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Fishing

By

**Tony Chamberlain
and
Jone Maiwelagi**

With contributions from

Patricia Tuara
Lyn Lambeth
Temakei Tebano
Johnson Seeto

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Community Fisheries Training Pacific Series 1

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

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Project Leader

Tony Chamberlain
Marine Studies Programme
The University of the South Pacific
PO Box 1168
Suva, FIJI ISLANDS
Email: chamberlain@usp.ac.fj

Project Team

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

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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

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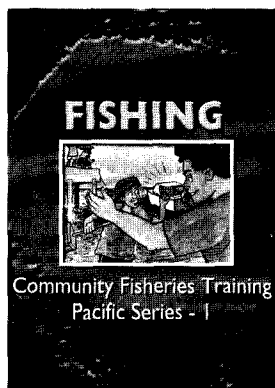
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Fishing:

Community Fisheries Training - Pacific Series 1



An introduction to fishing activities and fishing skills used in the Pacific. Topics include: knots, nets and fishing methods with a brief review of fishing, gender issues and sustainable harvesting.

How to use this book

This book is structured into three chapters. A series of Activities, Discussion and Demonstration suggestions are included in each chapter to encourage further exploration of the content. The Objectives listed below may serve as a guide for learning.

Objectives

After reading this book and completing the exercises you should be able to:

1. explain what is meant by gender in relation to fishing and consider the range of different harvesting activities carried out by men and women in the Pacific;
2. explain what is meant by sustainable harvesting;
3. practice a range of knots and ropework used in fishing;
4. describe four types of nets used in fishing;
5. describe how to mend a fishing net; and
6. describe at least three fishing methods used in your fishing community.

Chapter One - Introduction



Fishing practices in the Pacific

The types of fishing carried out in a country depend on the available marine resources, the marine environment, fishing knowledge and gear. Between the sub-regions of Polynesia, Melanesia and Micronesia, fishing practices show some significant difference and some similarities.

Activity

- Materials: Large plain paper, 3 felt tip markers, sticky tape or blue tack.
- Break the class into 3 groups for those from Polynesia, Melanesia and Micronesia.
- On a large piece of paper have 1 recorder in each group list information under the main headings given below.
- Have each group report back to the class.
- Discuss similarities and differences.

Marine resource	Location	Harvesting method	Harvesting gear	Responsibility
shellfish	reef	hand collection	hand, knife	women, children

Fishing & gender

Gender refers to the different roles (or types of behaviour) men and women may have in a society. For example, in most parts of the Pacific, women traditionally collect animals from the reef flat while the men go fishing in boats. Sex differences between men and women are biological differences. For example, women can have babies and men can not.



Biological differences between men and women do not make it physically impossible for a woman to go fishing on a boat or for a man to collect from the reef. The different fishing activities practiced by men and women represent gender differences taught to young boys and girls by their communities and passed down through their culture. Gender roles may not be the same from one place to another, and they may change over time.

Activity

Looking at the charts from the previous activity, can you make any conclusions on the types of harvesting activities carried out by men and women?

Write the findings on the black board.

	Women			Men		
	Polynesia	Melanesia	Micronesia	Polynesia	Melanesia	Micronesia
Resource collected						
Geographic area fished						
Gear used						

Activity

1. Why do you think there are differences between the harvesting activities of men and women?
2. Who is responsible for the processing and marketing of seafood in your community?

Sustainable harvesting

When seafood from reefs, lagoons, or rivers is in short supply, people tend to harvest younger and smaller plants and animals. As a result, fewer mature plants and animals survive to produce offspring and there is less seafood available for later years. To ensure against over-harvesting, people are encouraged to practice **sustainable** harvesting.

Sustainable seafood harvesting techniques do not destroy the environment and ensure that enough plants and animals remain to repopulate the species. Leaving sufficient resources behind means there will always be enough for others in the future.

Discussion

1. How can **unsustainable** fishing be made more sustainable?

Seafood is less plentiful today because:

- demand for seafood has increased
- seafood harvesting technology is designed to collect more seafood in less time
- people harvest too much seafood, leaving little in the sea for others



Abaiang, Kiribati: Responsible fishing means food for the future.



Fiji: Tying knots at USP workshop.

Chapter Two - Knots

Fishing knots

A **knot** is a fastening formed by tying together ends of rope. Knot tying is an important fishing skill. Choosing the proper knot ensures, for example, that a vessel is securely **moored**.

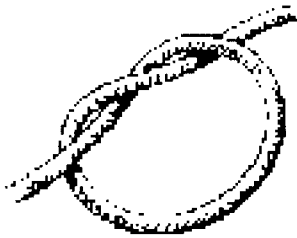
Some common knots are the:

- overhand knot
- figure eight
- reef knot
- bowline
- sheet bend
- clove hitch
- half-hitch

Knot tying

A well-tied knot can be the difference between losing or landing a fish. Following these rules helps knots deliver their full holding power:

- Where turns are required around a standing line, keep them separated. Pull the turns together in a neat spiral when tightening the knot.
- When double lines are used, keep them parallel. Avoid twisting the lines as a knot is being tied.
- Pull knots together as tightly as possible with even, steady pressure. A knot that slips under pressure may break the line.



Overhand knot.



Figure eight knot.



Reef knot.

Overhand

The overhand is a simple knot used to keep ends of a rope from **unlaying**. However, the overhand knot often jams and may become almost impossible to untie.

Figure eight

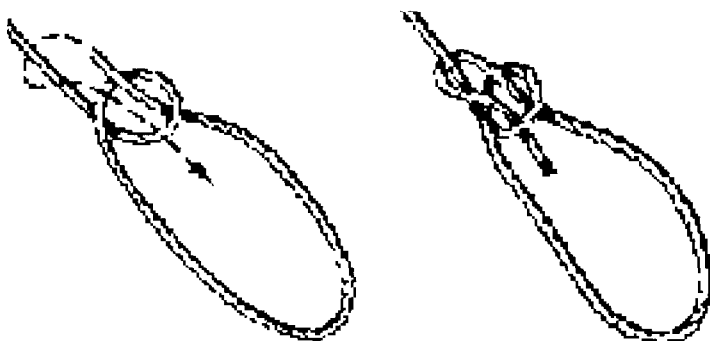
The figure eight is a better choice to prevent rope ends from unlaying. Unlike the overhand, this knot does not jam.

Reef

The reef knot is used for tying light ropes of the same diameter together and for numerous other purposes. A disadvantage of this knot is that it jams and may be difficult to untie after being heavily stressed.

Bowline

The bowline is used to make a loop at the end of the rope. This knot is good for securing a boat to a jetty. Bowlines will not slip, pinch or kink the rope as much as some other knots. They do not jam so are easily untied.



Bowline.

The sheet bend is also known as a Becket bend.



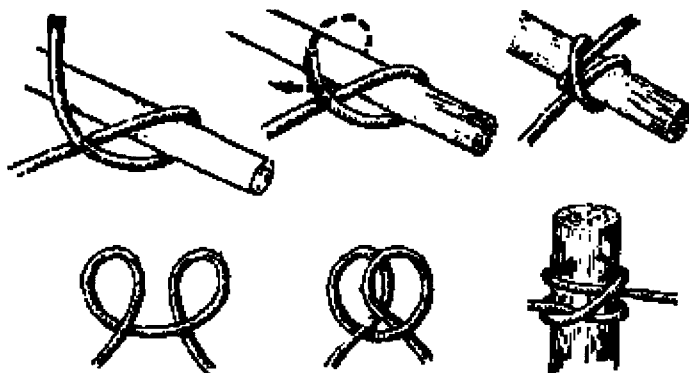
Sheet bend.

Sheet bend

The sheet bend is used for tying two lines together. It will not slip even if there is great difference in the thickness of the lines.

Clove hitch

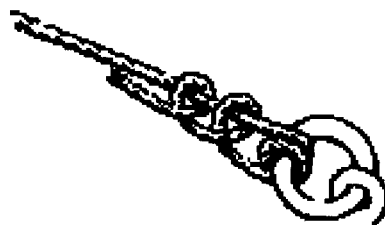
This is a common hitch used for temporarily fastening a rope to a pile or bollard.



Clove hitch.

Pile = heavy beam driven vertically into river bed or sea floor

Bollard = post on ship or quay for securing rope



Round turn & two half hitches.

Half-hitch

Two half hitches, or a round turn and two half hitches, are used for securing a line to a pile, bollard or timber.

Activity

1. Equipment: piece of rope (about 1 metre long)
2. Divide into pairs. Challenge each other to tie knots from the following list:
 - figure eight
 - two half-hitches
 - bowline
 - sheet bend (single)
 - overhand
 - reef
 - clove hitch

Ropework

Making fast to a cleat

The fisher's bend is also known as the anchor bend.



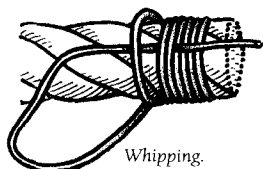
Fisher's bend.



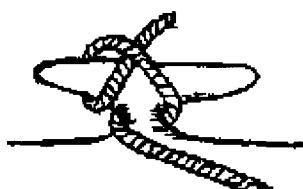
Fisher's knot.



A splice.



Whipping.



correct



incorrect

Fisher's bend

This technique is useful for making fast to a buoy or the ring of an anchor.

Fisher's knot

This knot is used for joining two ropes of the same size.

Splicing

Splicing is weaving two rope ends together, or rope to chain or metal eye. Many times, it is better to use a splice to join two lengths of rope rather than a knot. Some knots will cause a rope to break under only half of its regular load. A good splice, on the other hand, will allow a rope to retain most of its original strength.

Whipping

Whipping is to tightly wind and fasten light twine around the end of a rope to prevent the strands unlaying. A back splice is also used to stop the end of a rope from unlaying. Strands at the end of the rope are spliced back into the rope to make a strong terminal end.

Activity

1. Equipment: piece of rope, cleats, shackles
2. Divide into pairs. Test each other on the following skills:
 - making fast to a cleat
 - making fast to a shackle
 - joining two ends with a fisher's knot
 - joining two ends with a short splice
 - whipping or back splicing.

Making rope

Bark from the bau tree can be used to make rope.

- cut unbranched stems
- scrape off brown outer layer
- tie a big bundle of stems together
- soak underwater for about 1 week
- pull bark off the stem
- hang over a line or pole to dry in the sun (until it turns white; after about one week)
- tear dry bark into 3 strips lengthwise
- tie ends of the 3 strips together
- plait the 3 strips together to form a rope
- if one strip is too short, simply overlay a new strip and continue.



1. Thread the line through the eye and form a circle.



2. Make a few turns through the loop and around shank as desired.

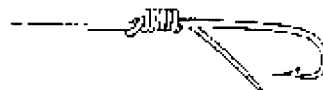
Demonstration

Rope making from bau bark.

Rigging

Snelling a hook

This method is used to fasten ring-eyed hooks onto a line.



3. Tighten by pulling standing line in one direction and hook in the other.

Snelling a hook.

Fishing hook knot

This knot is used for fastening a flatted-shank hook onto a line.



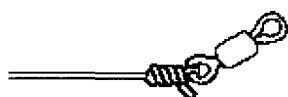
Fishing hook knot.



Thread the end of the line through the swivel or hook eye. put 4 or 5 twists in the line, then pass end through loop created.



Bring the end back through the second loop.



Pull tight.

Clinch knot.

Fastening terminal tackle

Clinch knot

The clinch knot provides a reliable connection between fishing line and the fishing tackle.

Joining lines

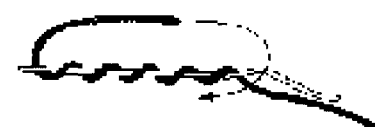
The following knots are used to fasten line together.

Blood knot

The blood knot is for joining lines of the same diameter.

Surgeon's knot

The surgeon's knot is for joining lines of different diameters. This is often the case when fastening line to a leader. Usually there is a swivel/ring at the connection between a line and leader.



Blood knot.



Surgeon's knot.

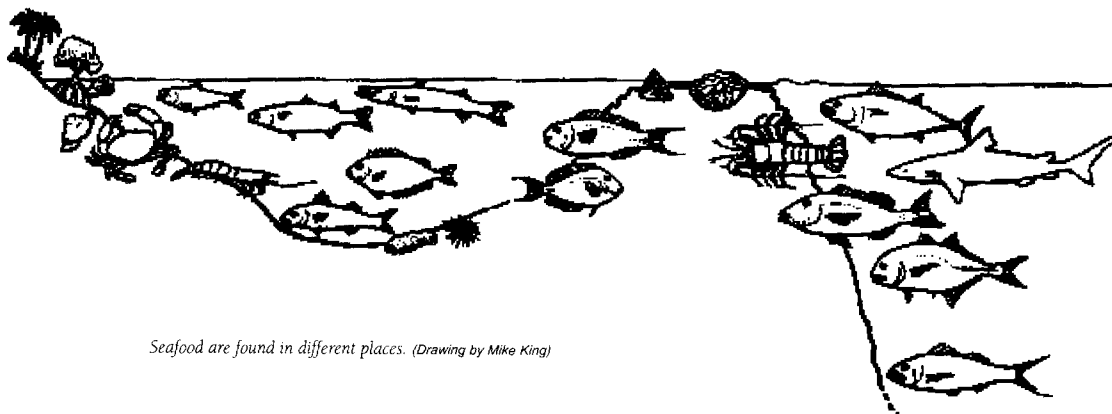
Activity

1. Equipment: fishing line, hooks, swivels.
2. Divide into pairs.
3. Take turns to practice each type of knot.
 - fasten line to a ring-eyed hook
 - blood knot
 - fasten line to a flatted-shank hook
 - surgeon's knot
 - fasten line to swivel
 - fishing hook knot
 - join two similar ends of fishing line
 - snelling
 - join two different-sized pieces of line
 - clinch knot.

Chapter Three - Fishing Methods

Introduction

Subsistence and artisanal fishers take many species of fish and invertebrates. Different types of seafood are found in different places.



Seafood are found in different places. (Drawing by Mike King)

Inshore

- beach
- lagoon
- mangrove

Nearshore

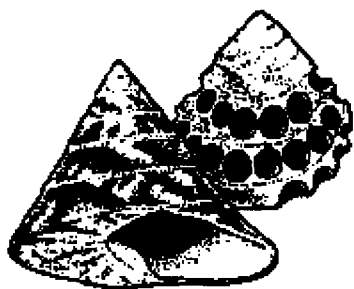
- reef slope

Activity

1. Divide into groups of 4 or 5 people. Choose the fishing method that most interests your group:
 - Hand gathering
 - Hook and line
 - Poisons
 - Nets
 - Traps
2. Think:
 - How, when and where is the activity is undertaken?
 - Who is involved?
 - What equipment is used?
 - What types of seafood are caught?
3. Prepare a short report about this fishing method. You can either write, make a drawing, tell a story, sing a song, etc. Present your group report to the rest of the class.



Santo, Vanuatu: Motorised dugout canoe equipped for drop-lining.

*Trochus.*

Trochus shell, green snails and pearl shells may be sold for export. They are used to make mother-of-pearl buttons.

*Giant clam.*

Giant clams were once hand gathered on many Pacific islands. However, due to overfishing, giant clam stocks have been greatly reduced. Many countries now have regulations protecting giant clams.

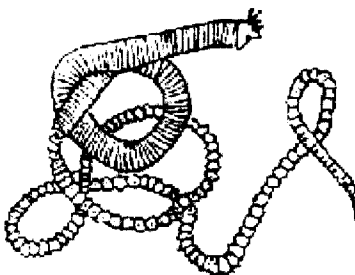
Hand gathering

Shellfish

On most days in a fishing community, women and children collect shellfish from nearby mangroves and shores. A family group may collect hundreds of small **bivalves** (clams, cockles, mussels) and small snails from under the sand. Shellfish can also be gathered from rocks at high tide. Oysters may have to be chipped from rocks. The catch is often shared amongst the fisher's clan according to social customs and obligations. Sometimes the catch is taken to market.

Worms

Peanut worms can be dug up from sand or mud. A famous annual event in some parts of the Pacific is the gathering of the palolo worm, a delicious sea worm that appears on reefs for only a few hours each year. The palolo normally lives hidden in holes in coral rock. It grows a back half that is filled with either sperm or eggs.

*Palolo worm*

On a certain night of the year, the back halves separate and swim to the surface. They break up in the sea and the sperms fertilise the eggs. The eggs hatch later into tiny larvae. These larvae drift in the sea, settle on a reef and grow into adult worms.

Discussion

1. Do you know of other sea life that appears only at certain times of the year?
2. Describe what they are and when they appear.

Activity

1. Equipment: calendar that shows phases of the moon.
2. Use the rules below to predict the date when the palolo worms will next rise.

- The palolo rises exactly **7 days** after the full moon in October or November, if that day is **later** than the second week in October and **before** the last week in November.
- If the predicted day is in the second or third week in October, there will be a small spawning in October. Then there will be a big spawning in November.
- If the spawning day falls in the last week of October, there will be one large spawning.

Sea cucumber

Sea cucumber or beche-de-mer can be harvested from the lagoon or the outside reef edge for local use or export. It is important to catch and handle these animals carefully to ensure good quality dried meat and high market value. When water is too deep for hand gathering, sea cucumbers may be collected by snorkelling or free-diving. In clear conditions, they may be hooked from the surface with either a multi-hooked lead weight or a shooting-lead.

The shooting-lead (also called a rope-spear or dri-bomb) is a 3-4 kg weight tied to a rope with a 3 cm straight barbed spike firmly attached underneath. This is lowered into the water over a sea cucumber and allowed to drop so that the spike penetrates the skin.

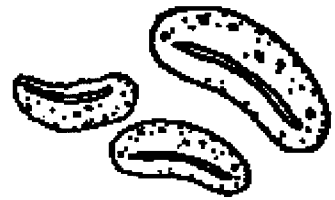
Only large sea cucumbers should be taken. Small ones do not fetch high prices and are important to the survival of the resource.

Octopus

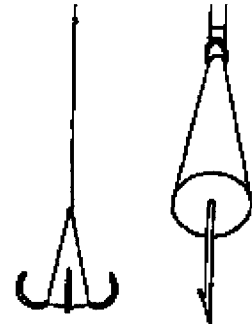
Octopus is often caught at low tide using metal hooks.

Crab

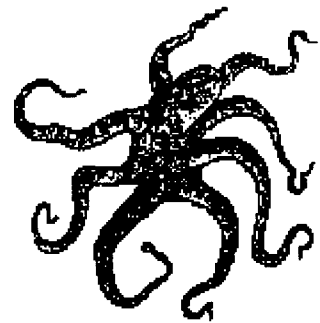
Crabs may be hand gathered or caught in traps.



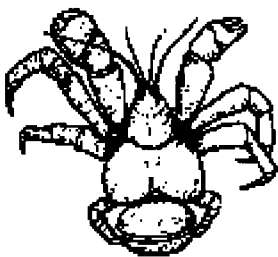
Beche-de-mer.



Beche-de-mer fishing gear.



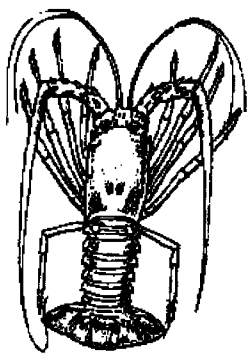
Octopus.



Coconut crab.



Mud crab.



Lobster.

Lobster

Lobsters are usually speared or collected by hand in the Pacific. Lobsters may be found at night either by walking along the reef at low tide or by diving with lights.

Sea vegetable

As with other seafoods, sea vegetables or marine algae are healthy foods. A variety of different types are eaten in the Pacific.

Add your local names to the sea vegetable listed here:

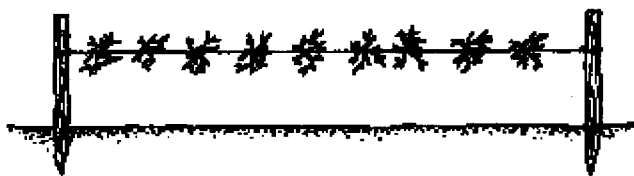
- Glassweed are usually coarse, thin, brown and hair-like.
- Maidenhair is the name of a seaweed used to make jelly.



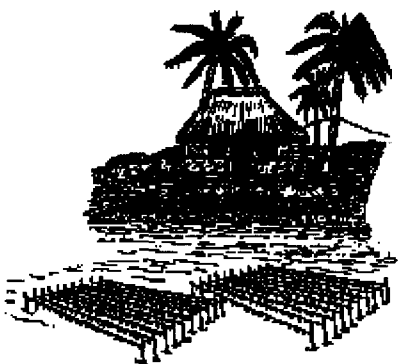
Kiribati: Preparing a meal from sea vegetable (*Eucheuma*).



- Eucheuma is often grown for money. It produces a gum used in making other food products.



- Seagrapes are a green sea vegetable with many tiny lumps or bubbles on its stem. Seagrapes grow in clean, sandy lagoon areas away from mud and river mouths.



Sea vegetable farm.

Case study

The people of Naviti Island in the Yasawa Group, Fiji Islands, have been selling seagrapes at Lautoka and Nadi markets for 10 years, and at Suva market for the past 3 years. This artisanal fishery started in Gunu Village on Naviti when a woman from the Lau Group married into the village and showed the people of Gunu how to harvest seagrapes. In Naviti, seagrapes are "A-grade" and abundant. They grow in thick beds on both the sea-side and lagoon-side of the peninsula.

About 40 women from Gunu harvest seagrapes. Traditionally, only women harvest. However, due to the commercial nature of this resource, husbands often assist. During school holidays, children also help. Lunch is prepared and taken out to the harvesting site.

Monday and Tuesday of each week (weather permitting) seagrapes are harvested from sandy areas. On Wednesday they are harvested from rocky areas. The reef is picked over for 3 to 4 hours during low tide when the seaweed is more accessible.

There is no particular season for seagrapes. However, supply may vary because of bad weather or inconvenient tide times that interrupt collection. Rain is the most important type of “bad weather” because fresh water decreases the salt level in lagoon water and makes the seagrapes turn soft and die soon after harvesting.

The Lau woman taught the people of Gunu how to harvest seagrape in a sustainable way. Seagrape stems growing on the sand are picked individually. The tip of the runner is not picked. Seagrapes growing on the coral are picked by the handful. Stems are broken at the base by pinching with the fingers or by pulling. The stems are placed into a 50 kg sugar bag. By harvesting in this way, seagrapes grow back quickly and are less likely to disappear.



Yasawa, Fiji: Nama harvested from reef.

Seagrasses are not seaweeds, but are similar to flowering land plants. They have roots to gain a foothold in drifting sand.

The roots of seagrass help stop sand from drifting away. Trapped material builds up to form sand bars and sandflats, providing homes and food for other forms of life.

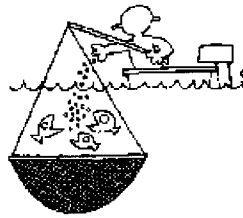
Nets

Lift nets

Lift nets have panels or bags of netting that face upward. When lifted out of the water, fish above the netting are caught when the water runs out. These nets may be used from the shore or from a boat. They are often used in creeks and rivers to catch bait fish and freshwater prawns. Bait or lights may be used to attract fish after the net is placed in the water.



Lift Nets.



Rabbit fish.

Cast nets

Cast nets are conical in shape and have small weights all around the base of the mesh. When fish are sighted, the net is thrown. The net opens up and falls over a school of fish. The weights make the net sink quickly and trap the fish underneath. The net is then hauled in and the fish removed. Cast nets are used to catch bait fish and shoaling fish. No bait is used in cast net fishing.



Cast Net.

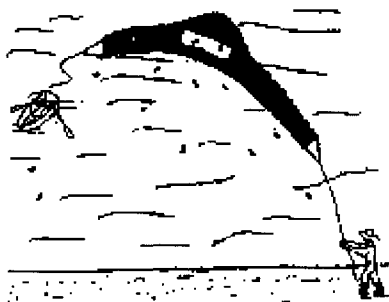


Ponyfish.

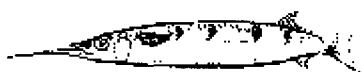
Activity

To throw a cast net properly:

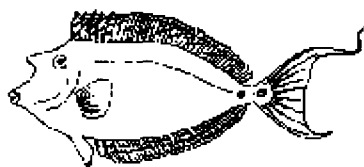
- Gather the weighted edge in 3 separate sections.
- Put one on your shoulder, one in your left hand, one in your right hand.
- Slowly approach the school of fish.
- When close enough, throw the net so that it opens like an umbrella (hint: swing back and then forward like a discus thrower).
- The net sinks quickly so gather in the leadline straight away.



Beach seine.



Garfish.



Unicorn fish.



Surround net.

Seining

A seine is a net that is laid out in a wide arc to surround fish. No bait is used. Many hands are needed for this method of fishing. It is a co-operative effort. Beach seine nets are set from the shore and then pulled back to the beach. The sea bottom and water surface act as natural barriers when fish have been herded into the net.

Activity

To set a beach seine:

1. Two people hold the wooden stakes at either end of the seine.
2. Everybody else holds a length of leadline and float line.
3. The two wooden stake carriers quietly walk into the water with everybody else following.
4. After walking out deep and then parallel to the shore, leadlines and float lines are let go.
5. The two stake carriers pull the net into the shore without lifting the leadline.

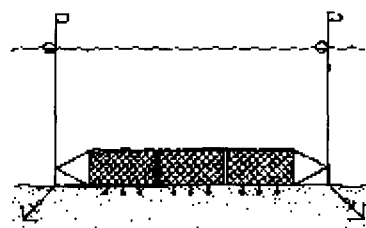
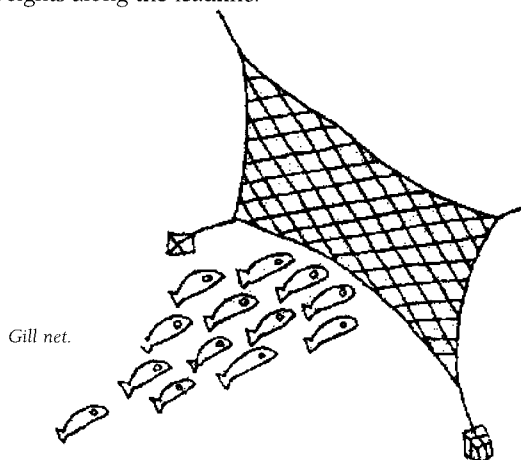
Note: In deep water a small boat can be used to set the net.

Other seines are used together with stick-lashed fences and long ropes hung with coconut fronds. Two boats set out beyond the reef, dragging the rope with the fronds towards a shallow area with a fence set up in a small arc. The fronds gather the fish into the fence.

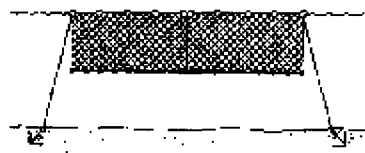
As the rope is pulled closer to the fence, the seine is set beyond the fronds. Later, the seine is gathered into the fence to make a cage. Fish are scooped out with a small net. **Surround nets** are similar to seine nets. They are laid out in shallow lagoons from 1/2 to 3 metres deep. When a school of fish is spotted, two people start laying the net around the school. Other people scare the fish into the net by hitting the surface with sticks. Finally the fish are surrounded and caught.

Gill nets

Gill nets entangle fish by the gills. Gill nets may be placed at the surface, in mid-water or at the bottom. A boat is sometimes needed to set the net. Gill nets are used in the lagoon to catch mackerel, barracuda, mullet and sometimes reef fish. **Set gill nets** are fixed by an anchor at each end. The net is held open by floats along the headline, and weights along the leadline.



Bottom-set Gill net.



Surface-set Gill Net.

Catching aquarium fish

SCUBA divers use nets to gather aquarium fish such as butterflyfish, wrasse, clownfish and damsels. Two divers will swim down the reef slope and set a barrier net 1 metre high and 10 metres long across a depression. They then use a stick to disturb the fish in the reef holes and herd them into the net. The fish are then collected with small scoop nets.

The fish are transferred into plastic bags attached to the diver's waist. Later they are placed into a large plastic tub in a shaded part of the boat.

When collecting in deep water the fish may have to be transferred to a special decompression container, or they are decompressed at the surface. This is done by carefully puncturing the air bladder with a hypodermic needle to release the air.

Another method of collecting aquarium fish uses poisons and is therefore destructive and unsustainable. Chemicals such as cyanide are squirted on the fish to stun it. The cyanide spreads in the water and kills the surrounding corals and marine life.



Coral fish.



Banner fish.

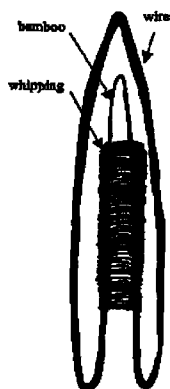


Plastic net needle.

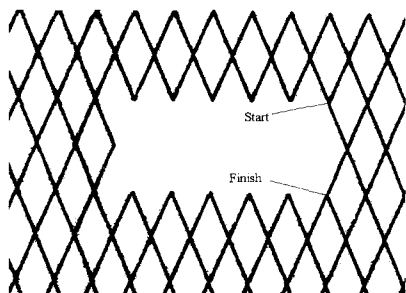
Net mending

Net needles

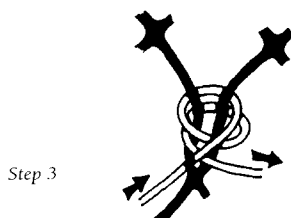
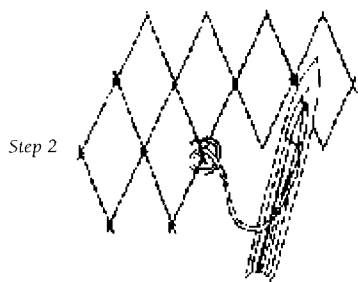
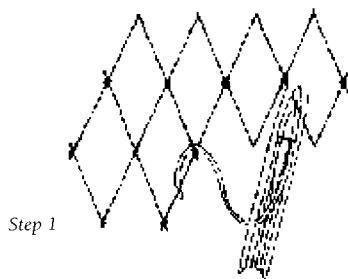
Net needles are usually made out of wood or plastic. A homemade net needle can be put together with bamboo, wire and cord whipping.



Homemade net needle.



Cutting out damaged netting.



The starting knot.

Cutting out

To mend a damaged fishing net, the first step is to cut out a proper hole. Cutting the hole removes the damaged netting and prepares knots on the remaining netting to accept new twine.

In a piece of sound netting, each knot has **four** bars of twine leading to it (except knots along the edge of the netting). When cutting a net to prepare for mending:

- the knot where you decide to **start** the mending must have **three** bars of twine leading to it
- the knot where you decide to **finish** the mending must have **three** bars leading to it
- all knots **in between** the start and the finish must have **two** bars leading to them.

Why? In mending, when the starting knot is tied, twine on the mending needle forms the fourth bar to the knot. Likewise, when the final knot is tied, twine on the needle forms the fourth bar (as the mending twine is brought to this knot and tied). For all knots in between, twine on the needle forms one bar as the needle is brought to the knot and another bar as the needle leaves.

Review

In this diagram, note how the hole in the netting has been cut to leave:

- the starting knot with _____ bars of twine
- all middle knots with _____ bars of twine
- the finishing knot with _____ bars of twine

The starting knot

This knot is tied in four easy steps: Note that this knot should have an overhand knot on the end of the twine to stop the knot pulling through:

1. pass the needle up through the mesh until a short tail of twine remains below the starting knot;
2. use your fingers to twist the tail of twine around the two bars of mesh above;
3. throw the loop of line to the left and form a sheet bend;
4. pull tight;
5. use a half hitch to form a mesh.

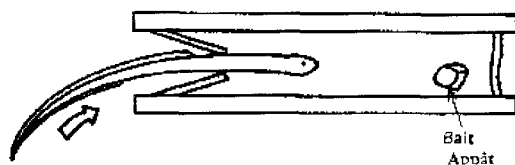
Demonstration

1. Net mending.
2. Notice how the **half-hitch** knot is very important in net mending.

Traps & barriers

Traps & pots

Fish traps and lobster pots are basket-shaped cages. They are set on the bottom and can be used with or without bait. Fish enter easily. However, the funnel or maze-like opening makes it hard to escape.



Eel trap.

Traps are good for catching:

- eel
- rock cod
- crabs
- prawns

Catching eels is an art practised in the islands of the South Pacific. Three of the methods that are still used include lasooing, poking and trapping. In lasooing, a lasoo is made at the end of a long pole, the bait is placed near the lasoo, the loose end of the string is pulled tight when the eel passes through. Poking requires a thin, strong iron rod bent at the end imitating a hook. The eel is pulled out from its hole. The trap is traditionally built from a local hard wood and coconut fibre string. The entrance is skilfully designed so that the eels find it hard to escape. The baits are placed on both sides of the entrance inside the trap. Small traps are for shallow water, large ones are for moray eels, a delicacy in Kiribati and the Marshall Islands.



Fish pot.



Sea eel.



Kiribati: Eel trap.

Barriers

Barriers are fences or nets that form a collection area where fish are herded. Barriers are often set up to work with the help of the tides.

Barriers are good for catching:

- trevally
- snappers
- milkfish

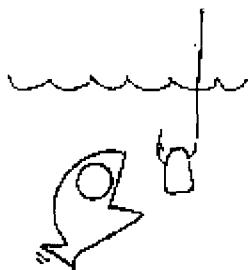
Demonstration

Display traps that are used in your region, such as:

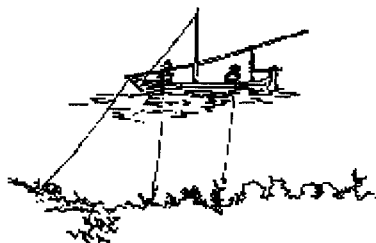
- collapsible trap
- pyramid trap
- arrowhead trap
- crab trap



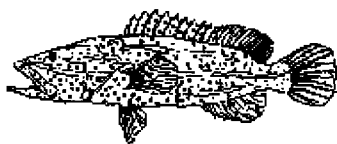
Fish barriers.



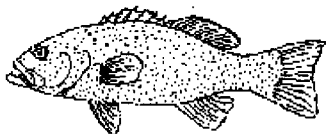
Fishing with bait.



Hand-lining from boat.

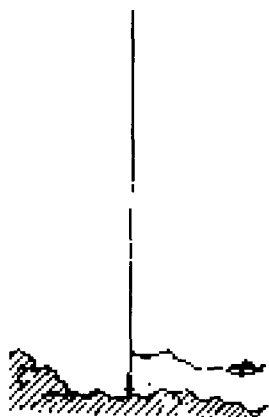


Lined coral cod.



Coral trout.

Chum is fish bait that has been broken up and thrown into the water to attract fish.



Bottom set hand-line.

Hooks & lines

Introduction

Fish are attracted by natural or artificial baits placed on or near a hook fixed to a line. There are many types of hook and line arrangements.

Discussion

1. What styles of hook-and line-fishing are used in your country?
2. Share with your classmates and compare:
 - where
 - when
 - who
 - types of baits
 - types of hooks
 - traditional methods
 - modern methods
 - target species
 - special times or locations

Hand-line

The arrangement used most by subsistence and artisanal fishers is the hand-line. Hand-lining is done with a line, but without a pole or rod. The line may be cast from a beach, reef flat or vessel (raft, canoe, boat). Usually a single hook is used. Sometimes multiple hooks are used. If the current is strong a weight may be attached to the line. Usually the weight is fixed one metre above the hook when fishing midwater or in shallow water on the sand. If fishing in deep water the weight is fixed one metre below the hook.

Many types of bait are used, including:

- fish flesh
- fish gut
- live scads
- damselfish

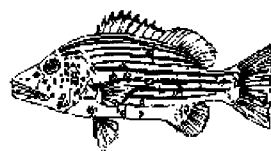
Hand-lining for reef fish may be carried out any time during the day. The best time is at day-break or at sunset.

There are two types of hand-lines:

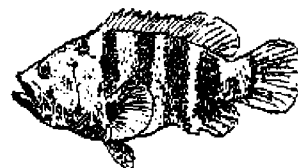
- **Bottom hand-lines** are set on the seabed using a weight at the end of the line. The hooks attached to a **snoed** a little further up the line from the weight.
- **Mid-water hand-lines** are usually heavy lines with weaker snoeds. Lines can be set at different depths to locate fish, with the sinker (if used) above the hook. **Chum** can be used with this method.

Baited hand-lines are used to catch a variety of reef fish, including:

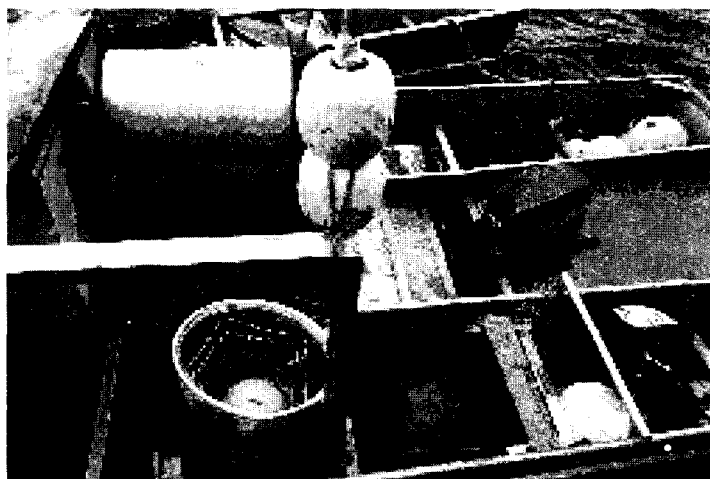
- snapper
- sea bream
- grouper (or rockcod)
- squirrelfish
- mid-water tunas, rainbow runners



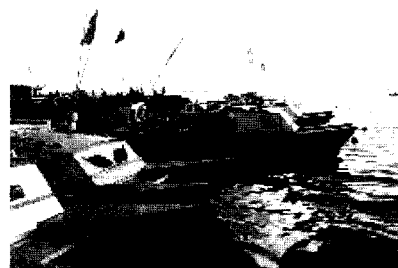
Stripy snapper.



Giant grouper.



Samoa: Longline gear on an alia.



Apia Harbour: A fleet of alia.

Destructive fishing methods

Some people use traditional poisons from seeds and roots or even very destructive poisons such as bleach in lagoon waters to stun small fish. Explosives such as dynamite may also be used to stun large fish.

All of these methods are destructive, unsustainable and illegal. They kill all life in the area and threaten the resource.

Discussion

- 1 Are poisons or explosives used in your area?
- 2 Discuss why this is harmful. What might be done to stop their use?

Activity

1. Which of the following fishing gears are destructive?
 - hand line
 - dynamite
 - spear

- pole and line
 - poisonous plants
 - net
 - bleach
 - crow bar
 - fish trap
2. Add other examples from your country.

Words & Their Meaning

Artisanal fisheries	- usually involve the capture or collection of fish or seafood to sell.
Bivalve	- shellfish with a hinged double shell.
Bollard	- a short post on a boat, pier or shore for securing a rope.
Chum	- chopped fish and other material used to attract other fish.
Cleat	- a T-shaped or similar structure on a boat, pier or shore for securing a rope.
Destructive	- causing damage that is very slow or impossible to recover.
Gender	- refers to different roles men and women have in their society.
Knot	- is a fastening made by tying together two ends of rope, or by looping the rope on itself.
Mooring	- securing a boat to a floating buoy or pier.
Pile	- heavy beam driven vertically into river bed or sea floor.
Plait	- a length of rope or hair made up of three interlaced strands.
SCUBA	- swimming or diving underwater using special airtanks. SCUBA stands for self-contained underwater breathing apparatus.
Snood	- a short line attaching a hook to a main line.
Subsistence fisheries	- usually involve the capture or collection of fish or seafood for the family.
Sustainable	- sustainable harvesting can keep going indefinitely, without reducing or completely using up the resource being harvested. This is because the resource is not overharvested and is able to continue growing or reproducing.
Unlaying	- untwisting of a rope into its separate strands.
Unsustainable	- unsustainable harvesting is something that can only be done for a short time - eventually, because of overharvesting or destructive practices, the resource will disappear.
Making fast	- securing a rope to a pile, bollard, ring, cleat or other structure.

Related Resources

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Preston, G., L. Chapman and P. Watt. 1998. Vertical longlining and other methods of fishing around Fish Aggregating Devices (FADs): A manual for fishermen. Noumea: Secretariat of the Pacific Community.

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