

barcode: 161

LIBRARY
SECRETARIAT OF THE
PACIFIC COMMUNITY

SPC
641.39
CHA
2001
copy C

Seafood in our Meals

By

**Tony Chamberlain
and
Susan Parkinson**

With contributions from

Jimaima Lako

Patricia Tuara

Lyn Lambeth

Jimaima Tunidau Schultz

Community Fisheries Training Pacific Series 2

USP Marine Studies Programme / SPC Coastal Fisheries Programme:

Training Materials for Pacific Community Fisheries



The University of the South Pacific



Secretariat of the Pacific Community

Canada-South Pacific Ocean Development

New Zealand Official Development Assistance

Australian Agency for International Development

International Ocean Institute - Pacific Islands



NZODA



SPC Library



34532

Bibliothèque CPS

© USP Marine Studies Programme / Secretariat of the Pacific Community 2001

All rights for commercial / profit reproduction or translation, in any form is reserved. The USP and SPC authorises the partial reproduction or translation of this material for scientific, educational or research purposes, provided that the USP, SPC and the source document are properly acknowledged. Permission to reproduce the document and/or translate in whole, in any form, whether for commercial / for profit or non-profit purposes, must be requested in writing.

Secretariat of the Pacific Community Cataloguing-in-publication data
Chamberlain, Tony

Seafood in our Meals/Tony Chamberlain & Susan Parkinson

(Community Fisheries Training Pacific Series / University of the South Pacific, Secretariat of the Pacific Community, 2)

1. Seafood-Oceania. 2. Nutrition-Oceania.
1. Title 2. University of the South Pacific 3. Secretariat of the Pacific
Community 4. Series 5. Parkinson, Susan

641.39

AACR2

ISBN 982 - 203 - 822 - 4

Project Leader

Tony Chamberlain
Marine Studies Programme
The University of the South Pacific
Suva, FIJI ISLANDS
Email: chamberlain@usp.ac.fj

Project Team

SPC Noumea Coordinator - Lyn Lambeth
CETC Coordinator - Nu'ufou Petaia
USP Coordinator - Samasoni Sauni
Project Advisers - Gabriel Titili, Irene Novazcek
Editors - USP: Fred Mills, Karen Chamberlain; SPC: Kim Des Rochers

Cover Design and Layout - Pasifika Communications
Printed by Star Printery Limited
Photos by Tony Chamberlain
Most diagrams are from USP or SPC publications except where noted.

Preface to the Series

The majority of Pacific Island countries rely on the sea as a major source of food. While women are not involved in offshore deep sea fishing, they are active in collecting and gleaning shellfish and other edible sea species from the nearshore areas and inside the reef. Women also prepare fish either for sale or home consumption. In this preparation process, women are involved in cleaning, gutting, cooking and selling various seafoods. In many atoll countries, women are also involved in the preservation of seafood by drying or smoking. In view of women's role in fisheries activities and the importance of seafood in the region, it is vital that women learn not only the correct handling methods for seafood, but also how to use marine resources wisely for the future.

This manual is part of the Community Fisheries Training Series, and is designed to meet the wide need for community fisheries training in the Pacific, particularly for women. The series was originally developed for the SPC Community Education Training Centre (CETC). The fisheries course at CETC began in 1999 as a joint effort with the USP Marine Studies Programme. It was a response by the Centre to meet the needs of women in the region to improve their skills in small-scale fisheries activities. The USP Post Harvest Fisheries Project was also working to provide post harvest fisheries training for men and women in the region, hence the joint venture between the two institutions in 1999. The two groups of women who have since been through the course have found the training interesting and useful.

Since its inception in 1999, the course has been taught jointly by the USP Marine Studies Programme staff in Fiji Islands and the SPC Community Fisheries Section staff based in New Caledonia. Funding has come from Canada, New Zealand, Australia and the International Ocean Institute - Pacific Islands.

I wish to acknowledge the assistance of and major contribution by Tony Chamberlain, Lecturer of the USP Marine Studies Programme/Post Harvest Fisheries Project; Patricia Tuara, previous SPC Community Fisheries Adviser; Lyn Lambeth, SPC Community Fisheries Officer and other trainers in previous years.

I am grateful to the Marine Studies Programme technical staff who have given their time to training women and also the USP for facilities and equipment used during the course. I acknowledge Dr Jimmie Rodgers, Senior Deputy Director-General of SPC in Suva and the SPC Management for supporting CETC, by providing facilities and resources towards the implementation of the Fisheries course. We hope you enjoy this manual in the series.

Best wishes for a successful fisheries training programme.

Nu'ufou Petaia
Principal
SPC Community Education Training Centre (CETC), Narere, Fiji Islands
March 2001

Chapter One - Nutrition and Seafood

Introduction

Why learn about food?

Learning about food, its value and how the body uses it is important for the following reasons:



Marshall Islands: Majuro deli.

- to understand why some foods are more nutritious than others;
- to know how foods are used by the body;
- to enable us to make wise choices of foods to eat;
- to identify and use food with better nutritional value;
- to know when too much or too little food, or an unbalanced diet, is being eaten and how to correct the situation;
- to help community leaders teach others about good food choices;
- to help community leaders identify and solve some of the nutrition problems in their communities resulting from poor eating habits.

What's in food?

Food is what we eat or drink to supply the body with materials for growth, energy and health. The substances in foods needed for growth, energy and health are called nutrients. There are five main types of nutrients:



- carbohydrates
- proteins
- fats
- vitamins
- minerals.

Few foods contain only one type of nutrient. Most foods are mixtures of several types of nutrients. For example, fish contains protein, a little fat and some important minerals.

In addition to these nutrients, water is a very important part of a healthy diet. Although many foods such as fruits and vegetables contain a lot of water, we still need to drink water every day to keep healthy. Healthy sources of water include clean, fresh water, green coconut, fruit and vegetable juices, soups and milk. Drink less tea and coffee (especially if sugar is added), alcohol and sweet soda drinks.

What is nutrition?

Nutrition is about the study of food, its nutrients and how the body uses them, and about making wise choices about what we eat. The body needs a diet of the nutrients - carbohydrates, fats, proteins, vitamins and minerals - in the right amounts. Adequate nutrition depends on eating meals that supply enough of all nutrients. A balanced diet is one where the proper amounts of the right types of foods are eaten at regular intervals. Seafood is an important part of a healthy diet.

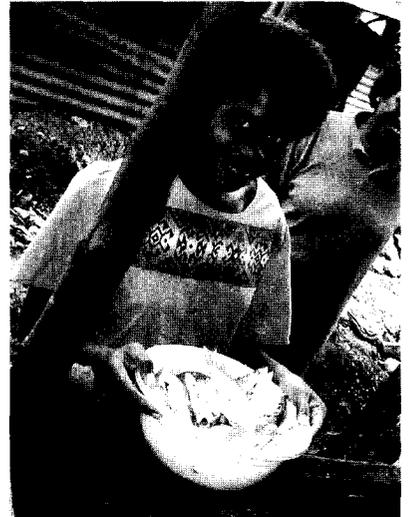
What is malnutrition?

Malnutrition can occur when the body doesn't get enough of these essential nutrients. Growth, reproduction and repair decreases and the rate of infection and nutritional disorders increases. Eating too much of certain nutrients, particularly energy foods, can also cause health problems - this is overnutrition. Both undernutrition and overnutrition are types of malnutrition.

Malnutrition occurs when:

- meals do not include the right balance and variety of nutrients - either too much or too little food is eaten, or foods low in nutrients are eaten;
- food is not properly digested; this can happen because of disease.

Instead of looking at nutrition in terms of nutrients, it is easier to think in terms of types of foods. There are three important food groups: foods that build your body, foods for protection, and foods for energy. You should eat a variety of foods from each of the food groups every day. It is important to remember that all foods contain a mixture of different nutrients, and that two foods in the same food group are not nutritionally the same, so variety is very important.



Fish protein helps us have strong healthy bodies.



Malnutrition.

1 Foods for body building

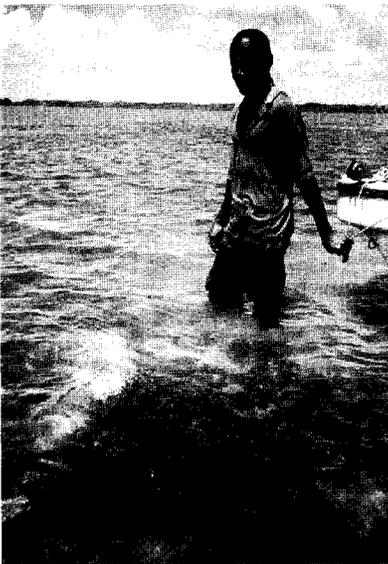
The foods in this group are particularly good sources of protein, which is important for growth, reproduction, maintenance and repair. These foods include fish and seafood, meat and chicken, eggs, nuts and seeds, dried beans and peas, milk, yoghurt and cheese, and soya products such as tofu. Proteins are essential for building and maintaining muscles and other tissues. **Enzymes**, substances that regulate chemical processes in the body, are also made up of proteins. Children require more protein in their diet (per kilogram of body weight) than adults because their bodies are still growing.

Eat two servings of different foods from this group every day.

2 Foods for protection

Foods in the protective group are particularly rich in vitamins and minerals that help protect your body from infection and sickness. Protective foods include all fruits, vegetables and sea plants.

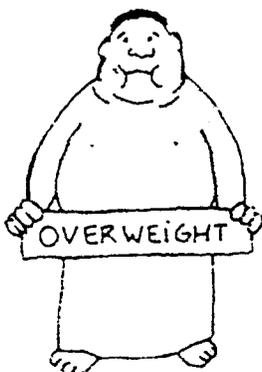
Include vegetables at two meals a day, and have fruit as a snack.



Sargassum, a sea plant.



Green vegetables.



Obesity.

3 Foods for energy

The energy food group includes foods that are rich sources of energy. The nutrients that provide the body with most of its energy are fats and carbohydrates. The body stores these, so that energy is available all the time. While fats are a more concentrated source of energy, carbohydrates provide the body with most of its energy.

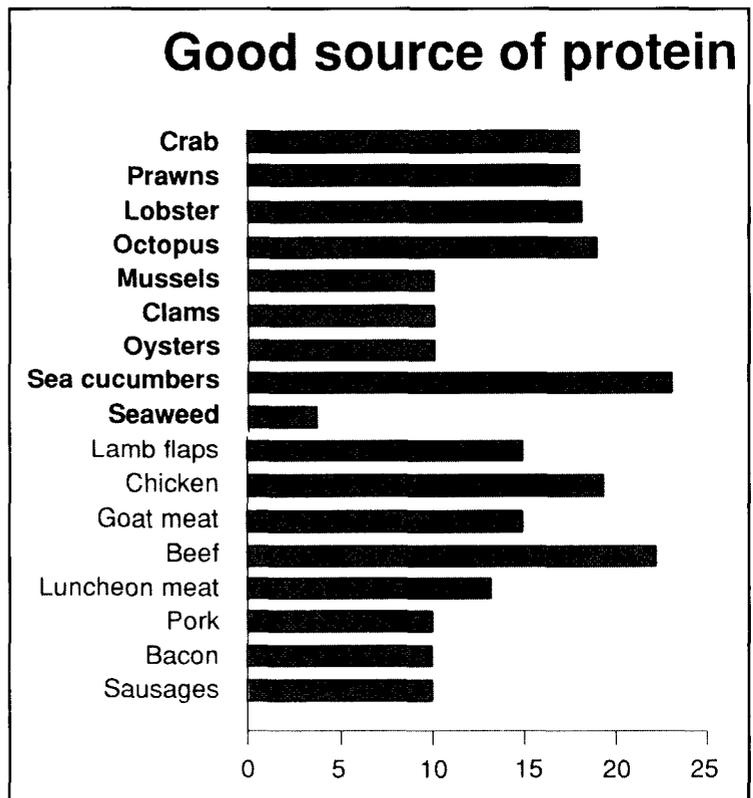
Eating too much fat is linked with heart disease and contributes to **obesity**, especially when combined with a lack of exercise.

Foods that contain a lot of carbohydrates include taro, yam and rice. Foods that contain a lot of fat include butter, margarine, oil, and coconut cream.

Include energy food containing carbohydrates with every meal.

Good nutrition

Good nutrition means eating the right amounts of food chosen from three food groups. Here is an example of a nutritious meal - a good serving of root crops, breadfruit or rice to give energy, some fish for body building and a larger serving of green vegetables for health. Foods to be eaten in small amounts are sugar, sweet foods, all kinds of fatty foods, oil, butter, margarine and fried foods. Remember to include snacks eaten between meals when looking at the food you consume each day. Choose healthy snacks such as fresh fruit and vegetables.



Protein content of seafoods per average serving (3—4 oz or 100 g) compared with meat. This will provide more than half the daily requirement for children 1 - 10 years of age.)

Nutritional value of seafood

Fish and other seafood are excellent sources of protein, vitamins and minerals and most kinds are low in fat.

Protein from seafood is of very high quality and easily digested by the body. Fish in particular is very good for children.

Vitamins work to keep all parts of the body healthy and free from disease. Oily fish such as mackerel are good sources of vitamin A and vitamin D. Fish livers are very rich in vitamin A. Vitamin A is needed for proper growth, healthy eyes and skin, and protection from infection. Vitamin D is important for bone growth and health. Seafood also contains some of the B vitamins which help the body to release energy from its stores. Niacin is another B vitamin that helps release energy from carbohydrates in the body.

It is important to note that some fish, for example shark contain, excessive amounts of vitamin A in the liver. These livers are poisonous to eat.



A variety of seafood.



Nukufetau, Tuvalu: Fish heads and seaweed are a good source of iodine.



Sea plants are rich sources of vitamins and minerals.

Minerals help strengthen bones, teeth, the blood, and many important body fluids. Small fish are good sources of calcium, which makes bones and teeth strong. Iodine and fluoride are also found in fish. Iodine prevents goitre, a disease of the thyroid gland, and fluoride helps prevent tooth decay. Clams, mussels, oysters and fish liver are good sources of iron. Iron is needed for healthy blood. Zinc, which is found in seafood, helps the body release energy and heal injuries. Selenium, another mineral found in fish, helps remove poisons from the body.

Oils are found in small amounts in most fish and seafood. Most seafood are low in saturated fats but contain instead the types of fats that are part of healthy meals, and reduce the risk of heart disease. Some types of shellfish contain a kind of fat called cholesterol, which was once thought to cause an increased risk of heart disease, but evidence now shows that the total amount of fat in the diet is more important. Fish is usually lower in fat than meat. Unfortunately, many people increase the fat in seafood dishes by frying them in butter or rich batters or serving seafood with coconut cream, creamy sauces and cheese. Frying fish and then cooking in coconut cream is not a healthy way of preparing fish as it significantly increases its fat content - save these types of recipes for special occasions only.

Activity

1. Write down two seafood recipes that are commonly prepared in your community.
2. Plan a meal using the two recipes (above).
3. Consider the nutrients available in this meal. Does this meal contain a mixture of food from the three food groups in their right proportions? Is this meal nutritious?
4. If necessary, modify this meal to ensure that a balanced diet is achieved.

Seafood in Pacific Island meals

Seafood has always been an important source of food for Pacific Island people. The great variety of fish, shellfish, other sea creatures and sea plants obtained from reefs, lagoons and surrounding seas, provide people with protein and many other important nutrients needed for health and physical development.

Nowadays, imported foods have replaced some of the more nutritious foods obtained from the sea. Many reefs have been over fished, and in some cases contaminated by pollution from the land. In order to preserve such an important food source, some countries are introducing programmes aimed at protecting their supplies of seafood. Regulations prevent catching undersized fish, crabs, lobsters and other marine animals, and allow them to reach maturity and breed. Some beach and reef areas are closed to fishing during breeding seasons to allow fish and shellfish to reproduce undisturbed. Public health regulations try to ensure that sewage and drainage from cities, towns and villages does not pollute the reefs and nearshore waters.

Seafood still constitutes the main source of protein in the meals of many Pacific Islanders. The low fat content of many fish species and the types of fat present form the basis of a healthy diet.

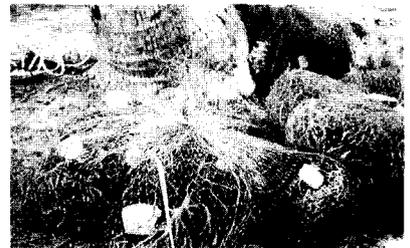
It is said that Pacific Islanders eat more seafood than any other people in the world - about 27 kilograms of fish per person per year. The exact amount varies from one Pacific nation to another, depending of the types of other food available. In PNG and Vanuatu, fish may be eaten a couple of times per week. In the Fiji Islands, Tonga and Samoa, rural people eat fish three or four times a week. In Kiribati and Tuvalu, fish is eaten every day.

Many Pacific Islanders living in towns don't eat as much fresh fish as people in rural areas because it is expensive to buy. Fresh fish is replaced by convenience foods such as tinned fish, imported fatty meats and rice. This has contributed to an increase in lifestyle diseases such as **diabetes** and heart disease among Pacific Islanders.

Many foods imported into Pacific countries are high in fat and low in essential nutrients. Some diseases such as diabetes, **hypertension**, stroke and heart disease are linked to the increased consumption of refined and processed foods such as white flour, white rice, tinned meats and packet noodles. People should be encouraged to eat more local foods such as fresh seafood. They should also be aware of the importance of protecting marine resources so they and their children can continue to enjoy the benefits of fresh seafood in their diet.



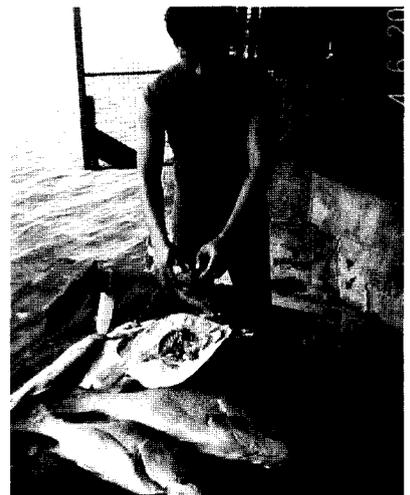
Eating too much processed food can be unhealthy.



Supplies of traditional food need to be protected.



Kiribati: Selling fresh fish by the road side.



Palau: Fresh fish is very nutritious.



Abaiang, Kiribati: Everybody needs a balanced diet.

Activity

Find a partner and discuss the following questions:

1. What are nutritious meals?
2. Which foods should you eat less of throughout the day? Which foods should you eat more of?
3. Why is fish consumption in Kiribati so different from Vanuatu?
4. How many days per week do you eat fresh fish? Is this fish bought or caught by your family?
5. What types of fresh fish do you eat?
6. How many days per week do you eat canned fish?

Population growth

Pacific Island populations grew rapidly when colonial authorities stopped tribal warfare and introduced Western medical care. The populations of Fiji Islands, Kiribati, Tonga and Samoa are now three to five times greater than what they were in pre-European times. Population growth has created increased pressure on limited island resources and has had a negative impact on the quality and quantity of available seafood for consumption. Some examples include:

- pollution of the marine environment, resulting in increasing reports of fish poisoning;
- high cash demand for fresh fish;
- overfishing of some reefs and lagoons; and
- importation of large quantities of rice and cheaper tinned fish.

Activity

Write down answers to these questions and discuss.

1. How has the population of your country changed over the years?
2. What is the population of your town or village?
3. Is overcrowding a problem in your capital, or elsewhere in your country? Suggest how this problem may be overcome.
4. Why have populations generally increased in more recent times?
5. Are there enough fisheries resources in your country to feed the increasing population? How about twenty years in the future?

Meeting the demand for food

Nearly all the seafood for local meals comes from coastal areas. These seafood resources are taken by two different types of fisheries:

- **subsistence** fisheries
- **artisanal** fisheries

Subsistence fisheries

Subsistence fishing is when local fishers catch or collect fish or seafood mainly for family food needs. Fish remains an important part of the diet in rural areas of many Pacific Island countries. Traditionally, the subsistence catch is shared among the fishers' family members or local community. The catch is divided according to social customs and obligations.

Because there is often no refrigeration in rural areas, the catch is generally eaten the day it is caught. Salting, smoking or sun-drying are ways to preserve the excess catch in some regions. Preserved fish are traded, sold, or stored for times when fishers are unable to fish, for example when the weather is bad.



Kiribati: Salted and dried fish.

Case study - School children in Samoa help gather fisheries data

Because of concerns over declining catches, the Fisheries Division undertook a detailed survey of subsistence fisheries in 1989. Because there were over 300 coastal villages, school children were asked to help survey household fishing habits and fish consumption patterns.

Fisheries officers visited the country's 12 secondary schools. They talked to Grade 10 students, explaining why it was important to monitor fish catch and fish consumption. The students recorded, among other things, daily subsistence catches and how much fish was eaten in their household.

The survey found that about 60% of rural households fished for subsistence. The average household went fishing 2 days per week, and each person ate an average of 36 kilograms of fish per year. Urban households ate fish 2.5 days per week, and each person ate an average of 19 kilograms per year.

Artisanal fisheries

Artisanal fisheries are those where fish or seafood is caught or collected mainly to sell. Artisanal fishers often use more technology than subsistence fishers, such as small motor powered boats to travel a little further out to sea. These are often family- or village-operated.

Small commercial fishing boats carry an icebox to keep the catch fresh. This ensures high quality and good market prices. High quality fish can be sold to restaurants, hotels, fish shops and butchers. Some may even be exported overseas.



Suva, Fiji: Fish market.

Activity

Fish Market Survey

1. Make a list of the common types of seafood available at the market place in your community.
2. Find out the following information about each type of seafood you have listed:
 - Where was it caught?
 - How was it caught?
 - Who caught it?
 - When was it caught?

Chapter Two - Seafood Preparation

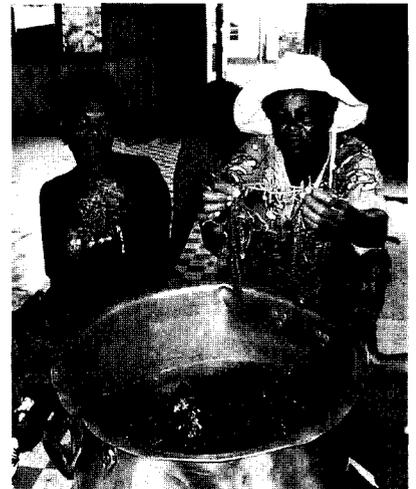
Introduction

This chapter has been written with the aim of making available new and old ideas concerning the use of seafood. Ideas for healthy seafood recipes are provided, some from the Pacific and some from countries outside the region. Most seafood is expensive if you have to buy it and it is useful to know about ways of making a delicious dish at a lower cost.

Some people who live in towns do not know about preparing and cooking the less known foods such as sea cucumbers which have a high food value and cost lesser than a whole fish. Recipes include a wide range of seafood now available in urban markets. In general the ingredients used are available in local shops at a reasonable price.

Most fish have soft flesh which is best cooked for a short time at a low to medium temperature. Firm-fleshed fish like tuna are more suitable for high temperature grilling. Cooking time depends on the thickness of the piece of fish. The time taken for moderate cooking heat to reach the centre of a large fish may be one hour, whilst a smaller fish may cook in half the time. It is important to know the temperatures and times needed to cook fish. This comes with experience. Exact timing can only be given in recipes that specify the thickness of the piece of fish to be cooked.

Fish is not like meat because every type of fish requires different cooking times and some are easily spoiled by overcooking. Cooked fish should be moist and tender, not hard and dry.



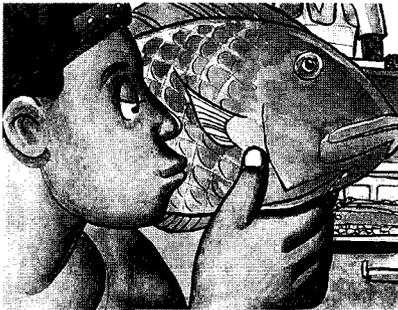
Seafoods often require preparation before cooking.

Using the recipes in this book

- Most recipes are enough for 4 to 6 people.
- The recipes are a mixture of Pacific Island recipes and recipes from other countries where seafood is an important part of the diet.
- Reduce the amount of salt and fat used in these recipes for healthier meals. If coconut cream is used, dilute it with water - one part cream and one part water.
- Special attention has been made to keep the recipes easy to make and low in cost.
- Most of the ingredients in the recipes are available throughout the Pacific Island region. For more unusual ingredients, possible substitutes are given.
- Tomatoes are frequently used in the recipes, but where these are

not obtainable, a little lemon juice or vinegar can be added to the recipe. Some recipes call for the skin to be removed from the tomatoes before using, but this step can be left out if preferred. To take the skin off tomatoes, put in boiling water for 2 minutes, then wash in cold water and the skin can then be easily removed.

- Spring onions are small green onions usually sold in bunches with long thin leaves.
- Most of the recipes are simple and easy to make and have been tested.
- All ingredients are measured in standard 250 ml (8 fl oz.) cups [250 ml = 1/2 fish tin (11 cm, 425 g, 15 oz)].



Fresh fish.

Guide to selection and preparation

Fish goes bad very quickly. When buying, make sure the eyes are bright and clear, the flesh is firm and there is no strong smell. The guts and gills should have been removed after catching.

Some seafood can be poisonous so avoid eating these at the times and from the places they are known to be bad.

In general, better value for money is obtained by purchasing larger fish such as tuna. Large fish have less wastage in bones.

Fresh fish will keep for a day or two if spread out on a plate, loosely covered and placed at the bottom of the refrigerator. If there is no refrigeration available keep the fish covered with a damp cloth, in a cool place, and use the same day. Most fish can be used after scaling, but in some instances skinning is preferable.

Scaling - Hold the fish firmly with a piece of paper or cloth. Scrape against the lie of the scales, from tail to head, with a knife, spoon or scaler.

Skinning - Remove the head, fins and tail. With a sharp knife loosen the skin round the sides and head end. Grip the loose skin with a piece of cloth and pull from head to tail.

Filleting - With a sharp knife, cut the flesh through to the middle back bone. Make an incision from head to tail and cut the flesh off the bone working towards the fins.

Fish steaks - Cut fish crosswise into steaks 1 cm (1/2 inch) thick.

Frozen fish - The flavour of frozen fish depends on the type, freshness and correct freezing. Fish should be packed in plastic before freezing. Some kinds of fish, such as parrot fish, do not freeze well. The flavour and colour of frozen fish tends to change after storage for several months. The fat changes giving the fish a yellow colour and a different flavour. Never re-freeze frozen fish that has been thawed.



Slicing Fish.

Pacific Island fish

Some of the best fish in the world are to be found in the oceans surrounding the Pacific Islands. Fish may be divided into two main groups: ocean fish which are caught offshore, and reef fish, which are caught on reefs and in shallow lagoons.

The flavour and texture of fish depends on its species and what it eats. Some of the larger ocean fish such as shark and tuna, have relatively more oil in their flesh than those that live in more shallow water nearer reefs.

In some areas or at certain times of the year some types of fish may become poisonous to eat. It is worthwhile seeking local advice about the fish sold in the market.

Add your own local names in the space beside each fish name:

Ocean fish

Spanish mackerel

Dark grey back and silver belly, and smooth skin. Keep the skin on and cut into steaks crosswise, fillet, or cut into large pieces for baking. Spanish mackerel has an excellent flavour and texture. It may be cooked by any method. Makes good kokoda (see recipes).

Barracuda

Dark grey back, silver belly, fine scales, sharp snout-like mouth. Scale or skin, fillet or cut into sections. Good flavour, fine white flesh, medium fat. Cook by any method.

Tuna (yellowfin, skipjack, bonito, dogtooth)

Yellowfin tuna has light red flesh and fine flavour. Skipjack and bonito have darker flesh and a stronger flavour. Dogtooth tuna has fine white flesh and good flavour. Skin, fillet or cut in cross sections for steaks. If desired, remove the dark flesh along the backbone, as this tends to have a strong fishy flavour. Cut into large sections and bake or steam. Yellowfin and skipjack make good raw fish dishes. Dogtooth is preferred for kokoda.

Jackfish, trevally (can also be considered a reef fish)

Grey or black back, silver belly, smooth skin. Skin or scrape, fillet or cut into steaks. Fine white flesh, but fairly dry. Best cooked in coconut cream or a sauce. May be fried.



Ocean fish.



Reef fish.

Reef fish

Coral trout, cod

Colour varies from red, brown or blue. The best type has brownish blue spots. Skin or scale. Very fine flesh of good flavour. Best filleted and fried, also bakes well.

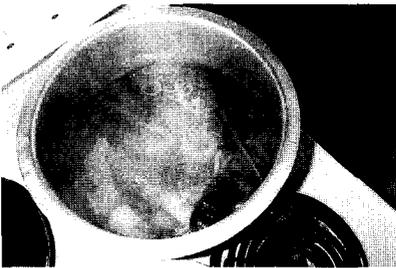
Other

Sting ray

Remove fins and cut into fillets or steaks. The flesh has a good flavour and is fairly moist. May be fried, baked or steamed.

Cooking fish

To make soup - Any kind of fish can be used to make soup. The flavour of the soup depends on the stock, which can be made from fish scraps such as bones, fins, tails and heads, and flavoured with vegetables, herbs and spices. Fish stock may also be used for cooking green leaves, such as taro leaves.



Fish soup.

Fish stock

1 medium fish head

Scraps from 1 or 2 fish

8 cups water

1 onion sliced

1 chilli chopped (optional)

2 teaspoons black **peppercorns**

2 cups chopped vegetables, such as Chinese cabbage, carrot, eggplant

1/2 teaspoon salt or to taste

Put all ingredients in a pot and boil over medium heat for 1 - 1½ hours. Cool and strain off the stock.

To grill - Whole fish should be scored with the tip of a sharp knife and brushed lightly with oil before placing on a preheated grill or hot coals. Fillets and slices should be 3-4cm thick. **Marinate** before grilling (see recipes). To keep fish moist, baste with a half lemon on the end of a fork dipped in oil.

To bake - Place fish on a piece of aluminium foil or on leaves in a baking pan. Cover with a **marinade** (see recipes) sauce. During baking, baste the fish with the sauce. Add water if necessary to thin the sauce. The fish is cooked when a skewer or sasa (coconut leaf stick) goes through the fish.

To cook in foil or leaves - Place fish on a sheet of foil or softened banana leaves. Brush with lemon juice and oil or coconut



Preparing fish for baking.

cream. Sprinkle with chopped herbs such as parsley, dill or chopped onion and chilli, salt and pepper. Wrap in foil or leaves making sure that steam and liquid is kept in the “parcel”. Bake in a moderate oven, or place on top of cassava while cooking and allow to steam. Test for cooking by inserting a skewer or a sasa.

To fry - For best results use a good vegetable oil or a mixture of oil and butter. Never use oil that has been overheated or contains burnt crumbs or batter. Pan frying requires **very** little oil, the hot pan cooks the fish. If you have a good non-stick pan, you will not need any oil. To fry fish in flour, batter or breadcrumbs, heat oil in a pan and test for frying temperature with a small piece of bread. When this browns, oil is hot enough to fry fish. To prepare fish for frying, first soak for a few minutes in salted milk, dry with cooking paper, roll in flour, shaking off excess. Fry floured fish until golden brown on both sides.

For battered fish, dip fish in batter and fry in shallow hot oil until golden brown. Drain off oil on brown or soft cooking paper or use dried banana leaf.

Batter

Sift 1 cup of flour with a pinch of salt. Beat one egg and add 1/3 cup of milk and stir into flour until mixture is smooth.

For fish in breadcrumbs, roll floured fish in egg beaten with a little milk or water. Dip into dried bread crumbs and fry in shallow hot oil till golden brown. Drain off oil on brown or soft cooking paper or use dried banana leaf.

Remember, for a healthy meal we should watch the amount of fat in our diet. Fried foods significantly increase the amount of fat in a meal and this cooking method should only be used once or twice a week. To reduce the amount of fat in the meal, it is possible to grill or bake breadcrumbed or floured fish.

To poach - Flavour water with herbs. Put fish into a shallow pan and partially cover with water. Put the fish into the water and **simmer** until it is cooked. During cooking, spoon the hot water over the fish and turn it over once or twice. A small fillet should cook in five to eight minutes. Test by inserting a skewer or a sasa. Serve with a well-flavoured sauce or coconut cream. Fish may also be poached in coconut cream diluted with water, or milk.

Marinating mixtures - The taste and moist texture of fish may be improved by marinating with different flavours. Here are some suggestions:



Frying fish steaks.

Island Marinade

1 coconut + 1/2 cup of water to make cream
1 small chilli
1 teaspoon crushed ginger (optional)
1 small onion finely chopped
3/4 cup lemon juice
1/2 teaspoon salt
1/2 black pepper

Asian Marinade

2 tablespoons medium dark soy sauce
1/4 cup oil (peanut oil if available)
1 small piece garlic crushed
1 teaspoon crushed ginger
1 tablespoon lemon juice
1 teaspoon sugar

Lemon Marinade

1/4 cup lemon or lime juice
1/2 cup oil
1/2 teaspoon salt
1 small chilli chopped (optional)
Black pepper
1 tablespoon chopped fresh parsley or basil (optional)

Use the same method for each different marinade recipe: mix all ingredients together, pour over whole fish or brush on steaks or fillets 2-3 hours before cooking.

Healthy eating

Fish is a nutritious food. To make healthy meals, serve with a generous portion of vegetables and some energy food such as taro. In preparing your fish, keep in mind some of the healthy eating advice and eat less fat and salt. Some of the recipes given here are prepared with extra fat and salt and it is a good idea to remember that these dishes should not be eaten too often; save them for special occasions.

Fat is added to foods in the form of butter, margarine, oil, and coconut cream - try to use them less. Salt is added directly during cooking, or indirectly as high-salt ingredients such as soy sauce and tomato paste.

Chapter Three - Seafood Recipes

Fish

Marinated Raw Fish Recipes

Sashimi - (A popular Japanese dish)

Yellowfin tuna is considered to be the best fish to make sashimi with, but other firm fleshed fish may be used. Quarter fillets by cutting out the bone and bloodline. With a very sharp knife, cut thin slices across the grain. The fish slices are then dipped in a hot sauce (wasabi).

Sashimi Sauce

1/2 cup soy sauce
1 piece of garlic crushed
1 teaspoon crushed ginger
2 tablespoons grated white radish
Mix all ingredients together

Serve sauce in a small bowl on a plate of sliced fish with toothpicks. Slices of fish are picked up and dipped in the hot sauce. Remember, soy sauce contains a lot of salt.

Kokoda - (Pacific Island style)

750g of any firm white fish or yellowfin tuna
1 cup lemon or lime juice
1 cup thick coconut cream (miti)
2 spring onions
1 tomato chopped

Cut the fish into 2cm cubes. Sprinkle with salt and leave it for a few minutes. Pour over the lemon juice and leave for 2-3 hours or until the fish has turned white. The time taken depends on the kind of fish. Firm-fleshed fish takes longer. When ready, the fish pieces should be moist and tender. If left too long, the fish becomes rather dry. Put the fish in a strainer and squeeze out the lemon juice. Mix with the miti (see next recipe). Serve garnished with chopped green onion and a little tomato

Note: Kokoda should be kept cool, but not very cold. Coconut cream becomes hard at low temperatures.

Miti - Recipes for this Pacific Island sauce vary in different countries of the region. The following recipe comes from Fiji:

1 grated coconut
1 small onion chopped



Nukefatau, Tuvalu; Slicing yellowfin tuna.

- 1-2 small chillies chopped
- 1 medium sliced lemon with skin on
- 1/2 teaspoon salt

Mix all ingredients well and leave for an hour. Squeeze out the cream and strain. A weaker sauce can be made by adding 2 cups of warm water to the ingredients before squeezing. Remember, a mature coconut contains a lot of fat.

Tahitian Fish Salad

- 500g raw white fish - walu or mullet - cut into 2cm cubes
- 3/4 cup lemon or lime juice
- 1/2 small onion finely chopped
- 1 medium carrot grated
- 1 small green capsicum chopped
- 1 small cucumber cut into cubes
- 1 cup shredded Chinese cabbage
- 2 tomatoes sliced
- 1/2 cup French dressing or miti (for a healthier meal this may be omitted)

Cut up the fish and sprinkle with a little salt. Pour over the fish lemon or lime juice and leave 2-3 hours. Strain off the juice and squeeze fish to remove moisture. Put in a bowl and mix in raw vegetables dressing or miti. Serve heaped on lettuce leaves or in separate dishes.

French Dressing

- 1 piece garlic
- 1 teaspoon salt
- 3/4 cup lemon juice or vinegar
- 3/4 cup of a good vegetable oil
- Black pepper

Crush garlic and add salt. Beat in lemon juice and oil. Always beat well before use or keep in a bottle and shake.

Note: Vary the flavour of the dressing by adding one of the following: 1 tablespoon chopped fresh herbs or 2 teaspoon curry powder.



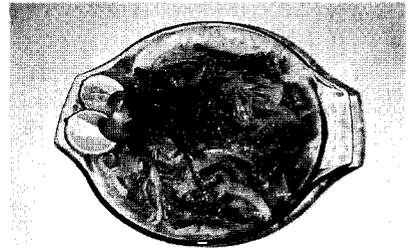
Ingredients for Ceviche.

Ceviche - (A traditional Mexican recipe)

- 400g fish fillets cut across the grain in thin strips or 2 cm cubes (suitable fish are tuna, walu, cod or other firm-fleshed fish)
- 1 teaspoon coriander seeds
- 1 teaspoon black peppercorns
- 3/4 cup lemon juice
- 1 teaspoon salt

- 1 tablespoon vegetable oil (preferably olive)
- 4 spring onions sliced
- 4 tomatoes skinned and chopped
- 1 small chilli seeded and chopped
- 2 tablespoons chopped coriander or parsley

Put the prepared fish in a bowl. Crush the coriander and pepper to a powder (heat spices in a pan till dry and crisp for easy crushing). Mix all ingredients, except onions, and pour over fish. Keep for 24 hours in a refrigerator, if available, and turn over occasionally before serving. Before serving, fry the onions in hot oil and add to the bowl of prepared fish. Serve as an appetiser in small dishes garnished with lemon slices and fresh coriander.



Ceviche.

Note: *Ceviche is often served with ripe avocado.*

Cooked Fish Recipes

Spiced Fish and Cucumber

- 750g prepared fish, fillets or steaks
- 1/4 cup lemon juice
- 1 cup flour
- 2 tablespoons curry powder
- 1/4 cup vegetable oil
- 1 small onion finely chopped
- 1 medium cucumber cut into small cubes
- 2 cups water or coconut cream
- Parsley or green coriander

Cut the fish into servings and sprinkle with salt and lemon juice. Sift flour with curry powder and salt. Roll fish in flour mixture until well covered. Heat oil in a pan and fry onion until golden brown. Take out of pan. Fry fish until brown on both sides. Add cucumber, onion, and coconut cream or water or fish. Cover pan and cook over very low heat until fish is soft (about 5 minutes). Garnish with chopped parsley or coriander.

Baked Fish with Tomato

- 1 whole fish 1-1.5kg
- Salt and freshly ground black pepper
- 2-3 tablespoons lemon juice
- 1 medium onion chopped
- 1 piece garlic crushed
- 1 tablespoon vegetable oil (preferably olive oil)
- 3 medium tomatoes chopped
- 1 tablespoon chopped parsley
- 1/2 cup water + 2 tablespoons lemon juice (or use white wine)

Prepare the fish and sprinkle the inside and out with lemon, salt, pepper. Put in a baking dish lined with greased foil or a softened banana leaf. Heat oil in a pan and fry onion garlic, tomatoes and parsley on low heat for a few minutes. Add lemon water or wine and cook for a few minutes. Spoon the mixture over the fish and bake in a moderate oven (180°C/350°F) for 40 minutes or till fish flakes easily when tested with a skewer.

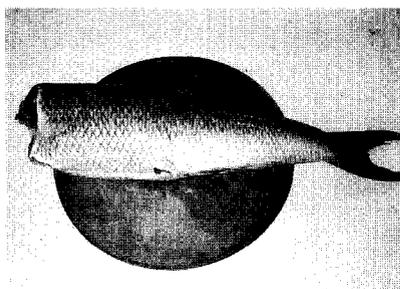
Variation - This is a good way of preparing fish to cook in an earth oven. Wrap the fish firmly in banana leaves or foil.

Baked Ginger Fish

- 1 whole fish 1-1.5kg
- 1 lemon
- 1 tablespoon vegetable oil
- 1/4 cup medium soy sauce
- 3/4 cup pineapple juice, lemon and water, or white wine
- 1 piece garlic crushed
- 1 small chilli chopped
- 2 teaspoons crushed fresh ginger
- 2 teaspoons sugar

Prepare fish, leaving on the head and tail. Rub with salt, and a lemon cut in half. Keep cool for an hour in the refrigerator, or cover with a damp cloth and keep somewhere cool. Mix together soy sauce, ginger, garlic, oil and fruit juice or wine. Beat well or use a blender. Place the fish in a large baking dish and pour over soy mixture. Bake in a moderate oven (180°C/350°F) for about 40 minutes. Baste frequently. If sauce dries up, add water. Just before the end of cooking, sprinkle sugar over fish to make a glaze. Serve on a board or large flat dish garnished with chopped parsley or coriander. Increase the pan sauce by adding extra water or fruit juice. Serve this with the fish.

Note: Wrap the tail in foil to prevent over cooking.



Fillet fish.

Fish Bele, Breadfruit or Dalo Kovu

(Cooked in banana leaves)

- 800g fish fillets (walu, cod, mullet or tuna)
- 800g prepared breadfruit
- 100g prepared bele leaves
- 2 medium onions chopped
- 1 chilli (optional) chopped
- 3-4 medium tomatoes sliced
- 1 cup coconut cream
- Salt and pepper
- 12 young banana leaves

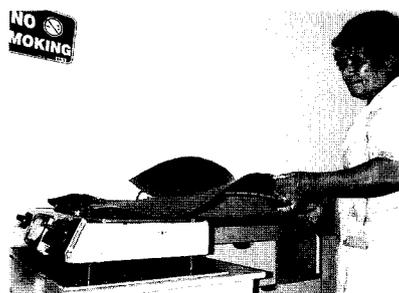
Use young whole banana leaves. Slice off the vein on the underside and soften leaves over a flame. If the leaves are large, cut into suitable sizes for each kovu (parcel). Divide ingredients into 6 equal portions. Cut breadfruit or dalo into thin slices about 2cm thick and put in the middle of each leaf. Cover with a layer of bele leaves (use about 4). Put fish on top of bele and cover with chopped onion and sliced tomato. Sprinkle with salt and pepper. Place each kovu in a shallow bowl and pour in coconut cream. Gather the leaves together from the centre to form a bunch, fold over and tie firmly just above the food. Repeat the above steps using a second banana leaf. Cook in a covered steamer (see below for an improvised steamer) for 30 minutes. To serve, open each kovu, trim off leaves and put on individual plates accompanied by a lemon wedge.

Note: A professional steamer can be replaced by putting a wire cake rack or half coconut shells in the bottom of a large pot. The water should mostly cover the rack or nutshells. Close the pot with a firm lid and watch to see that the water level is maintained.

Sweet and Sour Fish (Chinese style)

- 2 tablespoons vegetable oil
- 3 spring onions chopped
- 500g fish fillets cut into five 5cm pieces
- 2 tablespoons sherry wine or 1 tablespoon water + 1 tablespoon lemon juice
- 2 tablespoons soy sauce
- 3 tablespoons vinegar
- 150ml water or chicken stock (a stock cube could be used)
- 1 teaspoon chopped fresh ginger
- 2 tablespoons sugar
- 2 teaspoons corn flour, cassava or arrowroot flour
- 1 teaspoon sesame oil (optional)

Heat the oil in a wok or large frying pan. Add chopped onion and stir-fry until golden, then add the fish and sherry or lemon water. Reduce heat and cook till liquid evaporates. Add soy sauce, half the vinegar, chicken stock, ginger and half the sugar. Bring to the boil and simmer 5 minutes. Now add remaining sugar, vinegar, sesame oil and cornflour mixed with water. Stir into fish mixture and cook until liquid is thickened. Serve with rice or noodles.



Soften leaves.



Cut breadfruit or dalo.



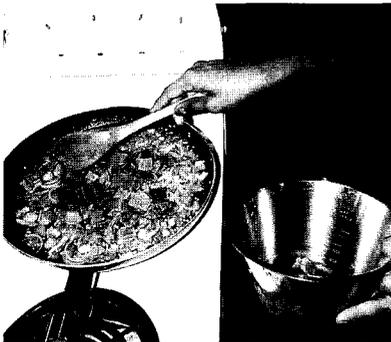
Tie leaves in a bunch and steam.

Stuffed Tuna Eggplant

- 3 medium sized eggplants
- 1 medium onion chopped
- 1 piece garlic crushed
- 1/2 teaspoon cracked coriander seeds
- 1 to 2 tablespoons vegetable oil
- 200g raw tuna finely cut
- 1 tablespoon chopped parsley
- 2 tablespoons tomato sauce or paste (see next recipe) or 1 large tomato finely chopped
- 1/2 cup soft bread crumbs or cooked rice
- 1 egg beaten
- Water



Fry onion, coriander seeds and garlic.



Add tuna.

Cut eggplant fruits in half lengthwise and scoop out the flesh leaving about 1cm inside. Keep the inside flesh and chop into small pieces. Put the eggplant shells in a baking dish. Put oil in a pan and heat. Add onion, garlic, tomato and coriander seeds. Stir-fry for a few minutes, add eggplant flesh and continue stir-frying until it is almost cooked. Put tuna into pan and mix well with other ingredients. Mix in rice or crumbs and beaten egg. Season with salt and pepper. Spoon mixture into eggplant shells. Pour water into pan to a depth of 1 cm, cover with foil or a lid and bake at 180°C (350°F) for 45 minutes. Remove cover and return to oven to brown on top.

Fresh Tomato Sauce

- 4 medium sized ripe tomatoes, or 1 cup canned tomato or tomato purée
- 1/2 small onion
- 1 tablespoon vegetable oil
- 1 small chilli
- 1/2 teaspoon salt (do not add if using canned tomatoes or purée)
- 1 teaspoon sugar
- 1 1/2 tablespoons flour or cornflour
- 1/2 cup water

Cook the tomatoes in a little water until soft. Mash canned and cooked tomatoes through a strainer to make a **purée**. Heat oil in a pot and add onion and chilli. Stir-fry for a minute. Add tomato, salt, sugar. Mix flour or cornflour with water until smooth. Add to other ingredients in pot. Cook over medium heat stirring all the time until sauce boils. Simmer for a few minutes.

Samoan Lemon Grass Fish Soup

750g tuna steak cut into serving pieces
 10 lemon leaves
 4 stems lemon grass
 8 cups water
 1 small chilli
 2 onions chopped
 1/2 teaspoon pepper
 1/2 teaspoon salt or to taste
 10 pele (bele aibika) leaves
 1 small bunch Chinese cabbage chopped
 1 cup chopped tomatoes (fresh or canned)
 Juice of 2 lemons
 1 can coconut cream (or cream from 2 coconuts)

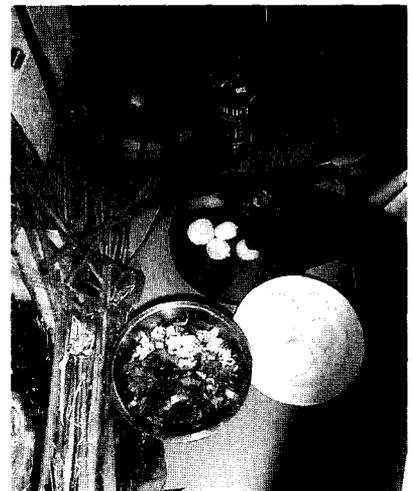
Put the lemon leaves, lemon grass, water, onion, salt and pepper in a large pot and boil for about 15-20 minutes. Take out the lemon leaves and grass. Put in the pele and cabbage. Bring to the boil and simmer for 5 minutes. Add fish and simmer until cooked, 2 to 5 minutes. Just before serving, add the tomato, lemon juice and coconut cream. Heat to boiling point and serve.

Note: Acid fruits make green vegetables lose the green colour. To keep a good green colour add lemon, tomato, etc. just before serving.

Pan-Fried Tuna or Sword Fish with Chunky Pineapple Topping

6 tuna or sword fish steaks, about 3cm thick
 Some black peppercorns (or crushed pepper)
 2 lemons
 2-3 tablespoons vegetable oil

Press some peppercorns into the steaks and sprinkle with lemon juice. Heat the oil in a wok or frying pan until medium hot. Fry steaks for about 3 minutes on each side or until fish is cooked. Serve with a spoon full of chunky pineapple topping on each steak (see recipe next page).



Preparing ingredients.



Pressing peppercorns.



Frying steaks.



Pineapple topping.

Chunky Pineapple Topping

- 2 cups diced pineapple
- 1 cup white vinegar
- 2 pieces garlic crushed
- 2 tablespoons sugar
- 1 tablespoon soy sauce

Put all ingredients in a pot and cook over low heat for 15 minutes stirring occasionally. Drain off the liquid before serving.

A Fish Curry from India

- 500g firm white fish cut into 2cm cubes
- 2 teaspoons turmeric
- 2-3 medium tomatoes or 1/2 can (410g) tomatoes
- 1 tablespoon lemon juice
- 1/3 cup vegetable oil
- 1 tablespoon crushed ginger
- 2 teaspoons crushed garlic
- 2 large onions chopped
- 2 medium green chillies, seeded and chopped
- 1 teaspoon salt
- 2 cup water
- 1/2 cup dilute coconut cream (optional)

Mix prepared fish with turmeric and lemon juice and leave for an hour. Heat oil in a pot and add ginger, garlic, chilli and onion and stir-fry until mixture darkens. Add fish, tomatoes, water and salt. Cook over low heat for about 10 minutes or until fish is cooked. Just before serving stir in coconut cream.

Shellfish

Shellfish provide one of the most important foods of the Pacific Islands. The meat is a rich source of protein, minerals and vitamins. Because shellfish filter the surrounding water for their food they are particularly vulnerable to pollution or poisons in the water. The shellfish themselves are not affected but they can pass on germs or poisons to the people eating them. Germs from drains flowing into the sea, rubbish dumps near the beach and latrines placed over the water, can cause food poisoning, dysentery and cholera. It is, therefore, very important that shellfish should come from clean reef or nearshore waters.

Important points about using shellfish

Shellfish must be alive when prepared. Keep baskets of shellfish damp with seawater and cover with leaves in a cool place. Use as soon as possible. Fresh water mussels, kai, will stay alive for several days when stored in clean fresh water. Change the water daily. This removes sand and mud. Wash well before cooking in shells.

To open shellfish, cut the mussels at the back of the shell with a sharp knife, then wash the meat to remove sand or place in a pot and bring to boil. Take out the meat and clean before final cooking.

Always cook shellfish collected from lagoons or reefs near towns or villages. Germs from rubbish and latrines get inside the shellfish causing illness. The germs can be killed by boiling. Do not eat raw shellfish unless it comes from a far off reef or beach.

Shellfish Recipes

Kai Soup

- 2 cups prepared raw shellfish from the sea or river
- 3 cups water
- 1/2 medium chopped onion
- 2 1/2 cups milk or thin coconut cream
- 1 chilli seeded and chopped
- 4 tablespoons flour
- 4 tablespoons butter or margarine
- 2 tablespoons lemon juice

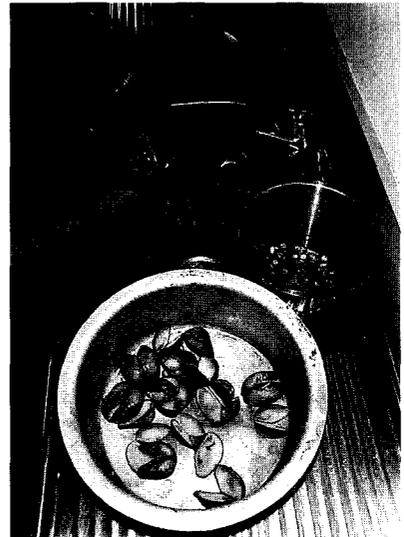
Put shellfish, water, salt and 1/2 the onion in a pot and cook at the simmering point until soft. Strain, keep stock, and chop shellfish into fine pieces. Heat butter in pot and add onion and chilli, fry a few minutes then stir in flour. Slowly stir in fish and stock. Keep on stirring until boiling. Add milk or coconut cream and lemon juice. Serve hot, garnished with chopped parsley or green onion.

Note: River kai should be left in a bucket of water for at least one day to remove sand.

Italian Seafood Sauce

- 1 medium piece garlic crushed
- 1 medium onion chopped
- 6 peeled and chopped tomatoes or one 410g can tomatoes
- 1 teaspoon salt
- 1/2 teaspoon sugar
- 1 chilli chopped (optional)
- 1/4 cup lemon juice
- 1 cup water
- 2 cups raw shellfish (shelled)
- 2 tablespoons chopped basil or parsley

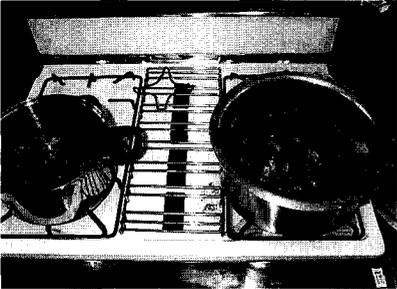
Combine all ingredients except fish and herbs. Put in a pot and simmer for 20 minutes. Add shellfish and simmer for 3-5 minutes. Stir in herbs and serve with pasta, rice or cooked root crops or breadfruit.



Removing meat from shellfish.



Ingredients.



Cooking shellfish.



Serving noodles.



Tonga: Sea cucumber.

Stir-fried Shellfish and Noodles

- 2 1/2 cups cooked shellfish
- 3 tablespoons oil
- 200 grams packet noodles
- 1 teaspoon cornflour or cassava starch
- 1 tablespoon water
- 2 pieces garlic crushed or chopped
- 1 chilli chopped
- 2 teaspoons crushed fresh ginger
- 1 cup dilute coconut cream
- 2 tablespoons soy sauce
- 1 tablespoon lemon juice
- 2 tablespoons chopped basil

Cook shellfish until just tender (simmer 1 minute. DO NOT OVERCOOK). Mix cornflour with water and set aside. Cook noodles and drain off water. In wok or large frying pan, heat oil and add garlic, chilli and ginger. Stir-fry a few minutes. Add coconut cream, soy sauce and cornflour. Stir well until simmering. Add shellfish, noodles, lemon juice and basil. Heat till just boiling and serve.

Note: coconut cream could be replaced by fish stock or water.

Other Ideas for Cooking Shellfish

Cook taro leaves (rourou) and coconut cream. Flavour with chopped onion. A few minutes before serving, stir in shellfish. Serve with lemon.

Put 3-4 medium sized taro leaves on top of each other and place 2 tablespoons of cleaned shellfish in the middle. Sprinkle with salt, pepper and finely chopped onion. Repeat until you have 6 separate piles of leaves with seasoned shellfish filling. Fold leaves into parcels; if needed tie with banana fibre or cotton. Place in a large pot and cover with coconut cream. Cook at medium temperature until taro leaves are soft.

Sea cucumber or beche-de-mer (dairo - Fiji)

This seafood grows on clean sand in deep water on the reefs, and in shallow lagoons. There are many different kinds found in tropical waters, and colours vary from grey-white, brown to black. The flavour and texture of the sea cucumber also differs, some being more preferable than others. In general, the grey-coloured kinds are favoured in the Pacific Islands.

Large quantities of sea cucumber are dried and exported to the Chinese market where they are considered to be a delicacy. The

processed sea cucumber, **beche-de-mer**, requires special preparation to make it soft enough to eat. It is included in soups, Chinese vegetables and fish recipes. There are many traditional Pacific Island ways of cooking this seafood.

Preparation

Put in a large pot with plenty of water and simmer for 3-4 hours. Clean the rough skin by rubbing with a shell or scraper. Cut down the side and remove the gut. To soften the tough flesh, wrap in pawpaw (papaya) during cooking. A substance in the leaves and fruits softens the tissues. The cooked sea cucumber keeps well in cool storage. When dried it should be soaked in water until soft and then cooked in the usual way.

Sea Cucumber Recipes

Steamed Stuffed Sea Cucumber

6 medium sized prepared sea cucumbers
 2 medium onions very finely chopped
 1 cup of other vegetables (Chinese cabbage, beans, carrot finely chopped)
 1-2 chillies
 A small amount of fresh fish or 1 small can of meat or fish (optional)

Mix all ingredients together and stuff inside the sea cucumber. Tie up each one with cotton or banana leaf fibre. Wrap in a softened banana leaf and steam for one hour.

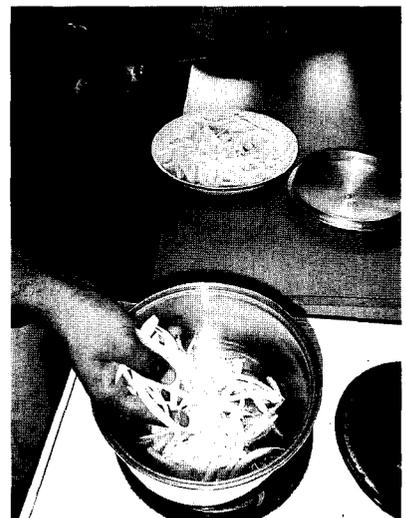
Variation

Wrap sea cucumber in a banana leaf and slowly cook in a pot with 4 cups of dilute coconut cream until soft.

Sea Cucumber with Hot and Sour Cabbage

4 boiled sea cucumber cut in slices
 4 tablespoons vegetable oil
 2-3 chillies chopped with seeds removed
 1/2 teaspoon whole black peppercorns lightly crushed
 2 medium Chinese cabbage cut into 4cm pieces
 3 tablespoons soy sauce
 3 tablespoons sugar
 3 tablespoons vinegar
 1/4 teaspoon sesame oil (optional)

Heat the oil in pan or wok. Add chillies and pepper and fry for a few seconds. Increase the heat and add sliced daire and cabbage. Stir-fry for 5 minutes. Add all other ingredients. Mix well and cook for 1 minute. Serve hot or cold.



Adding cabbage.

Sea urchins (cawaki - Fiji)

Sea urchins are found on many reefs throughout the world. Those most commonly used in the Pacific Islands look like a spiky brown ball. The inside **gonads** or **roe**, known as “corals”, are usually eaten raw, flavoured with a little lemon juice.

Preparation

When buying sea urchins make sure the animal is alive. Look for frothy bubbles on the top side. Wash well to remove sand. Take off the top round shell with a sharp knife and remove the corals with a spoon.

Cooking and Serving

Many people like to eat the corals with a teaspoon straight from the prepared sea urchin shell. Seasonings include salt, pepper, and lemon juice.



Fiji: Bundles of sea urchins.

Sea Urchin Recipes

Omelette

- 15 sea urchins
- 3 eggs
- 2 tablespoon water
- 1/4 teaspoon salt
- Ground black pepper
- Enough oil to just lightly cover the base of the fry pan

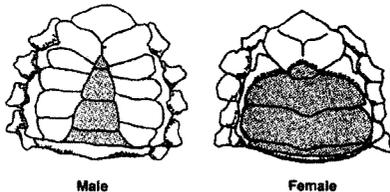
Take the corals carefully out of the shells, put in a bowl and wash with water. Beat eggs and add water. Stir corals into the egg mixture and season with salt and pepper. Heat oil or butter in a heavy pan. When hot (beginning to smoke) pour in omelette mixture. Reduce heat. Cut bubbles and scrape around the sides of the omelette so that raw mixture cooks on pan base. When almost firm, turn the omelette over so that it browns on the other side. Fold over before serving with lemon slices. Serve with a salad or cooked green vegetables.

***Note:** This recipe serves 2 persons.*

Crabs

There are many different kinds of crabs in the Pacific. The most common are the mangrove and land crabs. The coconut crab, found in some islands has the most flesh. The amount of flesh in a crab depends on the season, the sex and type. It is typical for female crabs to have more flesh than males, except when breeding. Identify the sex by the markings on the underside of the crab (see picture).

Male and female crab identification:



Important points about choosing and storing crabs

- Do not buy undersized crabs as they don't have much flesh and should be left to grow to adult size.
- Do not buy females with eggs - in most countries it is illegal to take females with eggs as these should be left to ensure the crab population continues.
- Make sure crabs are alive.
- Check the sex of the crab and buy bundles that include the most females.
- Store mangrove crabs by wrapping the bundle in a damp cloth. This will keep them alive for a week. Cook, cool, put in plastic bags, close and freeze.
- Put land crabs in container with some leaves. Make some air holes and close with a strong lid. They will stay alive for several days.
- Alternatively, cook and freeze.

Preparation of Crabs

Wash very well to remove all mud and sand. Put in a large pot and just cover with water. Bring to the boil and simmer until the legs pull off easily. Carefully remove the underside shell and take out flesh. Break the legs and claws to remove flesh.

Crab Recipes

Crab Vakasoso (Stuffed crab)

- 3 cups cooked and flaked crab meat (or use 1/2 crab meat and 1/2 flaked cooked fish)
- 2 cups finely sliced Chinese cabbage
- 3 medium tomatoes finely chopped
- 1 medium onion finely chopped
- 4 tablespoons grated coconut
- 1/2 cup coconut cream
- 1 teaspoon salt

Pour boiling water over cabbage and leave for 30 seconds. Drain off water. Mix all ingredients together. Spoon into crab shells or 6 half coconut shells. Cover with foil or banana leaf. Steam over boiling water for 10-15 minutes.

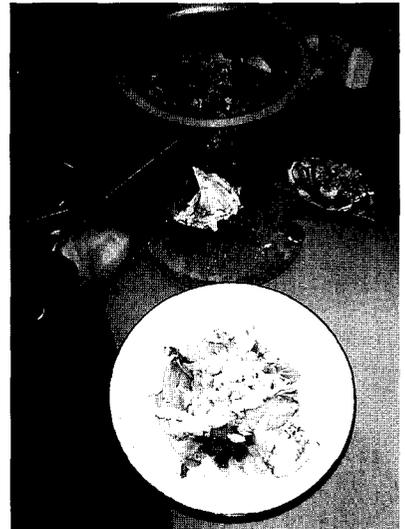
Note: Support the coconut shells by placing on rings made from small fish tins or coconut shells.

Crab Omelette

- 3 tablespoons chopped crab meat
- 2 teaspoons chopped parsley or onion
- 2 eggs



Crab boiling.



Cooked crab meat.

1/4 teaspoon salt
1/4 cup milk
Enough oil to just lightly cover the base of the pan

Prepare crab meat and mix with parsley or onion. Beat the eggs, add milk and salt. Stir in crab. Heat butter in a heavy fry pan. When hot, pour in egg mixture. As the omelette cooks, lift the sides of omelette and tilt pan so that egg mixture runs into the hot pan. When omelette is just firm, lift to fold in half. Serve at once with a thick slice of lemon.

Note: Recipe makes one medium omelette for 1 serving



Crab pancakes - batter.

Pancakes with Crab or Fish Filling

1 cup flour
1/4 teaspoon salt
3 eggs
1 1/2 cups milk
Oil or butter to grease pan

Sift flour and salt. Beat eggs and add milk and butter. Slowly beat egg mixture into the flour making sure there are no lumps. If lumpy, strain mixture. Let mixture sit for 1 hour. Grease a heavy pan with a little butter and heat. Pour 1/4 cup mixture into pan and lift sides so that mixture forms an even round. When mixture is dry on top with little bubbles, turn over to brown on top side. Cook one minute more, then cool on wire rack.

Note: To store pancakes, separate with cooking paper and stack on top of each other. Put in a plastic bag and freeze. Makes 12 pancakes.



Cooking pancake batter.

Crab Filling

2 cups cooked flaked crabmeat (or tuna or white fish) or mix with 1 cup cooked flaked fish
1 1/2 cups medium coconut cream (or milk)
2 1/2 tablespoon cornflour
1 tablespoon finely chopped onion
1 chilli chopped (optional)
1/4 cup lemon juice
1/2 teaspoon salt

Mix cornflour with half the coconut cream. When smooth, add onion, chilli, salt. Put cornflour mixture in a pot and stir until boiling. Turn down heat and simmer for 2-3 minutes. Stir in cooked crab



Stuffing and rolling.

mixture and lemon juice. Spoon filling onto pancakes and roll up. Serve hot with green vegetable or salad.

Prawns

There are many different types of prawns to be found in tropical seas. In the Pacific Islands the large sea prawn grows in the shallow waters of lagoons.

Important points about using prawns

- The soft flesh goes bad very quickly. Always check to see that prawns are fresh and preferably alive.
- Choose large prawns with well-filled tails.
- Cook on the day purchased or preserve by freezing.
- Remove the head and shell before or after cooking.
- The inside vein can be removed by cutting down the back of the prawn. This is optional.



Raw prawns.

Cooking prawns

Prawns have very soft flesh that is spoiled by cooking for more than a few minutes. To boil put in a pot of water and bring to the boil, reduce heat, cook for a minute, then pour off water. Prawns may be cooked in coconut cream. To fry, first remove shell, head and tail, cut down the back and flatten with your hand. Dip in a batter, or beaten egg and breadcrumbs. Fry in hot oil until golden brown and drain off oil (for batter recipe see Fried Fish page 14).

Prawns are often scarce and expensive, but a few added to a recipe gives additional flavour and colour. Here are some suggestions:

- Mix with taro leaves cooked in coconut cream;
- Add to vegetable curries;
- Include cooked prawns in salads of all kinds;
- Put into fish soup just before serving and cook for a few minutes.

Prawn Recipes

Prawn Rourou

600g (1 large bunch) prepared taro leaves
 Coconut cream made from 2 grated nuts and 2 cups water
 1 medium onion finely chopped
 1 piece garlic crushed
 1 teaspoon crushed fresh ginger
 12-24 shelled prawns
 Salt

Put the coconut cream in a large pot. Add garlic, ginger, onion and salt. Bring to the boil and put into taro leaves. Boil fast with lid off pot for 15 minutes. Stir in prawns, reduce heat and simmer 3-5 minutes.



Ingredients.

Prawn Pilau

- 3 tablespoons butter or oil
- 1 medium onion finely chopped
- 3 pieces garlic crushed
- 1 medium chilli seeded and chopped
- 1-2 tomatoes chopped
- 2 1/2 tablespoon curry powder
- 1/2 teaspoon brown black pepper
- 2 cups uncooked rice
- 4 cups dilute coconut cream
- 24 shelled prawns cut into half
- 1 1/2 cup sliced green beans or fresh pigeon peas, lightly cooked
- 1 cup grated carrot (optional)
- 1 cup corn (optional)



Cooking.

Put butter or oil in a large pot with fitting lid and heat. Add onion, chilli, tomato and corn or carrot and fry 5 minutes. Add curry powder, salt, pepper and cook stirring well about 2 minutes. Stir in rice and cook another 2 minutes. Add coconut cream and cook over low heat with lid on pot 25 to 30 minutes. Add prawns, pigeon peas or beans, stir well and cook 5-10 minutes or until coconut cream is absorbed, and the rice is cooked.

Note: chicken could be used to replace prawns

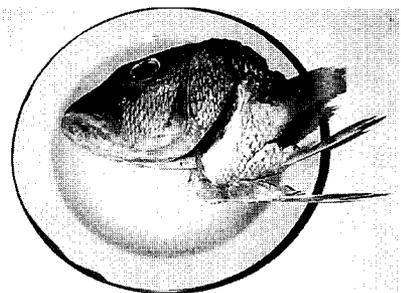


Serving.

Fish and Prawn Soup

- 1 medium fish head
- 2-3 cups of prawn heads, crushed
- 5 cups water
- 1 teaspoon salt
- 1 chilli
- 1 can tomatoes or 4-5 fresh tomatoes
- 1 medium onion chopped

In a large pot put the fish head, crushed prawn heads, water, salt and chilli. Boil slowly until the fish head is cooked. Take it out and remove flesh. Strain off the stock and discard bones. Put stock back in the pot and add chopped onion and tomatoes or canned tomatoes. Cook until onion is soft and stir in cooked fish.



Fish head.

Note: Crush prawn heads with a hammer or stone. It is a good idea to freeze prawn heads to make fish stock. If a thick soup is desired: Mix 1/2 cup of cornflour, flour or tapioca (cassava) starch with 1/2 to 3/4 cup of water to a smooth consistency. Pour 1 cup of the hot mixture into the flour mixture stirring all the time. Then stir this thickening into the soup and simmer for 3 minutes.

Octopus

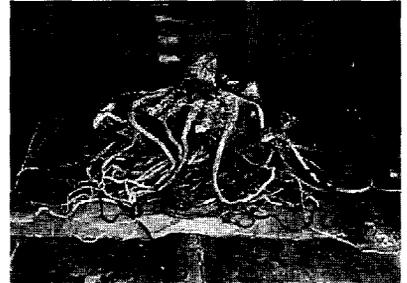
Octopus is a well known seafood throughout the world. It is most widely eaten in China, Japan, the Pacific Islands and in Mediterranean countries where it is sold either fresh or dried. The octopus flesh consists of muscle and this increases with age. It is best to choose smaller ones which are more likely to be tender. The quality of octopus appears to vary according to climate and location. For example, in Fiji the octopus from the Lau islands are said to be more tender.

To prepare a fresh octopus, first wash well to remove sand and remove as much skin as possible by rubbing with rough sand or a scraper. The skin on a boiled octopus can be removed with a knife. Many people prefer to remove the skin and suckers on the tentacles whilst others like to keep this part. Beat raw octopus with a flat piece of wood on a rock to soften the muscle. Cut out the round central part and remove the eyes. Then turn the body inside out to remove the ink sac and intestines.

Cut the body into strips and the tentacles into small pieces. Alternatively leave the octopus whole. Boil in water with a pawpaw leaf, lemon juice or a little vinegar until the flesh is soft. Another way of tenderising octopus is to wrap the whole prepared octopus in a banana leaf with some green pawpaw flesh and steam in a cooking pot or earth oven for 1 - 1 1/2 hours. The cooked octopus is now ready to be sliced and made into many different dishes.

Ways of using octopus

- Add to sliced half-ripe cooking bananas and cook until bananas are soft. Serve with a little coconut cream.
- Cook with grated green pawpaw flesh, lemon juice and a little chilli.
- Make into a Chinese dish with soy sauce, ginger, a little vinegar or lemon juice.
- Use in recipes from Mediterranean countries with onion, garlic and tomatoes.
- Cook with taro or bele leaves and flavour with coconut cream, chilli and onion.



Tonga: Sometimes octopus is dried for later use.

Octopus Recipes

Italian Octopus

750gms prepared octopus pieces
1/4 cup cooking oil
2 pieces garlic crushed
2 medium onions chopped
6-7 skinned tomatoes or 1 tin (450gms) whole tomatoes
1 teaspoon salt
1 teaspoon sugar

Heat oil, add garlic and onion. Stir fry until cooked. Add octopus, tomatoes, salt and sugar and simmer for 20 minutes. Serve with pasta, rice or root crops.

Octopus Salad

3 cups prepared octopus pieces
2 cups grated green pawpaw or diced cucumber
Chilli to taste
1/2 teaspoon salt
ground black pepper

Dressing - mix together:

1/4 cup cooking oil
1/4 cup lemon juice or white vinegar
1/4 cup finely chopped onion
1/4 teaspoon salt
1 teaspoon crushed fresh ginger

Put octopus, pawpaw or cucumber, chilli, salt and pepper in a bowl and mix well. Add dressing. Stir and leave for an hour before serving. Add 1/2 cup grated carrot or 1 cup diced tomatoes for variation.

Octopus Stew

1kg octopus
1/4 cup oil, preferably olive oil
2 pieces garlic crushed
2 onions sliced
6-7 medium tomatoes (skinned) or
1 can (410g) tomatoes
1/2 teaspoon salt
1 teaspoon sugar

Cook the octopus in salted water until tender. Cut into small pieces. Heat oil and fry garlic and onion for a few minutes (do not brown). Add octopus and tomatoes, salt and sugar. Bring to the boil and simmer for about 20 minutes. Serve with rice, pasta or cooked root

vegetables.

Chinese Cabbage and Octopus

750g octopus

1/3 cup oil

Water

Salt

Freshly ground black pepper

750g - 1 large bunch Chinese cabbage

1 cup chopped spring onions or 1 medium chopped onion

Juice from half a lemon

Put sliced octopus in a pot with half the oil, water, salt, lemon juice and boil slowly for 10 minutes. Wash the cabbage and cut leaves and stalks into medium size pieces. Put remaining oil in a pan or wok, heat, put in onion and stir-fry until soft. Add cabbage and stir-fry until just soft. Mix cabbage and onion with octopus. Add lemon juice, salt and pepper. Cover pot and simmer for 10-15 minutes. Serve with rice or root vegetables.

Sea plants

There are many edible sea plants growing in the Pacific. The use of sea plants as food varies according to different cultures. In general, sea plants are mainly eaten as an additional flavouring for other foods, such as raw fish and shellfish. The Hawaiians use 12 different varieties in their meals. In other Pacific countries a smaller number of varieties are used. The most common being "seagrapes", a bright green plant with small crisp bulbous leaves found growing on coral, coral rubble or sand. This is always eaten raw as a salad. Seagrapes are called nama in Fiji. What is the local name used in your community?

Other popular sea plants in Fiji are known as lumi cevata and lumi wawa. Lumi cevata consists of yellow-brown hair-like strands. Lumi wawa is darker brown in colour and contains agar. It dissolves when heated with a liquid and on cooling forms a jelly.

Preparation of sea plants and storage

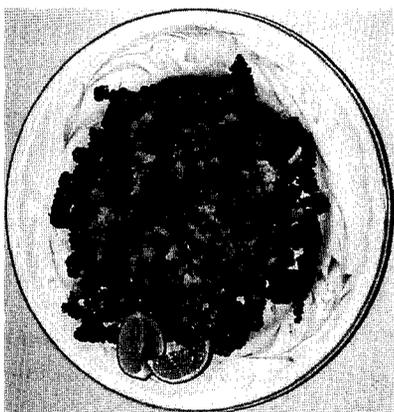
All kinds are collected in baskets and then soaked for half an hour in clean sea water before washing several times to remove sand and coral. Cleaned sea plants may be stored in plastic bags or wrapped in giant taro leaves. Seagrapes become soft if refrigerated. They will keep crisp for two days if wrapped in a pawpaw leaf and kept in a cool place. The two kinds of lumi may be kept for several days in cool storage.



Lumi is popular in Fiji.



Fiji: Selling bundles of nama.



Nama, chilli and kora.

Sea Plant Recipes

Seagrapes (Fiji - Nama)

- 2 cups of prepared nama
- 2 cups fermented coconut (kora)
- 1-2 chillies or 1 small onion chopped

Mix the nama with the kora. Add chilli to taste or mix with chopped onion and lemon juice. Serve with fish.

Nama Savouries

Cut slices of brown buttered bread in 2cm squares. Put a spoonful of nama on each piece. Garnish with a small slice of tomato or onion. Serve as a snack with cold drinks.

Variation

Replace bread squares with carefully cut pieces of cooked dalo, yam or breadfruit.

Nama and Fish

Cook fish in coconut cream and just before serving add some fresh nama. Bring to the boil and serve.

Gracilaria Mould (Jelly) - Fiji Lumi Wawa

- 3 cups well washed lumi wawa
- 3 cups coconut cream (or 1/2 cream and 1/2 water)
- 1/3 cup lemon juice
- 1 teaspoon salt
- 1-2 chillies

Heat the coconut cream, lemon juice and salt to boiling point. Add small amounts of lumi and stir until all the lumi is dissolved. Pour the mixture into a basin or mould and cool. When set to a jelly, turn out on a plate and garnish with slices of tomato or fresh green nama. Serve with seafood.

Variation

Add a small can of tuna flakes or 1 cup fresh fish, cooked and flaked, to the lumi mixture before putting to set. Serves 4-6.

Lumi Wawa

Pour boiling water over cleaned lumi and leave for 10 minutes. Drain well and use in the following ways:

- Mix with lemon juice, finely chopped onion and salt.
- Mix with fermented coconut kora.
- Cook with fish.

Filipino Salad

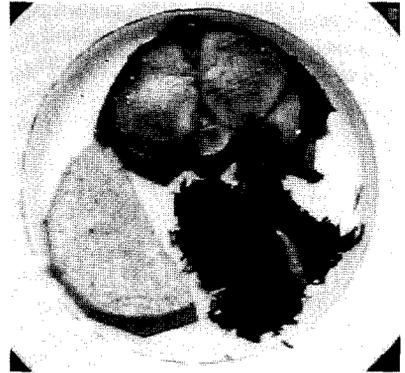
- 3 cups prepared lumi wawa
- 4 medium tomatoes
- 3 green onions chopped
- 2-3 teaspoons crushed fresh ginger
- 2 tablespoons soy sauce

Chop the tomatoes and stir into the lumi. Add all other ingredients. Serve cold. Very good with fish.

Vinegar Sauce - mix together:

- 1 tablespoon sugar
- 2 teaspoon salt
- 1/2 cup vinegar
- 1 small chilli chopped

Note: Serve lumi wawa and nama with vinegar sauce



Lumi salad and fish.

Words and Their Meaning

- Artisanal fisheries** - usually involve the capture or collection of fish or seafood for sale.
- Beche-de-mer** - sea cucumbers that have been processed into a dry food product.
- Carbohydrates** - are one of the nutrients we use as a main source of energy. They are organic compounds found in the cells of all living organisms, and include sugars, starch and fibre (fibre cannot be used for energy but helps keep the gut healthy).
- Diabetes** - a metabolic problem where the body is unable to control the level of sugar (glucose) in the blood. When this happens, blood glucose levels go up, particularly in response to certain foods. Symptoms include thirst, frequent urination, tiredness and infections.
- Enzyme** - substances produced by living organisms that start or speed up chemical reactions.
- Fat** - one of the nutrients we use for energy. Fats are the most concentrated source of energy and are essential within the body for certain functions. They can be in liquid (oil) or solid (fat) form and generally make food tasty.
- Gonad** - male or female organ, producing either sperm or eggs.
- Hypertension** - abnormally high blood pressure. It can lead to an increased risk of stroke, heart disease and other health problems.
- Malnutrition** - results from not eating a balanced, healthy diet. It is caused by not having enough to eat, not eating enough of the right things, eating too much of certain foods, or being unable to use the nutrients fully in foods eaten.
- Marinade** - a sauce, typically of oil, vinegar and spices, in which meat, fish or other food is soaked before cooking in order to flavour or soften it.
- Marinate** - to soak in a marinade.

- Minerals** - inorganic substances that are essential for health, and which are obtained from the foods we eat. These include common elements such as calcium, potassium, iron and iodine.
- Nutrient** - an essential part of food that the body requires for growth, energy and health.
- Nutrition** - is the way our bodies take in and use food.
- Obesity** - occurs when a person is extremely overweight (according to medical definitions) for their height. Being obese is associated with high risks of disease and ill-health.
- Peppercorn** - whole dried pepper seeds.
- Protein** - a nutrient that is essential for health, particularly for growth and repair. It can also be used by the body for energy.
- Purée** - smooth pulp of semi-liquid or mashed or sieved food.
- Roe** - another name for gonad, especially when used as food.
- Simmer** - cook slowly just below boiling point.
- Subsistence fisheries** - usually involve the capture or collection of fish or seafood for the family.
- Vitamins** - organic substances that are essential for life and health. Foods containing all the necessary vitamins for good nutrition must be included in the diet.

Related Resources

- Davidson, A., and C. Knox. 1989. Seafoods. Mitchell Beasley Press, U.K.
- Davidson, A. 1983. Mediterranean Seafood. Penguin Press, U.K.
- Fulton, M. 1983. Encyclopedia of Food and Cookery. Octopus Books, Australia.
- Good Housekeeping Cookery Book. 1985. National Magazines, U.K.
- Home Institute Cook Book. 1947. Charles Scribner, U.S.A.
- Los, K. 1984. Regional Chinese Cooking. Octopus Press, Australia.
- Malos, T. 1979. The Complete Middle East Cookbook. Ure Smith, Australia.
- New Zealand Fishing Industries Board. 1986. New Zealand Fish and Shellfish. Whitcoulls, New Zealand.
- Parkinson, S., P. Stacy, and A. Mattinson. 1995. Taste of the Pacific. David Bateman, N.Z.
- Parkinson, S., and P. Stacy. 1977. Pacific Islands Cookbook. Pacific Publications, Australia.
- Pacific Tropical Botanical Gardens. 1974. Ethnological Study of Some Edible Hawaiian Sea Vegetables.
- Swartvagner, M., and M. Folco. 1980. Tahitian Cooking, Les Editions du Pacifique, Tahiti.
- Solomon, J. 1991. A Taste of the Tropics. Crossing Press, U.S.A.
- Solomon, C. 1979. Indian Cooking. Paul Hamlyn, Australia.
- South Pacific Community Nutrition Training Project. 1990. University of the South Pacific, Fiji.

Acknowledgments

Una Isi Lalabalavu, Resource Person
Premal Deo, Food and Textiles, USP
Food and Textiles students, USP