom right) Jess from Asins Fish Market. Photos courtesy of Peter Houk.*



plankton, some eat algae, and some eat smaller fish. The larger, predator fish take longer to grow and reproduce compared with the algae eaters, while the plankton eating fish are fastest to grow. Because of their rapid growth, the planktivores are an important base for numerous food webs in the marine environment. Through market based surveys island nations can examine 'how far down the food chain' their stocks are, and draw upon numerous studies for comparison. It has been shown that all types of fish are needed to ensure a healthy functioning reef, and provide a high level of security for societies that heavily use the protein in their diets. Fishing too far down the food chain can disrupt the cycles.

2) Are fish able to reproduce before being caught?

This is a basic question that is readily answered by identifying and measuring lots of fish. In a previous issue the L50 was introduced (the size when fish can start reproducing). Simple comparisons can be made between the most desirable species of fish and their known sizes at first reproduction. These results can be used to institute size-class restrictions that minimize capture of small fish, and harmonize the stock and catch rates.

3) What are trends in catch rates?

While extremely desirable, the answer to this question does not come right away. Market-based surveys estimate the total biomass of fish being harvested, and on a yearly basis, can generate trends. Few, if any, islands throughout Micronesia have consistent, annual market data to establish these trends yet.

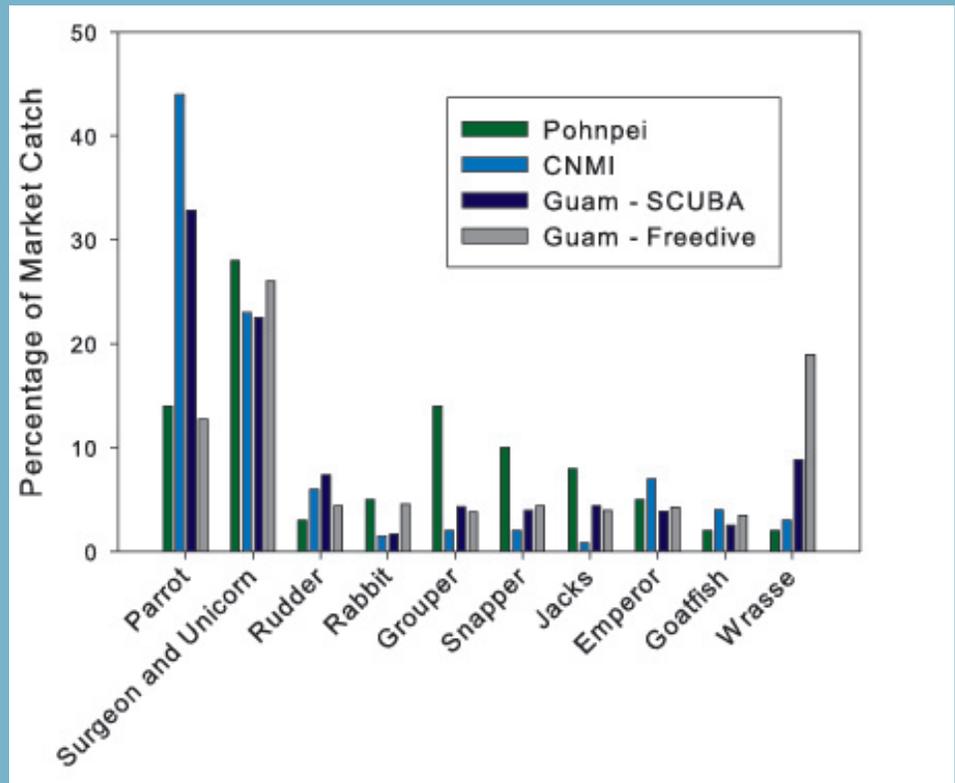
Together, the answers to these questions can help recommend what type of management would best suit the needs of each island, and whether or not management actions are working. However, few localities have yet to act upon the available information.



## Current Efforts

Throughout Micronesia intensive market surveys have been conducted a one point or another for numerous nations. I'm aware of data, reports, and current efforts from Pohnpei, Yap, Palau, CNMI, and Guam. A quick look at the available data reveals that Pohnpei's trophic index (carnivores to herbivores) is around 0.8, while CNMI and Guam have much lower indices of 0.2 and 0.3, respectively (see figure on right?). Studies show that fishing 'down' the food chain decreases the stability of coral reef systems, and reduces their growth, diversity, and ability to recover from natural disturbances. The end result, more and more of the favorite reef spots we have come to know change in appearance, decline in health, and produce less desirable food fish for us.

However, the data available from markets suggest one means to deal with the situation. Consider for example, the highly desirable unicorn fish that makes a delicious barbeque and is a dominant catch in all markets throughout Micronesia. In Saipan, intensive surveys this past summer revealed that unicorn fish were being caught well before they typically reproduce. Obviously this will contribute to a declining fish stock; but the data clearly provide evidence for the establishment of minimum catch sizes for this species. While enforcing every fisherman would be impossible, the markets make up and estimated 60-70% of the catch. So, a simple start is to institute harvesting size restrictions that can be enforced through market sales. In support, several market owners I've talked to clearly understand the need to have a continuous supply of fish for their profit; however have little choice but to purchase whatever fish the fishermen choose to catch and sell. One owner explained to me, "if we don't



consistently buy their catch they will find another market to sell to, and we may lose their future business, and ours.”

A second aspect of market-based data is their ability to evaluate existing management. For several years now fishing with SCUBA has been illegal in the CNMI. However, if one compares the catch composition among various Micronesian countries, it becomes clear that SCUBA fishing continues to supply a dominant proportion of the fish to Saipan-based markets. The graph above shows that the SCUBA fishery on Guam (where it is legal to use) has strong ties with CNMI's, and both are very different from the free-dive catch. SCUBA increases the ability to target parrotfish that sleep in both deep and shallow waters, while free-diving most effectively targets surgeon fish that mainly sleep in shallow waters.

### Reconciliation

While market-based surveys can't answer all of the complex questions

that fishery agencies and managers face, they provide a great starting point. Some key challenges are to increase data collection, availability, and translation. However, lots of data already exists, yet little action has been taken.

- Perhaps part of the problem lies in translating the information to the public, who ultimately, provide support for and can demand management action.
- Perhaps part of the problem is designing management strategies around the data. Perhaps part of the problem lies in convincing the small proportion of people that catch the greatest percentage of the fish.
- Perhaps part of the problem is convincing our lawmakers to pass relevant legislation.

Clearly, part of the solution resides in scientific data. Market-based surveys are one of our only means to rigorously sample fish populations and generate sound data.

# Science to help people effectively manage resources.

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## WORKING WITH *THE MICRONESIAN FISHING JOURNAL*

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Contributions can be as simple as photos of your catch or as detailed as a transcribed interview. Mainly we are looking for stories (600-1200 words long) about fishing, cultural importance of fishing, management, community efforts, history, why Uncle Semo is the best fisherman ever, and related topics. JMF has an editorial staff that can help ensure that your message comes across clearly.

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Images may be sent as .jpg or .tiff files. English language submissions: 600 and 1200 words. Local language submissions up to 600 words.

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# Fishermen Talking Story

*Interview with  
Gasma Nedlic, 43  
years old*

*Fisherman from  
Lelu, Kosrae*



*(Above) Fisherman Gasma Nedlic. Courtesy Photo courtesy of Osamu Nedlic.*

*How many years have you been fishing?*

I started fishing when I was a kid around 7 – 8 years of age. I spent 15 years in United States... that's the time I stop fishing, but after I came back to Yepanu my home sweet home I started fishing again, just the day after I arrived. Miss it so much. So I would say I have been fishing for nearly 25 years.

*Who taught you to fish?*

My dad was a fisherman and he is a fisherman, still... may I say he will be a fisherman. He taught me a lot about fishing. Most of my family members are fishermen, who also taught me fishing..

*What techniques do you most commonly use?*

Trolling and Bottom fishing.

*Is there a method of fishing that you used to use, but no longer do so?*

I used to spear fishing but I quit after I saw JAWS movie. I thought of it every time I'm underwater even up till today.

*Do you typically fish during the day or night with these techniques?*

Day time

*Do you use a boat when fishing or fish from shore?*

On the shore I usually walk and sometimes I used canoe.

*What type of fish do you target?*

All types of fish, but my favorite is the rabbit fishes

*What year would you say was your biggest catch ever?*

By trolling, my biggest catch was in 2001. Over 100 pieces of tuna fish

*How many people were involved in catching that amount?*

Just me and a friend

*Why do you fish?*

Fishing is my hobby. Other than that fishing is the main source of my daily living

*What do you do with your fish?*

I sold them when there's many, keep

some to my family and share some to my relatives. I don't want them to spent money on fish. The worst thing about fishing is when you catch nothing.

*How much do you make per pound? How much this amount changed over time?*

Tuna fish is one dollar a pound recently. This is rapidly increased due to fuel prices. It used to be 35- 50 cents a pound.

*How important is income from fishing to you?*

The income from fishing is in fact shouldering my daily living cost.

*Does your fish catch vary with season, moon phase, rainfall, or other yearly weather patterns?*

Moon phase

*Since you started fishing, has your fish catch been consistent in terms of the amount of fish harvested? If no what change has occurred?*

Back in 70's to 80's, it was easy to catch huge amount of fish... any types of fish. In the past days, I could catch 50 – 70 pieces of emperor near the Lelu causeway. Currently the amount of catch in the reef flat areas is declining. Other thing I have noticed recently is the growing number of invasive species.

*Since you started fishing, has your fish catch been consistent in terms of the type of fish harvested? If no what change has occurred?*

Comparing the years I've mentioned to date, rabbit fishes and the goat fish are hardly seen in these days.

*Do you fish alone or with partners? How many? Same partners over time?*

Most of the time with relatives and friends. I never go alone at night, I'm



*(Above) A young boy in Kosrae learning how to spearfish as the sun sets. Photo courtesy of Peter Houk.*

*“Back in 70's to 80's, it was easy to catch huge amount of fish... any types of fish. In the past days, I could catch 50 – 70 pieces of emperor near the Lelu causeway. .”*

afraid of ghost. I have a friend who always prefers to go alone fishing at night, but I don't wanna be like him. He's name is Stain George.

*Do you share your fishing knowledge with other fishermen? Family members? Community members? Government resource management agencies?*

Family, friends and now starting to pass on to my kids

*Are there any areas you have stopped fishing? Why?*

Yes, out in reef flat areas near the cause way. Due to water quality and less fish.

*Are there any animals that you used to fish for that you no longer do?*

Goat fish.

*How far will you travel to catch fish?*

Trolling, 7-8 miles off shore. Inner I can go every where

Overall on your island or jurisdiction, what is the current status of fish population? (Rank 1 to 10, 10 being the highest).

I would say 7.

*Has the amount of fish being caught changed over time? How?*

Yes, less fish now adays

*Has the type of fish being caught changed? How? Size changes of particular fish?*

Yes, the size is getting smaller especially the rabbit fishes.

*In your opinion, are you aware of any management practice(s) that are helping to improve fish populations?*

I have heard about the proposed MPAs. To me personally, I supported this management issues. We definitely have to look at the changes that are already occurring in those days comparing the past. But surely, some people don't like the ideas protected areas.

*In your opinion, what are the best management options to keep high fish populations year after year?*

Set aside sites to be protected and size limits, or gear restrictions.

# The Beginning of an End to Tuna?

BY JOHN STARMER

It is hard to imagine that it might in any way be possible to catch too many tuna. The oceans are huge, the fish are plentiful— yet this ‘gut feeling’ many of us have may be very, very wrong.

An meeting of the Western and Central Pacific Fisheries Commission’s Science Committee in Vanuatu this past August found that YellowFin are being pulled in at a maximum rate and that Big Eye tuna may be on the track to overharvesting at current catch rates. And these findings are based on the broad perspective, averaging statistics for all regions.

So how is it possible that we might be reaching the maximum sustainable catches for these fish? Overall tuna catch for the region in 2008 was reported by WCPFC at nearly 2.5 million metric tons! (Consider that Guam and CNMI’s commercial catch was just under 250 metric tons in 2008) Of that catch nearly 75% was caught by purse seiners. Commercial long-line and pole&line operations pulled in another 17%. The remaining 10% was trolling and other artisanal methods.

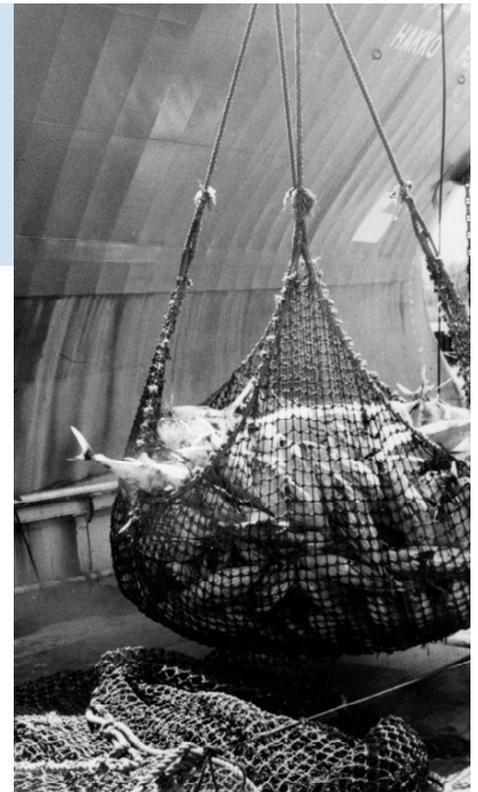
Of additional concern is that while the overall numbers suggest caution, some of the specifics suggest we may already be overfishing some areas.

The WCPFC’s draft meeting report notes that while Yellow Fin reproductive biomass (how many adults are available) is o.k. for the entire region, in the western equatorial region, they are only at 30% of what

would be expected if no fishing occurred. And its worth noting that nearly 95% of the Yellow Fin catch comes from this region.

The fact that the commission exists and actively provides recommendations and data synthesis to support fisheries management is the result of international recognition that migratory fisheries are now under global, rather than local pressure.

But at the end of the day, individual countries have the ultimate responsibility to manage their resources. Given the usual mantra of not enough funding, not enough staff, not enough resources that most Micronesian jurisdictions recite, how will the region be able to sustain tuna harvests for its population while still assuring access to the benefits provided by the global markets?



*Photo courtesy of CNMI Coastal Resources Management Office.*

*More information, and the WCPFC Science Committee’s draft report is available at: <http://www.wcpfc.int/>*



# HEALTHY REEFS HEALTHY FISH



## A MARIANAS ORIGINAL

THE YELLOW CROWNED BUTTERFLYFISH

This fish is found only in the MARIANAS- nowhere else in the world!  
It lives in and depends on the reefs for food and shelter. When we  
take good care of our reefs, we help protect the health of this rare  
species- A Marianas Original.



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