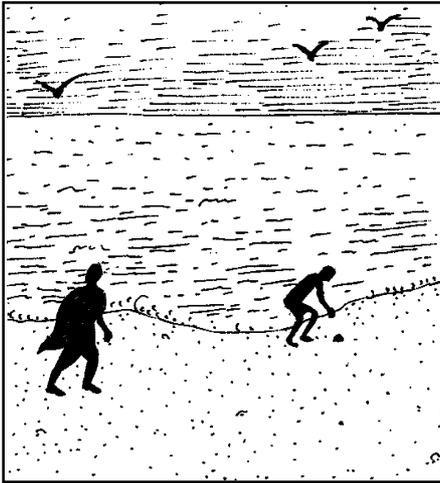
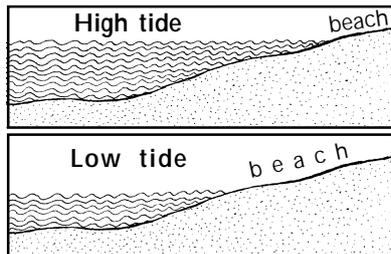


# The Coastal Plains and Islands

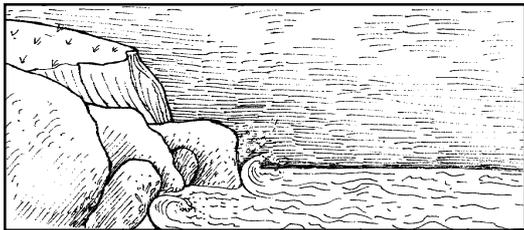


## The seacoast at one place

The coast is where the sea and the land meet. Look at this picture and see how a stretch of sandy beach extends down to meet the sea, which seems to go out to infinity! All day long, throughout the year, the waves lap the shore.



During high tide the sea comes up higher and during low tide it recedes lower, exposing more of the beach.



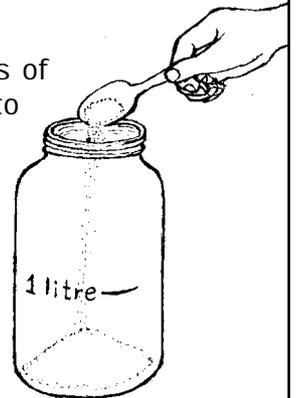
## The seacoast at another place

At some places on the coast there are cliffs and rocks. The boom and thunder of the waves lashing against the rocks fills the air all day long.

## Seawater

Can people drink seawater? Seawater contains many different kinds of salts. These salts come from the soil and rocks on land. They get dissolved in water and keep washing into rivers and into the sea. Although river water (fresh water) does not contain much salt, it all adds up. The salts do not evaporate - they get accumulated in the seas over millions of years, making seawater very salty.

Measure 350 grams of ordinary table salt into a container that will hold 1 litre (the 1 litre level should be marked on the container). While stirring, gradually add fresh, clean, drinking water until the salt is completely dissolved, making sure the final volume comes to one litre.



If you have never seen seawater, you can get some idea of how salty it is by tasting the water in the bottle. Real seawater will taste different because it contains a number of different kinds of salt, but it will taste about as salty as this.

*Could you drink the saltwater you made? Could you use it to make dal?*

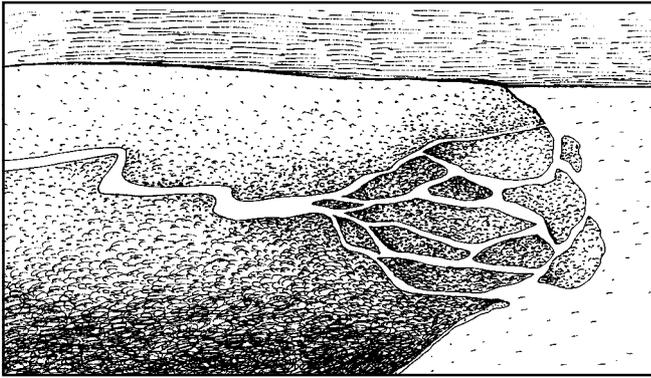
*What would happen if you try to boil an egg in saltwater?*

*Can you use saltwater to water plants?*

*Design an experiment to find out if saltwater can be used for watering of plants.*

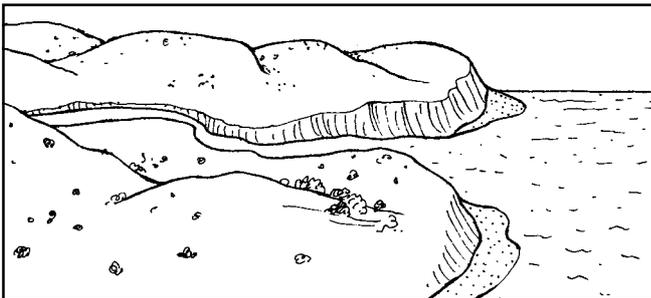
# Where rivers meet the sea

What happens at the mouth of rivers? Does the freshwater and saltwater mix? What happens to the sediment the river carries? Let's find out.



## A delta

In some rivers, the sediment that has been carried along by them gets deposited at their mouths. The ocean currents do not carry all the sediment away - it piles up, and the area around the mouth gets shallow. The river keeps getting choked by sediment, so it makes new branches or **distributaries**. After many thousands of years, the sediment forms new land and islands that extend out into the sea. This area is called a **delta**. Due to the sedimentation and weak tidal currents, seawater does not usually come far up the rivers in deltas.



## A river estuary

In some other cases a river meets the sea at a place where the tides are so strong that they create currents that carry most of the sediment away. No delta is formed. Seawater floods into the mouth of the river, making it broader and carrying away the sediment. The mouth of this kind of river is unusually wide. This is formed due to erosion and sinking of coastal areas. Such open mouths of rivers, where there is a mixture of fresh water and salt water are called estuaries.

## Map-study

*You can find out a lot about coastal plains by studying some maps of India.*

*Do you live on the coast or have you ever been to the coast? Look at a map of India and find the names of some places located on the coast.*

*How many states of India are located along the coasts? Make a list.*

*Estimate the lengths of the coastlines on the eastern and western sides of India. Which looks longer?*

*The areas near the coasts of India are mainly low-lying plains, called the coastal plains. Which coastal plains are wider - the eastern or the western?*

*Do the Indian rivers that flow into the Arabian Sea have deltas? Locate four major rivers of the west coast. Which states are they in?*

*Notice in the Atlas that in fact there are many small rivers coming into the Arabian Sea, and their names are not mentioned. These rivers are hardly 60 to 120 kilometres long. They come down the steep slopes of the western ghats and flow over the western coastal plains before they meet the sea.*

*Estimate the width of the coastal plains at the narrowest and widest places.*

*On the eastern coast of India you will find many deltas. Which rivers have deltas? Where do these rivers begin? Are they long or short rivers? Why do they not flow west into the Arabian Sea?*

*How vast are the oceans that lap the shores! Which countries besides India lie on the shores of the Bay of Bengal and the Indian Ocean?*

*There are many large and small islands in these oceans. Some are so small that they are not even shown on the maps in your Atlas. Some of these islands belong to India. The main ones are the Andaman and Nicobar cluster and the Lakshadweep, Amindivi and Minicoy cluster of islands. Locate them on the map.*

*Which of these island clusters are closer to the mainland of India? Use the scale on the map to estimate the distances from some mainland ports to these islands.*

*What other islands are there in the Indian Ocean?*

## Harbours

Indian and foreign ships come to harbours to load and unload the cargo they transport. The sea near a harbour has to be deep enough so that large ships do not run aground. These should also be protected from storm. Railway lines have been laid so that trains can carry the goods to and from the harbour. Thousands of labourers work here loading and unloading ships.

*Look at a map showing rail and sea routes of India in an atlas. Study how Mumbai, Chennai and Calcutta are connected to the world by ocean routes and to other parts of India by railroads. Organise the information you get in a table.*

While there are such big cities on the coasts with many kinds of industrial and business activities, most people in the villages on the coastal plains live by farming, fishing and some small-scale industries.

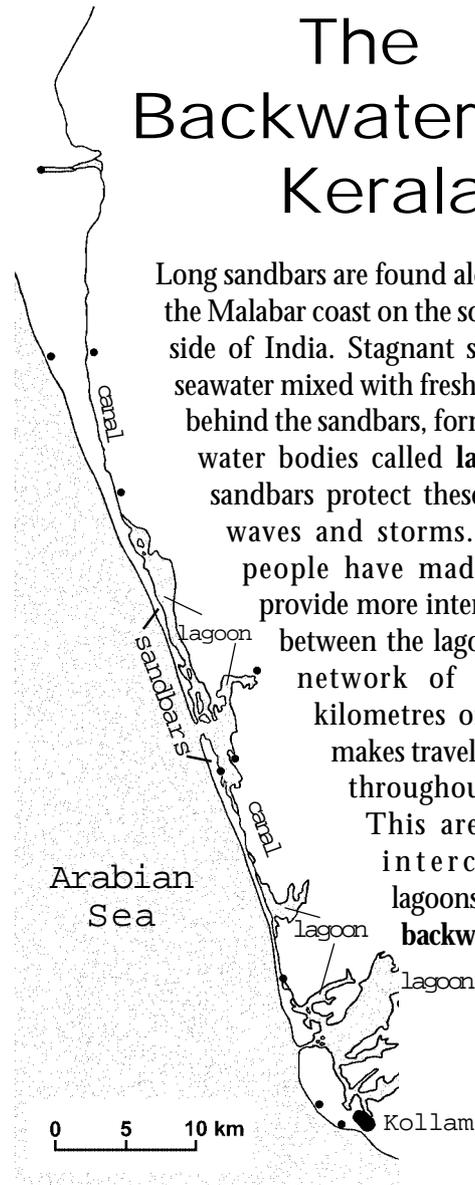
Boats at a dock in Mumbai harbour



## The Backwaters of Kerala

Long sandbars are found along much of the Malabar coast on the south-western side of India. Stagnant seawater and seawater mixed with freshwater collect behind the sandbars, forming shallow water bodies called **lagoons**. The sandbars protect these areas from waves and storms. In Kerala, people have made canals to provide more interconnections between the lagoons. Thus a network of about 500 kilometres of waterways makes travel by boat easy throughout this area.

This area, with its interconnected lagoons, is called the **backwaters**.



# Agriculture in the Coastal Plains

*Find out the main grain crop grown in the coastal plains (you can find out by looking in your Atlas). Is it the same in the eastern as well as the western coastal plains?*

*What are the coarse grains that are grown in the coastal plains?*

*What other commercial crops are grown in the coastal plains?*

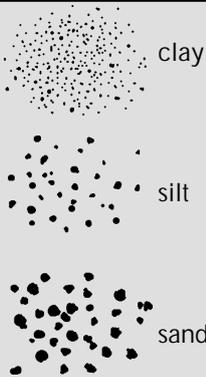
## Agriculture in the Deltas of the Eastern Coastal Plains

From May to August it rains heavily along the western coast and in the Western Ghats. Although it does not rain as much along the Eastern Coast, people take advantage of the rivers that flow there. These rivers have their source in the Western Ghats. Thus the rivers help to bring water from areas of heavy rainfall in the west to areas of low rainfall in the east.

As they flow along, rivers also wear away the soil and rocks they pass over. Soil and rocks are carried off by the rushing water.

*You know that soils have particles of different sizes called clay, silt and sand. Identify them in this picture.*

*Which are carried farther by rivers: larger rocks, small pebbles, sand, silt or particles of clay?*



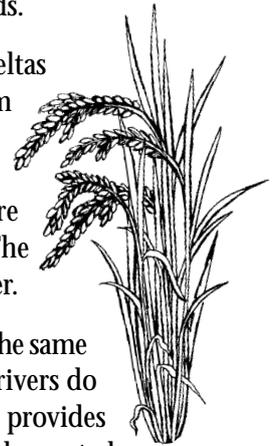
When they flood, rivers deposit soil containing large quantities of clay and silt in the deltas. This soil is also rich in humus.

For centuries people have made canals in deltas to carry floodwaters to the fields in order to increase the moisture content and fertility of the soil. Because of this, it has been possible to produce plentiful crops in deltas.

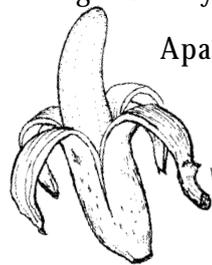
However, floods also have harmful effects that have to be guarded against. For example, floodwaters can drown people, destroy houses and villages,

submerge crops and cover fertile fields with layers of sand. Therefore, the farmers also build high bunds along the riverbanks to control the floodwaters. They can then use their canals to let in water according to their needs.

The rivers begin to flood the deltas of the eastern coastal plains from the month of May, and that's when the agricultural work starts. In May the rice fields are prepared and sowing is done. The paddy is harvested in September.



A second paddy crop is sown in the same fields in October. But now the rivers do not flood. The rain in October provides water for this crop. This crop is harvested in January, when moong is sown in the same fields. The moong is harvested in April. In this way, agricultural work continues here almost throughout the year.



Apart from paddy, there are plantations of bananas, paan and betel nut in many places in the deltas. These crops also require a great deal of water.

*You had found some other crops of the eastern coastal plains from the maps. In which parts of the plains would they be grown? In the deltas or elsewhere?*

*Since two to three crops are cultivated in a year in the deltas, you might think that a large number of people would settle here. Look at the population map of India to see if the delta regions are very densely populated.*

## Drier Regions between Deltas

If you look on a map of the eastern coastal plain you will find that there are regions between the deltas that do not have any large rivers - between the Mahanadi and Godavari, between the Krishna and Cauvery, and the region south of the Cauvery. The monsoon rainwater that the major rivers carry from the Western Ghats does not reach these parts. So this region doesn't get the humus and silt carried by these rivers. Compared to the deltas, these regions are dry. People living here have to make do with the little rain that falls here. This rainfall is enough for cultivating one or sometimes two crops a year.

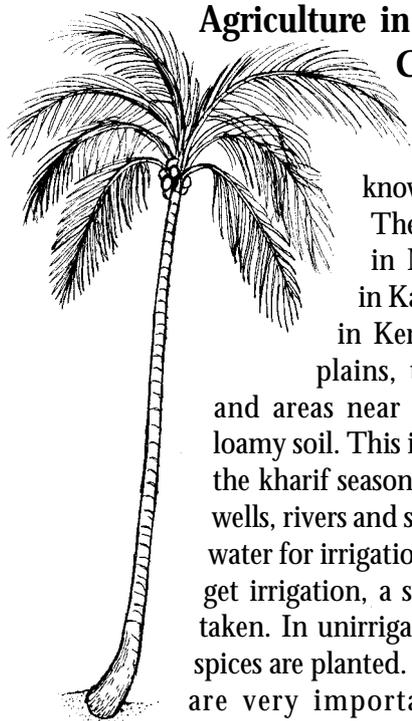
The people living here collect rainwater in tanks. This keeps the soil moist and the water can also be used for irrigation, to some extent.

The water in the tanks is not enough to irrigate the entire region, so only some parts are irrigated. Several crops that require less water are grown here. These include cotton, tobacco, groundnut, sesamum, chilly and pulses. Jowar and ragi are also grown in those regions where irrigation is not possible.



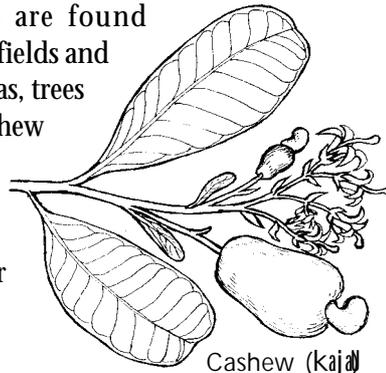
Cotton grows in the drier regions between deltas

## Agriculture in the Western Coastal Plains



coconut

The different regions of these plains are known by different names. They are called Konkan in Maharashtra, Kanara in Karnataka and Malabar in Kerala. In these narrow plains, the flat river valleys and areas near estuaries have good loamy soil. This is used to grow rice in the kharif season. After the monsoon, wells, rivers and streams are used to lift water for irrigation. In those fields that get irrigation, a second crop of rice is taken. In unirrigated fields, pulses and spices are planted. Tree plantation crops are very important here. Coconut plantations are found along paddy fields and in sandy areas, whereas, trees such as those of cashew nut, mango, chikoo, and arecanut are grown on the coarse, less fertile soil near the hilly regions.



Cashew (kajal)

## The Gujarat Coastal Plains

The coast of Gujarat gets much less rainfall than the coastal plains in the rest of India. Agriculture here is thus very different. Crops that require a lot of water are grown only in a few irrigated parts of the Gujarat coastal plain.

*Compare the Gujarat and southern coastal plains on a physical map of India to think of a reason why Gujarat gets less rainfall. Explain, including reference to how clouds and rain are formed.*

*Which of the following crops would you expect to find in the coastal plains of Gujarat? Make your estimation and then check in the Atlas to see if you are correct.*

*paddy wheat coconut cashew bajra tea cotton jowar tobacco rubber sugarcane*

*Gujarat has two large peninsulas. What are their names? Sketch them in your notebook.*

**The Rann of Kutch** is a saltwater marsh – it is mostly muddy or covered by water during high tides and after the rains. Not much grows here except a few kinds of grasses and bushes. It is a vast, wild land without towns, villages or roads.

# The Impact of Dams on Deltas

You know about dams built on rivers to irrigate dry regions of the plateau. These dams have caused problems for people living in the deltas. Because of the dams, less water and silt is reaching the deltas, so the fertility of the soil there is gradually decreasing. Thus sharing of river water between different regions is becoming an issue of conflict. For example you may have heard about the Cauvery water dispute between Karnataka and Tamil Nadu.

The water stored in Krishnarajasagara is used for irrigating a number of nearby districts and for meeting the needs of Bangalore. The water stored in Mettur dam is released for irrigating the crops grown in the delta regions of Tamil Nadu.

*What has been reported in the press about this dispute? Share what you remember and try and collect some reports.*

*Study a map to see how the Cauvery flows between these two states.*

*Which state is upstream on the river and which state is downstream?*

*Locate Krishnarajasagara dam in Karnataka and the Mettur dam in Tamil Nadu. How would the waters of the Cauvery River fill the reservoir of the Mettur dam?*

*Supposing there is poor monsoons in a year (as it was for e.g. in the year 2002), what are the steps that Karnataka can take to meet the water needs of its people?*

*What are the steps that Tamil Nadu can take to meet the water needs of its people?*

*People have been feeling the need for a national water policy so that such conflicts can be resolved in a fair manner. What do you think should be the basis of resolving such conflicts? Have a discussion in your class.*

Let's learn something about how the people live in villages by the sea and what changes have occurred recently in their lives. We'll find out about a hamlet of fisher folk on the eastern coast of India where a man named Thomas lives.

## Going Out Fishing at Sea

### The Fishermen Head for the Sea

It is three in the morning. Thomas's wife wakes him up and gives him some rice gruel to eat. By 4:00 am, Thomas is ready to go out to sea. His friend David waits for him on the beach. Both are poor fishermen. They do not own any boats or nets. They work on Rajan's boat, a kattumaram. Rajan is also not very rich but he does own a kattumaram that cost Rs 10,000 and fishing nets that are worth Rs 5,000. It is on this kattumaram that Rajan and his son go to sea to catch fish. Thomas and David have been hired to help them.





Pushing the kattumarams out into the waves

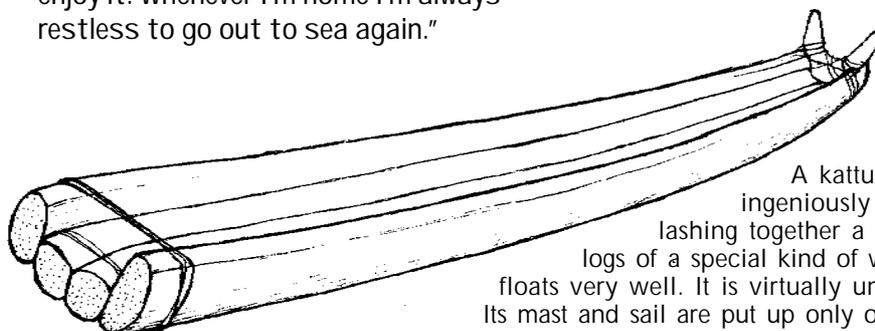
It's still quite dark outside. At night, a breeze blows from the land to the sea. This breeze will help them sail out. The sail and the nets are lashed tightly to the kattumaram so that the waves cannot wash them away. Many people come to push the kattumaram out to sea.

After a while, Thomas and David set down their paddles, hoist the mast, and unfurl the sail. The kattumaram dances along on the waves. The waves are not so high today, but at times they can get so big and powerful that they can overturn the kattumaram, knocking everyone into the sea. If that happens, the fishermen turn it upright, climb back on board, and carry on with their work.

Thomas was seven years old when he first went to sea. Twenty years have passed since that day. If you ask him how he likes his work he will reply, "Oh, I enjoy it. Whenever I'm home I'm always restless to go out to sea again."



The sail has been set



A kattumaram is ingeniously made by lashing together a few large logs of a special kind of wood that floats very well. It is virtually unsinkable. Its mast and sail are put up only out at sea.

*What difference do you see between the boats in your area and the kattumarams in these pictures?*



By the late morning, the sun has warmed up the land and also the air above the land. This warm air rises up and cooler air from above the sea rushes in to take its place. Thus the breeze has changed direction and is now blowing from the sea towards the land. The fishermen use this breeze to return to shore.

It's hard work to pull in the net full of fish

But it is no easy task to sail the kattumaram. It is hard work: rowing, adjusting the direction of the sail according to the breeze, and drawing in the heavy nets. Catching fish at sea is also dangerous. There is always the fear of drowning. When a fisherman goes out to the sea it is not certain that he will return. He can be caught in a sudden storm, or his boat might strike a rock and be dashed to pieces. Or he might even fall prey to sharks.

Two or three kilometres away from the coast, the fishermen drop anchor. The heavy anchor sinks into the sand at the bottom of the sea and keeps the boat from drifting away. Thomas helps open the nets and spread them in the water. An hour or so later they pull up the heavy nets full of fish and begin the journey back to the coast.

By the time they get home it is around noon or a little later. Other boats are also coming in. On shore a crowd of traders and other people are waiting for the boats.

### The Fish is Sold to Traders

Thomas's mother is one of the people there with her basket. As soon as the fish are unloaded from each kattumaram, the women make a dash towards the heap of fish. The auctioneer appears. Usually, the catch is sold on the beach by an auctioneer. In return, he gets a portion of the catch. Small traders, like Thomas's mother buy the fish and take it to the market to sell. She also takes some to cook for the family.



This time, a big trader makes a grab for Rajan's catch. Rajan has borrowed money from him for his sister's wedding. The trader had lent the money on the condition that Rajan would sell his fish only to him, and at a cheap rate. This does mean that Rajan and his friends lose some money, but if they sell the fish to anyone else, the trader won't lend them money in future. He may even ask Rajan to return the entire loan immediately. So Rajan's fish is sold off to this trader.

The big trader preserves the fish in ice and sells it in faraway cities. Sometimes it is exported to foreign countries, which earns a lot of money.

Rajan divides the money he receives from the trader into five parts - one part each for Thomas, David, and his son, and two parts for himself. Rajan gets one part for his labour and another for his kattumaram and nets.



Drying fish is one way of preserving it for future use

## Months without Money

During the months of January and February the catch is poor. The fishermen can never be certain whether they will get any fish, even after a day's hard work. This situation continues till April. During these months, labourers like Thomas and small fishermen like Rajan undergo many hardships. They borrow money from traders to keep their households going. From May or June until September, the catch is good. They try to repay their debts during this period.

***How is the fishermen's catch sold?***

***Why was Rajan not able to sell his fish in the auction?***

***Of the money obtained by selling the fish, why did Rajan keep two parts for himself while he gave everyone else only one part each?***

## Big Fishermen, Small Fishermen

Among farmers there are small, medium and big farmers and labourers. The same holds true for fishermen. Workers like Thomas do not own a kattumaram or nets. They work on the boats of others. More than half of India's fishermen work as labourers for others. It requires around Rs20,000 to Rs50,000 to purchase a boat, kattumaram and nets. That is a sum that only a few people can arrange. Big fishermen own many boats, kattumarams and large nets. To operate these and pull in the nets they employ 50 to 60 labourers. They keep half of the catch and the rest is divided among the workers.

One such big fisherman is Anthony. He used to have many kattumarams, boats and different kinds of nets. About 50 to 60 labourers worked on his boats. Most of these workers took loans from him, so they worked for him for lower wages. Anthony accumulated a lot of money over the years and became rich.

## Mechanised Boats (Trawlers)

Ten years ago, the government announced that those who wanted to buy mechanised boats (trawlers) would be given loans and a subsidy. The cost of the trawler and new nets amounted to Rs 2 lakhs.



Anthony spent Rs 1 lakh of his own and took a loan of Rs 1 lakh to buy a trawler. Apart from Anthony, there were only two other persons in the village who could arrange the money to buy these new boats.

Using the trawler has proved to be very profitable for Anthony. Now he needs very few workers - only 6 or 7, against the 50 or 60 workers he needed earlier.

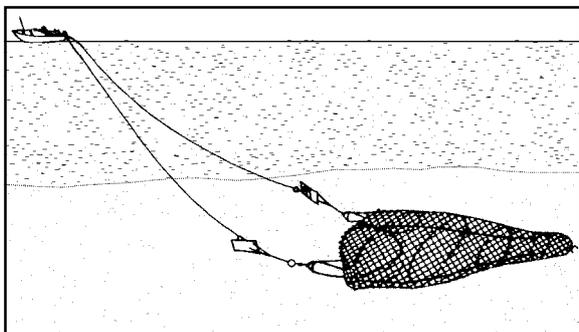
He has made his nephew the captain of the trawler and most of the workers are his relatives. With a trawler they can go farther out into the sea in case the catch near the coast is low. A trawler can go out to sea even if the wind is strong and the waves are high. As a result the catch is bigger.

Anthony has earned very high profits with his trawler. He has sold off his sailboats and kattumarams and bought two more trawlers. This meant that a large number of workers lost their jobs.

*Why do labourers working for big fishermen like Anthony work at low wages?*

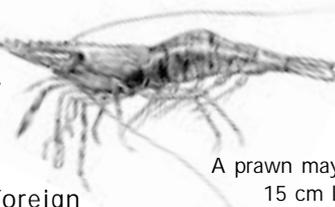
*What are the advantages that a trawler provides to its owner?*

In the beginning, Anthony used to take his trawler 10-12 km out into the sea to catch fish. But when the demand for prawns rose, the situation changed. Prawns are found just 3-4 km from the shore, and not farther out in the sea. So Anthony ordered his ships to drop their nets only 2 to 4 km from the shore. Along with the prawns they would also catch other kinds of fish in their nets. Not just big fishermen, but big traders and industrialists also got into the prawn business with their trawlers. Thus a lot of trawling took place near the shore.



## Prawns

Over the past many years, the demand for prawns (a kind of crustacean) has been steadily rising in foreign countries - and so have their prices. The prawns that fishermen catch are bought off by big traders so that they may be supplied to packaging factories. In the factories the prawns are cleaned and boiled in water with salt. They are then frozen in refrigerated rooms. The frozen prawns are exported to foreign countries where they fetch a very good price. The ships on which the prawns are sent have refrigerated holds in which the prawns are kept frozen for the weeks it may take to reach their destination.



A prawn may be 15 cm long

## How Trawlers affect the Small Fishermen

Two to four kilometres from shore is the zone where small fishermen usually spread their nets. As more and more trawlers come into use, the catch of the small fishermen is growing smaller and smaller. Now they often return empty handed from the sea. Consequently, they have to frequently borrow money to run their households. In this way they are coming more and more into the grip of traders and money lenders.

*Why do the owners of trawlers want to catch prawns?*

*Why do small fishermen have to borrow more money due to the coming of trawlers?*

In the evening, all the fishermen and labourers meet to discuss their problems. Rajan says, "From the time these trawlers have started running, the number of fish in the sea has decreased. Has anyone ever before heard of a shortage of fish in the sea? These big boats catch all the fish, and there is nothing left for us!"

"Once when I was working on Anthony's boat, I saw for myself the horrible way the trawlers work," Thomas says. "There are wooden planks attached to the lower part of the net, and as the trawler moves, these planks go scraping along the sea floor."

A trawler net scrapes the bottom of the sea to catch fish

On hearing this many fishermen exclaim, "What!, it is only on the sea floor that the fish deposit their eggs! It is only there that young fishes grow. What must be happening to them?"

"What do you think?" says Thomas, "They all get killed! That's another reason why there are less fish in the sea."

"Another thing," adds David. "These trawler nets are so fine that even small fishes get caught in them. Though, they are of no use to any one! They get killed for no reason at all! No wonder we don't catch big fish these days – the little ones get no chance to grow up."

Just then another fisherman comes along, crying out loudly, "Tell me, who will teach these men a lesson! They have ruined me! I had spread my net on the sea. This boat of Anthony's went right through it, tearing it apart. Thousands of rupees it had cost - and now, all is lost."

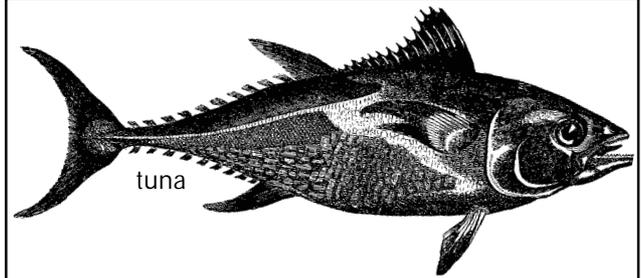
"Last week they destroyed my father's net just like that," another man says. "Every day they are becoming more and more bold - only two days ago one trawler came speeding along and hit my friend's boat and overturned it. Poor fellow, he almost died!"

"We must get together and do something to stop all this. If we don't stop them we'll all be ruined - and even before that our sea will be ruined," says Thomas.

State governments have tried to regulate the activities of trawlers by not allowing them to fish near the coast and use small nets. Governments are also trying to help fishermen to motorise their kattumarams.

*When mechanised boats began to be used for catching fish it seemed that the production of fish would increase, and the condition of fisher folk would improve. But what happened in reality? Narrate briefly.*

*Write an imaginary conversation between Anthony and Rajan on the topic of the size of catches.*

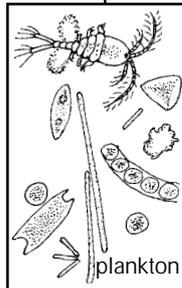


## Why are there Less Fish in the Sea these Days?

**1. Overfishing:** The main reason for the decrease in the population of fish and other marine life is overfishing and the use of trawlers.

**2. Pollution kills marine life:** There are many big factories along rivers and in the coastal regions. They use many kinds of poisonous chemicals, which are then released into the rivers and seas. Certain chemicals, such as ones containing toxic metals like mercury, cadmium and lead, can kill fish and other marine life. Also, when people eat fish that contains too much of these toxins, they can suffer serious health problems such as permanent brain damage.

**3. Pollution causes excessive growth of algae:** Too much organic waste such as sewerage, fertilisers, pesticides and detergents washing into the rivers and seas can have another effect. It can cause too much algae to grow on the surface of the sea. This can kill coral reefs and other marine life deeper down by preventing enough sunlight and air from reaching them.



**4. Reduction in nutrients going into the sea:** Rivers carry fresh water and also humus and nutrients into the sea. Many kinds of microscopic organisms called **plankton** live on the nutrients rivers deposit in the sea. Small fish and other marine animals eat plankton. Bigger fish eat smaller fish. Birds and other animals eat fish. Thus marine life is dependent on the humus and nutrients brought into the sea by fresh river water. In the last 50 years, many dams have been built

across the rivers of India. Due to these dams less fresh water now reaches the sea. Humus brought by the rivers has also decreased. Can you see how this might affect the fish in the sea?

**5. Excessive siltation reduces marine life:** Trees and plants prevent too much sediment from draining into rivers. But when land is cleared of forests, rivers sometimes carry too much silt and sediment into the sea. The sea becomes muddy and turbid, and marine life cannot get enough sunlight to survive.

*Too little nutrients in the sea can be bad. Too much nutrients can be bad. Explain.*

*Reduced river flow can result in either less fish or more fish. Explain.*

# The Islands of India

## The Andaman-Nicobar Islands

For many centuries, people have been living on the Andaman-Nicobar Islands, located far to the east of India's mainland. Trading ships on their way to Indonesia and China have also been going past these clusters of islands.

The Andaman-Nicobar Islands are heavily forested with lush evergreen tropical trees. Spices, betelnuts, coconuts and bananas grow in plenty. A fruit called pendse (kevda), jackfruits (katahal), wild pig meat and honey are favourite foods.

### Mangroves

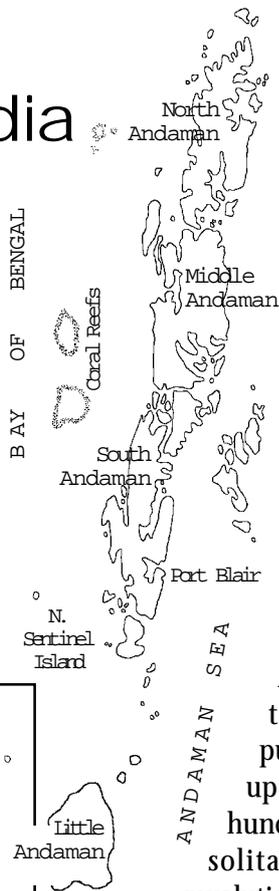
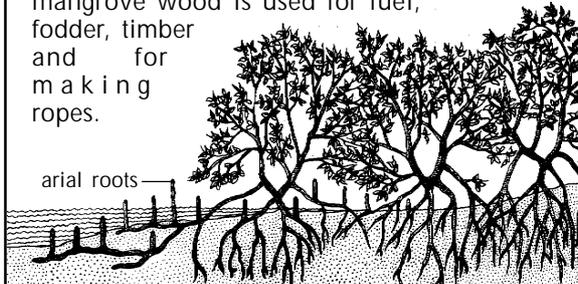
You may have heard of mangrove trees, which grow in places near seacoasts where saltwater mixes with freshwater. They are one of the few plants that can live in salty, wet marshes.

#### How do they survive?

- (1) They have special filters and glands to separate out the salt.
- (2) They have large networks of roots that keep the plants firmly anchored in the marshy soil that keeps getting flooded with salty water when the tides rise.
- (3) Parts of the roots also extend above the ground and above the water so that they can get the air that the plants need to survive.

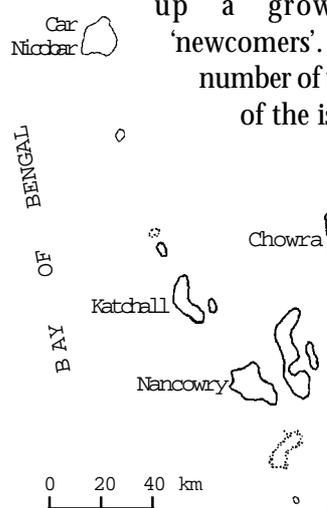
Mangroves are very important in providing a habitat for a wide variety of microscopic organisms, insects, crustaceans, fish, reptiles and birds. They also trap silt and help control floods.

However, mangrove swamps are under threat in many areas. These days they are being drained or filled and used for agriculture, industry and urban development. Also, mangrove wood is used for fuel, fodder, timber and for making ropes.

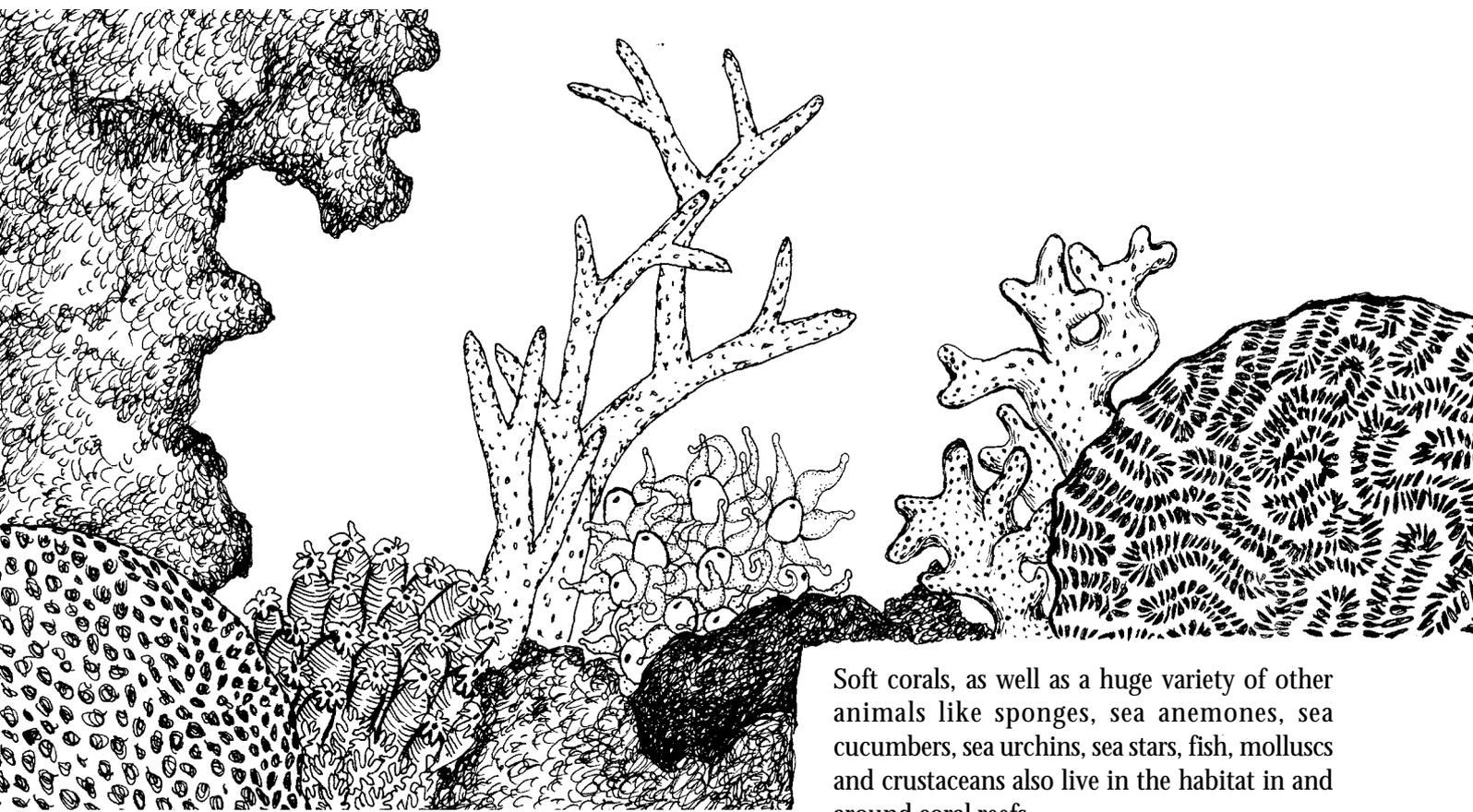


The original inhabitants of the Andamans belong to a number of tribes, and for centuries they have been living by fishing, hunting and gathering - without farming. Why haven't they taken up agriculture? Is it because they have had no need for it, with the abundance of wild produce? Or is it because the hilly, forested land is not very suitable for farming? These are interesting questions to debate.

Since 1858, the British took advantage of the isolation of the Andamans and sent prisoners from the mainland of India there for punishment. In 1905, the British set up a huge prison in Port Blair with hundreds of cells to keep prisoners in solitary confinement. Many rebels, revolutionaries and freedom fighters of India spent years of torture and misery in this cellular jail. The prisoners that survived and were freed were encouraged by the government to settle down there itself instead of returning to the mainland. Other people from the mainland of India have also come to settle in the Andamans. Over time, government officials, traders, tourists and people serving the tourists have made up a growing community of 'newcomers'. On the other hand the number of tribal inhabitants on some of the islands is decreasing.



Tourism has increased and so has trade in timber, coconut coir ropes and dried fish. These are exported from the islands whereas most vegetables and food-grains are imported. Some rice is grown for local consumption.



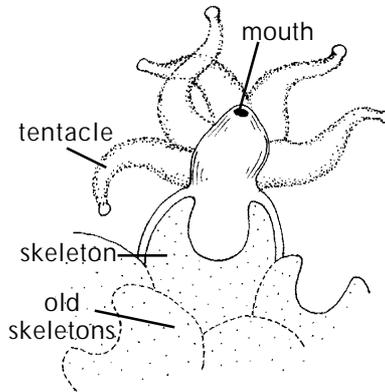
Soft corals, as well as a huge variety of other animals like sponges, sea anemones, sea cucumbers, sea urchins, sea stars, fish, molluscs and crustaceans also live in the habitat in and around coral reefs.

### Coral Reefs

Look at this picture - what do you think it shows? Plants? Rocks? Sea Weed? Actually, these are corals - which are animals!

As shown in this close-up picture, a coral consists of a small polyp and a hard outer, cup-like skeleton that remains after the polyp dies. New polyps build their skeletal cups right on top of the old cups. They remain fixed in place. Over thousands of years, many layers of the skeletons of dead corals build up to form a large rock-like, solid structure in a variety of spectacular shapes: a **coral reef**.

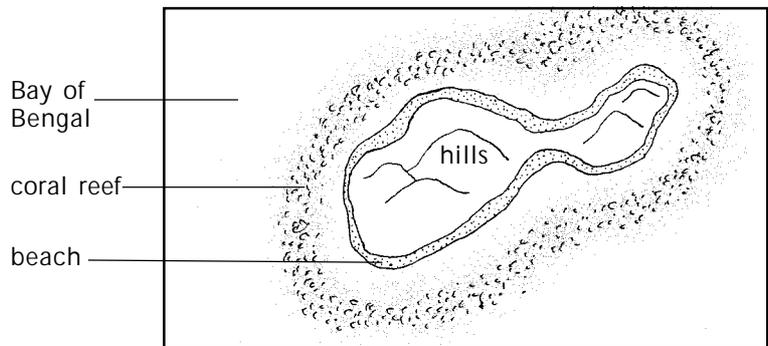
Coral polyps eat plankton (microscopic organisms) that they catch with their stinging tentacles.

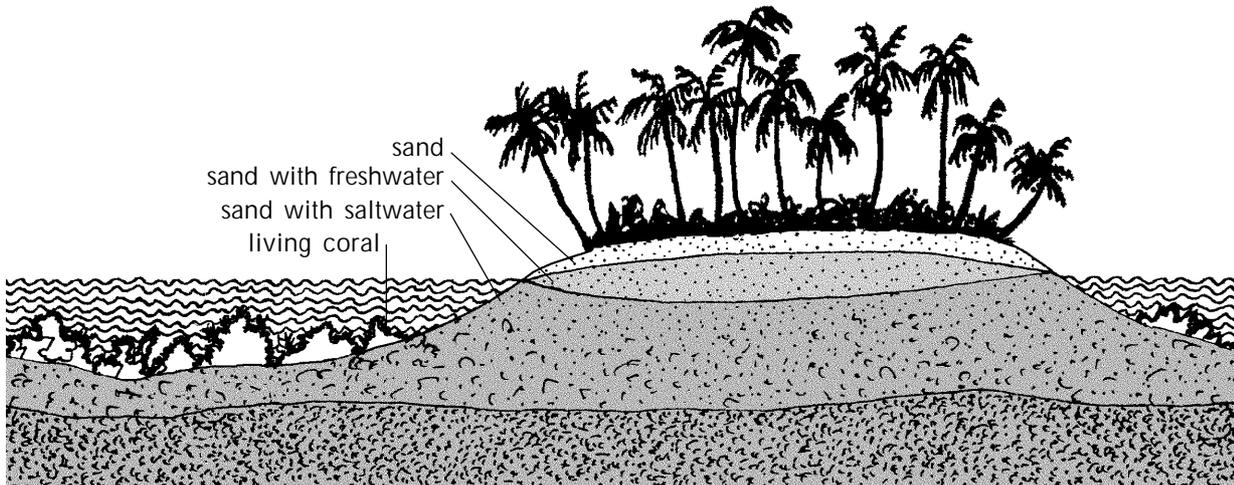


a living coral polyp

Coral reefs can survive only in salt water that is just the right, warm temperature. The water must also be shallow and clean, so that enough light can reach the algae upon which the coral depend. Without light, algae cannot live.

Coral reefs are found in fringes along the shores of the Andaman-Nicobar Islands, which are volcanic hills that stick out from the bottom of the sea.





A Coral Island

## The Lakshadweep Islands

In some places, where the sea is shallow, there are islands sticking out of the water made of the accumulated piles of dead, broken up coral rocks and coral sand.

Seeds of various plants are brought by wind, waves and birds, and may take root in the sand. Plants survive on the rainwater that collects in the sand, forming a layer above the heavier salt water further down. Coral continues to live on the reefs in the shallow seas in and around the islands. This protects the islands from waves and storms. A coral island can sometimes become a vegetated, inhabitable island.

In the Arabian Sea, the Lakshadweep, Amindivi, and Minicoy Islands (a Union Territory of India) and further south, the Republic of Maldives are such coral islands. The largest inhabited islands

are less than 4 km long, and rise not more than 2 metres above sea level.

Coral reefs can be easily killed by various human activities. This may have far-reaching detrimental effects on the marine environment.

The most common trees native to the Lakshadweep Islands are coconuts. There is not a large variety of plant or animal life above ground on the islands – the really amazing variety of life lives in the water around the coral reefs.

The Lakshadweeps are inhabited by people who's ancestors had come and settled here from the Indian mainland. Fishing, tending coconut plantations and tourism are the main occupations. Other than growing coconuts and tending small household gardens, little agriculture is practiced, due to the sandy soil.

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## Exercises

1. Look at the section about deltas and describe how deltas are formed in your own words.
2. Look at detailed maps of India and find four large rivers that do not have deltas.
3. Are there any rivers that flow from the eastern coastal plain across India to the western coastal plain? Explain why or why not.
4. Would you expect to see a lot of large rocks and boulders in deltas? Explain why or why not.

5. *Why might you expect to find good farming land in a delta?*
6. *Can good harbours easily be made on a delta? Explain why or why not.*
7. *Why is there dense population on the coastal plains?*
8. *Describe in your own words the daily routine of a small fisherman and fisherwoman.*
9. *If you were a fisherman, what fears might you have about your work?*
10. *In which months is the catch of fish good and in which months is it low?*
11. *List some advantages and disadvantages of using mechanised trawlers as compared to kattumarams for fishing.*
12. *On the right is a present-day map of the region around Cuttack. Which large river is shown here?*
13. *Which of the following maps shows how the area around Cuttack might have looked a few thousand years ago? Explain.*



14. *Suppose there are two girls whose families both farm small plots of land not far from the Krishna River: Mala, whose farm is close to Tenali, and Vani, whose farm is close to the dam at Nagarjunasagar. Find their locations on a map and explain how each of the girls might feel if a plan is announced to raise the height of the dam.*



Fisher Women - a painting by K Srinivasalu