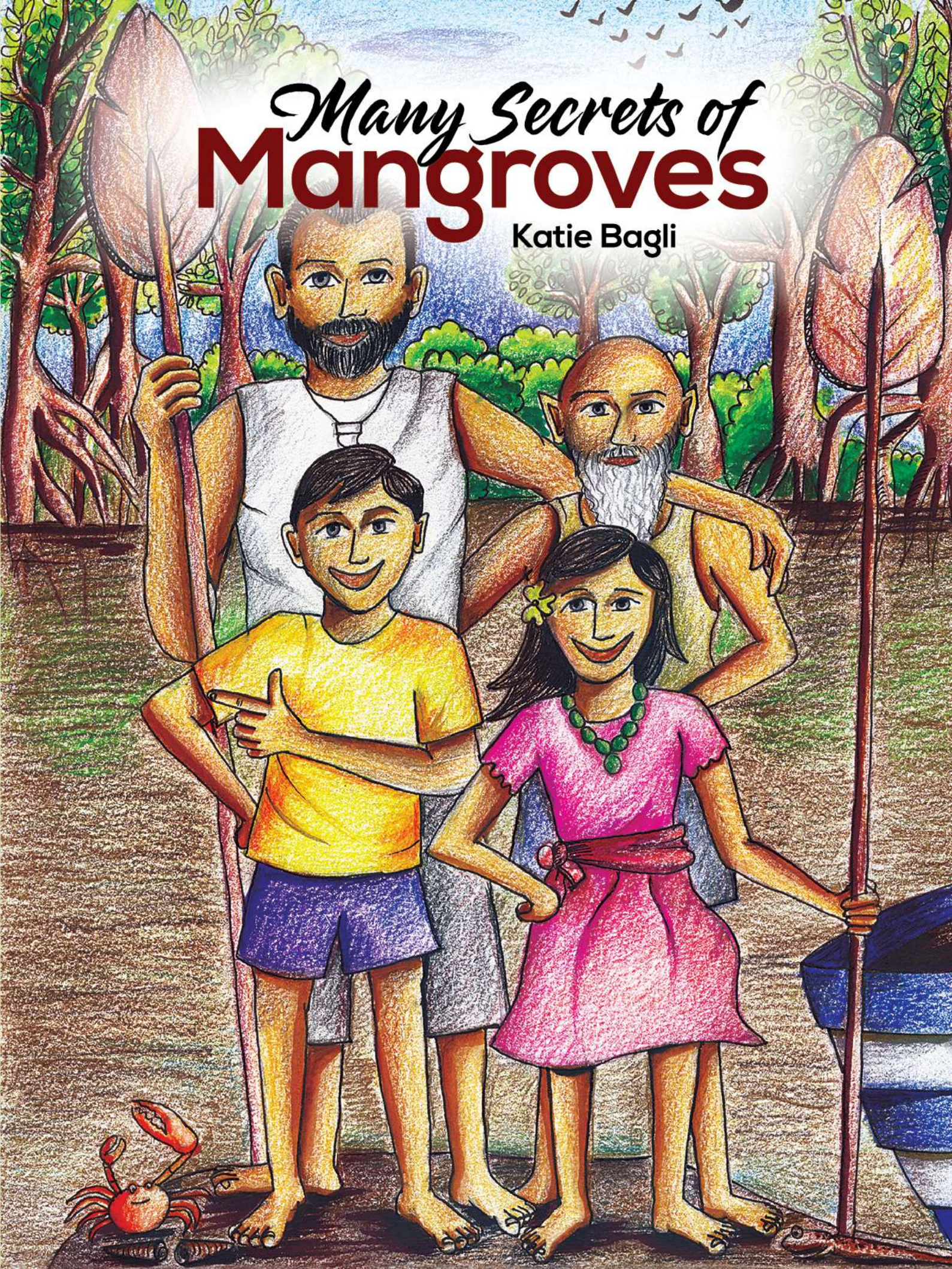


Many Secrets of **Mangroves**

Katie Bagli



Ganesh and his two children, Radhi and Abhay, escape the stormy sea and land up on an unknown island. Bauna, the local fisherman offers them food and shelter. What happens next? Read on...

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Author

Katie Bagli

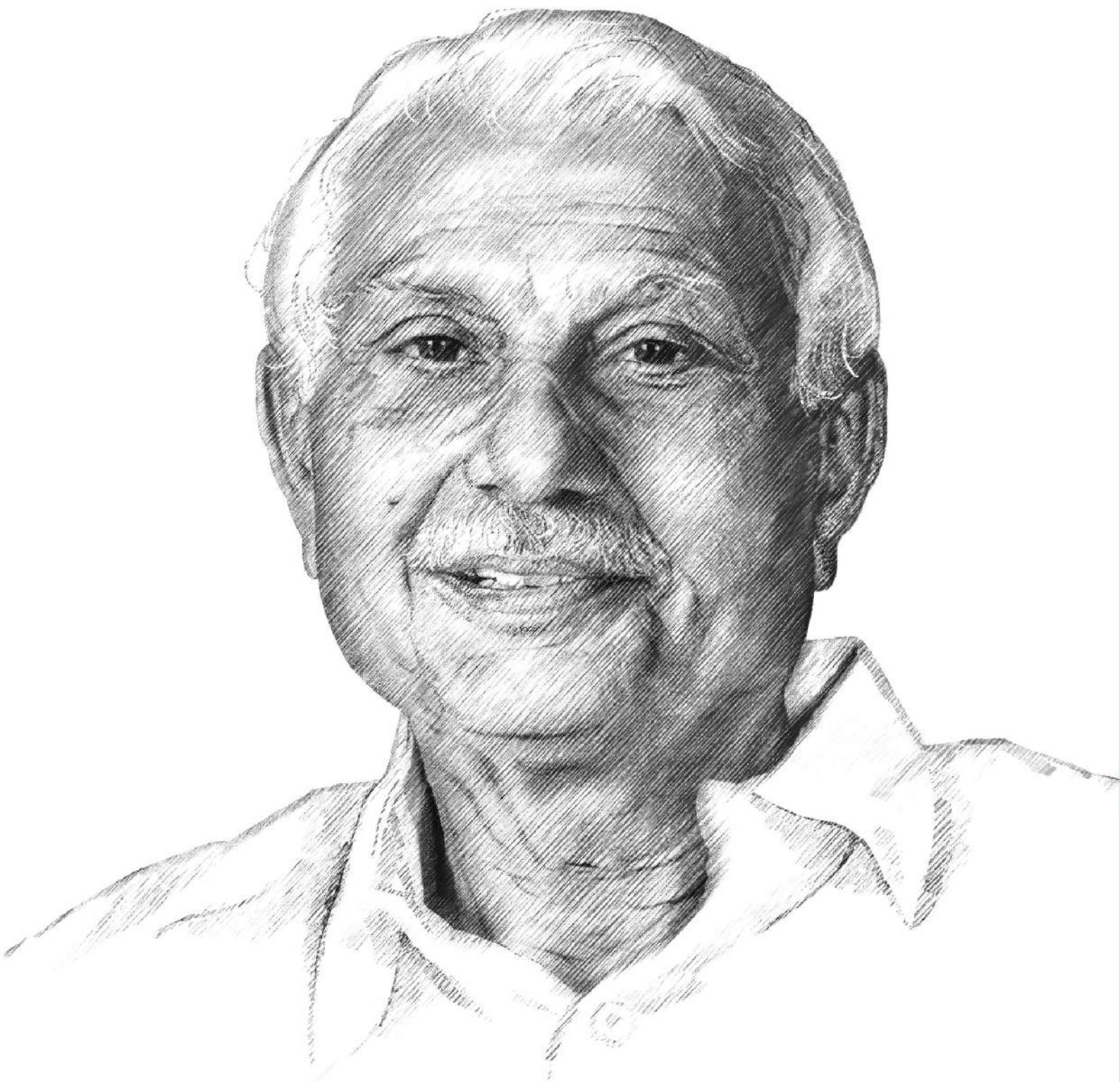
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Godrej Infotech Limited

Concept, knowledge inputs, photographs & production

Godrej Wetlands Management team



Naval Pirojsha Godrej

3rd Dec 1916 - 8th Aug 1990

This book has been dedicated to the memory of Naval Pirojsha Godrej who endeavoured to pursue his father Pirojsha Godrej's dream of establishing a self-sufficient industrial garden township – Pirojshanagar. What is unique about Pirojshanagar is that it epitomises a harmonious blending of man, machine and nature. The well-maintained natural environment in this township is not only conscientiously protected but also enhanced to a great extent.

Despite the heavy demands on his time of an industrial establishment during his father's lifetime in the sixties, Naval Godrej managed to indulge in his love for nature and also his love for sailing – only his close friends were aware of his interests, as he was a very private person. Equally important to him were the mangroves adjoining Pirojshanagar. Despite the financial constraints in those early years, he gave whatever he could to the mangroves. In this, he was supported by his elder brother Sohrabji. These were the early years before the formalization of the Soonabai Pirojsha Godrej Foundation.

Naval Godrej's firm commitment to environmental issues laid down the foundation of the environmental policy that Godrej followed vigorously by adopting practices for sustainable development and preventing the industrial abuse of the surrounding environment. Various initiatives such as commissioning of the Effluent Treatment Plant in 1983 and the first Tertiary Sewage Treatment and Recycling Plant in 1986 were significant steps in this direction. His foresight also led to the demarcation of a green non-development zone including a mangrove forest. Under his leadership, an Environmental Cell was established in 1985 for protection and Conservation of mangroves which later grew into Soonabai Pirojsha Godrej Foundation.

The logo for Godrej, featuring the word "Godrej" in a stylized, cursive script font.

Foreword

Mangroves are marvels of nature, ecological wonders, and offer a scenic splendour. They display arching roots, breathing roots, salt exuding leaves, mud-dancing fishes, and breath-taking beauty.



Mangroves are the only tall tree forests between land and sea in the tropical and warm temperate coasts. They are also known as 'Coastal Woodlands', 'Oceanic Rain-forests', 'Roots of the Sea', 'Only Blue Carbon Forests' or 'Tidal Forests'.

Mangroves are adapted to their harsh environment where no other tree species can survive. They are highly productive forest systems. Mangrove biomass production is greater than any other aquatic systems on the Earth.

Mangroves provide the right conditions for fish to propagate, thereby supporting the livelihood of the coastal people. In addition, they provide firewood, timber, cattle feed, honey, medicines, recreation and scope for tourism development.

Mangroves are like "Green forts" that protect the coastal life against natural calamities such as tsunamis, storm surges, cyclones and floods. It was the mangroves that saved human life and property in India during the 1999 super-cyclone of Odisha and the 2004 Asian tsunami. The mangroves protect the coastal ground water from seawater. They remove coastal pollution by removing the atmospheric carbon-dioxide, solid wastes and toxic heavy metals.

The mangrove forests of India are globally unique. They have the highest biodiversity of 5,747 species. The largest mangrove forest in the

world is Sundarbans which is present in India and Bangladesh. The Sundarbans is the only mangrove forest in the world inhabited by the Royal Bengal Tiger. It also serves as a “home” to rare and threatened wildlife species.

Besides the Sundarbans, Bhitarkanika of Odisha is considered to be the “mangrove genetic paradise” of the world. In India, the mangrove forest increases by about 2% per year. Maharashtra state significantly contributes to the increase of mangroves in India.

It may be emphasised here that our loving children are the future of our country and the prosperity of the nation. Their minds need to be ignited with information, inspiration and passion for conserving our precious nature treasures. Bearing this in mind, a children’s book on mangroves has been written by renowned author Ms Katie Bagli with the support of a dedicated team from Godrej Wetland Management Services. I whole heartedly appreciate this great effort.

Hats off to Godrej & Boyce Mfg. Co. Ltd. (G&B) for the monumental work in protecting a vast area of mangroves at Vikhroli, Mumbai, sensitizing about 10,000 citizens every year on our nature treasures, developing a Godrej Mangroves mobile app – first of its kind in Asia – and, in publishing the children’s book on mangroves in 11 Indian languages.

Let’s have a vision to see, vigour to act and a heart to care for our mother nature, to ensure a safe and happy future!



Prof. Dr. K. Kathiresan

UGC - BSR Faculty Fellow & Honorary Professor,
Member, IUCN Mangrove Specialist Group

Date: 02.12.2019





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1. *A New World*

Ganesh and his two children, twelve-year-old Radhi and fourteen-year-old Abhay were desperately looking out for land. The sea had suddenly turned very choppy. Gusty winds were howling in their ears. A sure sign of an approaching storm. To add to their problems, they would soon be running out of fuel.

Ganesh had bought this boat – Samudree Devi – out of the money he got by selling his house and belongings. Ever since his wife had died, he had been wanting to leave his home town on the Malabar Coast and settle down in a new place. Now that his two children were old enough to accompany him at sea, they had embarked on this voyage ten days ago.

“Look Baba,” Radhi called. “Out there, the horizon appears to be green. Isn’t that land?”

Even as they made their way towards the distant shore, the sky turned an angry black and sent forth torrential rains. Their boat was being tossed about like a wind-blown sheet of paper. The children huddled close to their father, frightened out of their wits. What if their boat capsized? What if they all drowned?

To their great fortune, however, the land they headed for had narrow inlets which seemed to be shielded to a great extent from the force of the wind and rain by the jungle all around. The Samudree Devi became

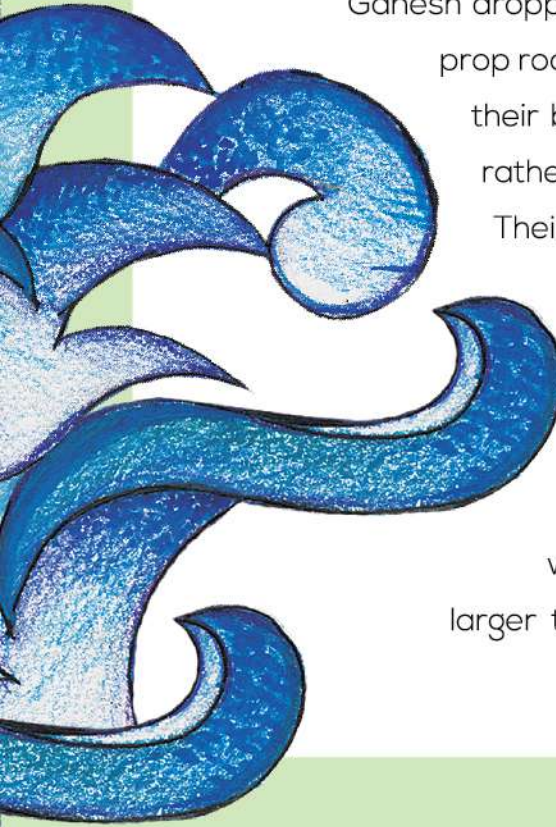


steadier. They felt greatly relieved and their fears melted slowly.

As they made their way into one of the creeklets, they found themselves in amazingly calmer waters. The wind too seemed muted now and the rain much milder. Although the dense trees looked very alien, they seemed to be doing the job of soldiers, protecting the land and waterways from the fierce winds and wild waves. Ganesh and his children were astounded to see these strange trees standing in the water. They seemed to belong to a new world. They had roots arching out of their trunks forming a thick entanglement with each other.

"These roots seem to be offering plenty of hiding places," remarked Abhay. "It would be fun to walk through them."

"What about snakes? There must be plenty of snakes hiding in them, I am sure," said Radhi.



Ganesh dropped anchor and tethered Samudree Devi to a huge prop root. Very cautiously the three of them stepped out of their boat, onto the marshy land. Since the ground was rather soft, they had to carry their sandals in their hands. Their bare feet sank ankle-deep into the soft mud. Warily, they made their way into this new world. As they lumbered heavily through the swamp, a large army of red crabs crawled towards them, taking them completely by surprise. And, as if this was not weird enough, the crabs began waving their left front claws which were strangely far larger than their other claws. Ganesh, Radhi and Abhay

could not believe their eyes, they simply watched mesmerised.

"I think they are welcoming us to their island," Radhi dared to whisper.

After what seemed like ten whole minutes, the crabs stopped waving and made an about turn, and began marching ahead of them towards the interior of the island.

"Now they ask you to follow them," chuckled a shrill voice behind them.

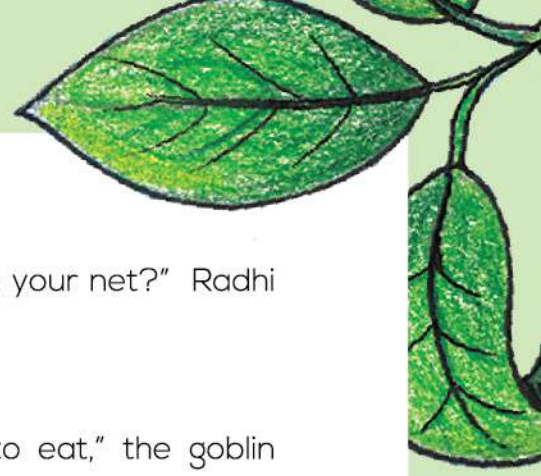
All three of them jumped out of their skins and turned around. Who was that?

This island seemed to be having surprise after surprise in store. It was a queer-looking man, rather like a goblin straight out of the pages of a fairy tale book. Short and skinny, with a shiny bald head, large round eyes that seemed to be dancing continuously, pixie ears and a long, white unkempt beard. He had strung over his shoulder a netted sack that contained four of the enormous-clawed crabs.

"Hello, I only joking," he explained with a smile that stretched from ear to ear. He pointed to the netted sack and explained: "These male Fiddler Crabs. They perform the ritual dance of waving their giant claws to attract female would-be partners, heh, heh!"

Ganesh and the children looked down and true enough, they saw some red crabs jostling around the goblin man's feet. These had both claws of equal size. They were probably females, going for the males.





"But why have you caught the male Fiddler Crabs in your net?" Radhi ventured to ask.

"Aha, these males have very fleshy claws, good to eat," the goblin answered, smacking his lips. "By the way, you people seem to have come from distant land. You must be hungry. You welcome to join me for dinner. I, Bauna my name, make very tasty crab curry."

Indeed, all three of them were ravenously hungry, since they had run out of their food stock. The children looked at their father with pleading eyes. Ganesh gave in to the temptation.

"That is very kind of you, Bauna. We have been sea-faring for several days and were forced to anchor here on this island because of the storm. Besides, our food stock is over. By the way, the unusual looking trees growing out of the sea around this island seem to be sheltering its inhabitants from the impact of the storm."

"Oh, you never see mangroves before? These trees our shore-keepers. We call them mangal forest. Forest in the sea. Very useful trees, they are. You come stay with me for some days. I show you all of our mangal forest. I tell you all about trees and animals living here."



Ganesh looked at the earnest little man and his heart warmed towards him. He felt an instant liking for him. With Bauna there to shelter them and show them around, they need not worry of unknown dangers here on this alien place.

"Well, actually we do need to repair our boat and restock it with fuel and food," he spoke aloud. "We would be extremely grateful if we can stay with you for a few days. We can pay for our upkeep, though."

"Money for upkeep? Never!" Bauna seemed to feel offended by the offer and stamped his feet to show it. "We island people always welcome strangers with open arms. We never take money."

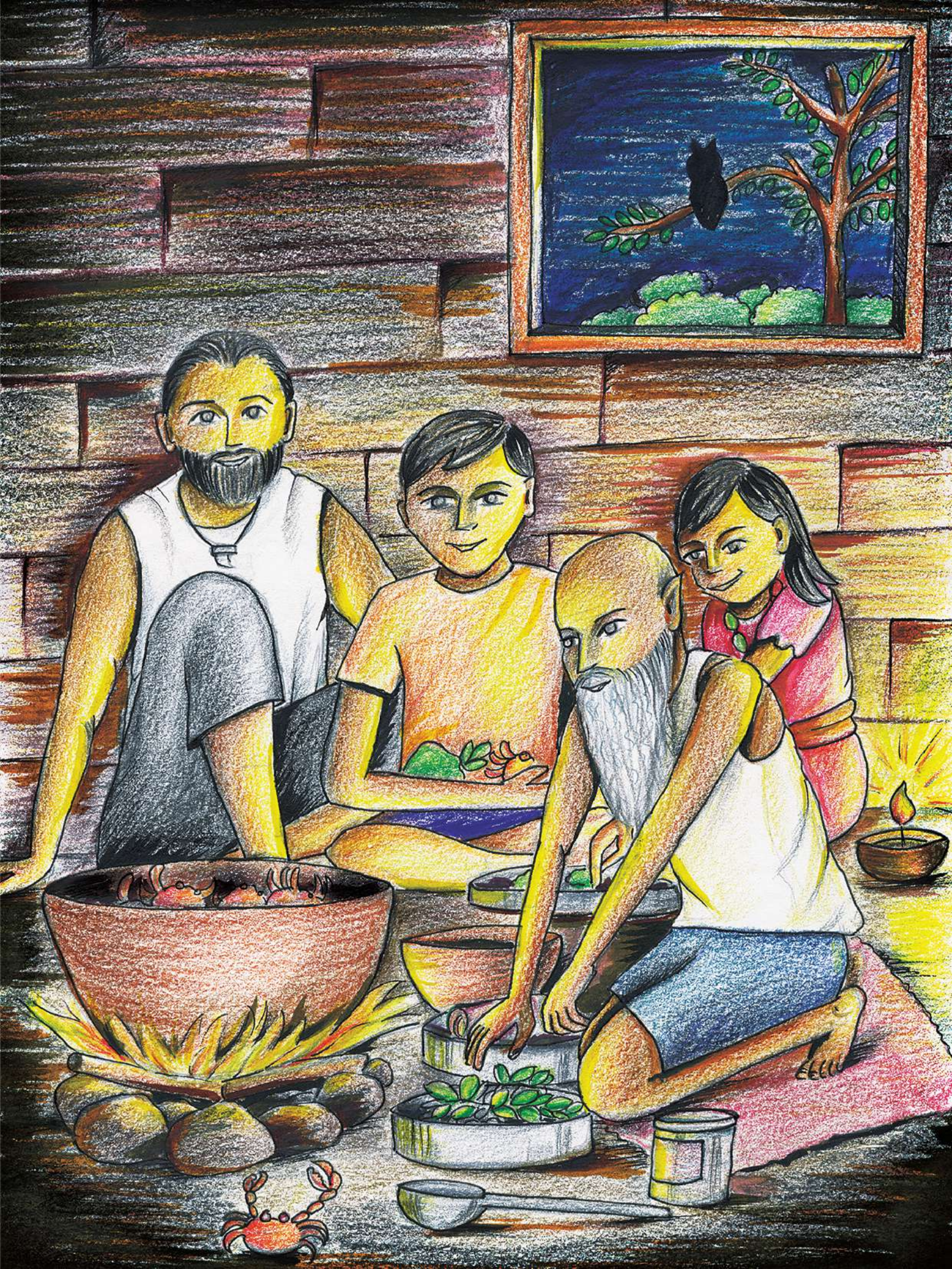
Ganesh felt sorry for having hurt the goblin man's pride. For the rest of the walk to his house, nobody spoke.

Bauna's house was inland in a village, away from the mangrove trees. All the houses in this village were of timber.

"We make homes and boats out of dead mangrove tree wood," Bauna explained. "Mangroves give very good timber. Having grown in saline water, mangrove wood does not decay over the years like the wood of trees that grow on land."

On and on Bauna talked, entertaining them with his lively chatter while they sat in his two-room shack and watched him cooking on a charcoal fire by the light of the single oil lamp in the house. No one noticed a glistening grey snake slip in through the door which was left ajar. It was only when the snake had helped himself to one of the crabs in the netted bag that they realised its presence. Its body bulged as it swallowed its prize whole. And then, their jaws dropped when they saw it regurgitate the empty shell.

"How did it do that?" asked Abhay, his eyes wide as saucers.



"This Glossy Marsh Snake. Commonly found among mangroves. It has this strange way of eating," Bauna informed them.

Abhay made sure the door was shut and bolted. He certainly did not want any more of the snakes to come in.

Outside, the night resounded with the chirping of crickets and the hooting of owls. It didn't take long for them to devour the crab curry which was, true to his word, out of this world. Having fed his guests, Bauna took out some spare mattresses which he laid out on the cow-dung lined floor. Having had a tiring day, Ganesh and the children fell into a deep slumber in no time. The silvery light of the full moon streaked in through the window lighting up the room in a kind of eerie glow. They did not hear the distant howling of a jackal who was looking for prey. Little did they know what this strange world, the world of mangroves, had in store for them. They hadn't the slightest inkling how long they would be living here on this surreal island.



How Much Do You Know?

1. Can you give another name for mangrove forests?
2. Can you guess why Ganesh and his children found it calmer among the mangroves even though a storm was raging just beyond?
3. The goblin man Bauna used a charcoal fire to cook. Where, do you think, did he get charcoal on the island from?
4. What, do you think, is a creeklet?

(Answers are given below)

1. Mangal forests – it means forests in the sea.
2. The dense mangrove trees growing in the sea along with their entangled mass of roots could break the force of winds and waves.
3. He used wood charcoal from the mangrove trees.
4. A naturally flowing stream, like the tributary of a river.

Some Interesting Tidbits

Mangroves can absorb five times more carbon dioxide and give off three times more oxygen than other trees. That is why we say they sequester carbon. The high carbon content makes excellent charcoal out of dead mangrove trees. The charcoal can serve us as fuel.

2. Mangroves - Truly Extraordinary



The next morning Bauna offered to take the three of them around the island after a breakfast of Mangrove Apple fruits and the most delicious honey.

"Where did you get such yummy honey from, Bauna Kaka?" Abhay asked.

"Our trees, like River Mangrove and Red Mangrove trees, have beautiful flowers. Lots of bees come to flowers. They make big hives," Bauna explained, his dancing eyes growing as wide as frisbees. "We go gather honey from time to time."

It was low tide when they reached the island's coast. The sea had gone far out laying bare the sea-growing trees and their extraordinary roots.

"Look, now that the trees are no longer submerged by the sea, they look rather queer," said Abhay. "Their roots come out from high up on their trunks, like a skirt. And there are others whose roots look like knock-knees, jutting out at right angles." Abhay began walking with bent knees, to ape the trees. "I am an old man, I have bent knees." The others began laughing at his mimicry.

"And some of their roots are growing upwards like daggers," added Radhi excitedly. "They look very poky." She went towards them and





dared to feel one of them. "Imagine sleeping on them like a yogi sleeping on a bed of nails."

"You know nothing about mangroves?!" exclaimed Bauna, jumping up and down excitedly just like a goblin. "Mangrove trees have to be very strong. Sea water constantly moves up and down. High tide, low tide – then again high tide, low tide. Soil full of saline water and soft so tree cannot get proper anchorage. They could topple over with force of water. That is why nature given them special roots to help them hold on to soil firmly."

"But what about the bed-of-big-nails type of roots?" enquired Radhi.

"Them peg roots. Foreigners who come here sometimes call them by big name – 'pneumatophores'. Those for breathing. They have tiny holes like your nostrils to breath in air. No air for them in water-logged soil of mudflat."

Abhay, in a burst of inspiration, began articulating:

"Pneu-ma-to-phores, pneu-ma-to-phores...

Never seen such roots before.

Like pencils galore, balancing on the shores

Pneumatophores, pneumatophores,

You hide many creatures inside you, I'm sure!"

"Now you don't have to get so melodramatic!" exclaimed Radhi, pulling her brother's ear.

"And what about the trees that have stilt roots like a big skirt and those

other trees that have knock-kneed roots? How do they breathe?" Abhay asked.

"They too have holes, I suppose," conjectured Ganesh, "since they are exposed to the air."

Radhi's attention was drawn to the leaves of one of the mangrove trees. "Bauna Kaka, there appears to be something wrong with this tree. Are those specks of white some kind of fungus on its leaves?"

"Oh, those Grey Mangroves. That not fungus on them. You taste it, you will come to know."

Radhi was hesitant and her father seemed to wear a look of uncertainty. What was this goblin asking his daughter to do? But then, Bauna seemed to be trustworthy; he wouldn't have asked her to taste it if it posed any threat.

Very cautiously Radhi licked the white stuff. It tasted salty. "Hey, there is salt on these leaves!" She licked up the entire leaf.

"Ha, ha! Now can you tell me where this salt has come from? Why only this type of mangrove tree has salt on its leaves and that other one you see there does not have salt?" Bauna quizzed. "I give you till tomorrow for answer. Think, think, think.."

Even as the little goblin spoke Radhi gave out a squeal. **"EEEEEEEEEEKS! What was that?!"**

A slimy grey 'thing' had pounced out of the marsh, jumped on Radhi's





foot and then went hop-hop-hopping a little distance away. It perched on a rock and stared at them out of bulging toad-like eyes, its skin glistening in the sun and its cheeks bulging absurdly.

"Oh, nothing to be scared of. Those Mudskippers. Harmless. We catch them sometimes and cook them. They live in sea and land between high tide and low tide, among mangroves."

"So, these were probably the predecessors of amphibians," said Ganesh. "They even look like frogs and toads with their bulging eyes and I suppose when they are on land they breathe through their moist skins, just like amphibians."

"They are fish," said Bauna. "They probably evolved a little bit so that they could come out of the sea and spend some time on land too. Do you see what looks like their puffed-up cheeks? Those are actually fish's gills filled with water so they don't dry up on land. Just look at their fins; big enough to be feet. That is why they can jump about."

As they watched, more and more of the Mudskippers came hopping along, and very soon they were surrounded by dozens of them popping out of the swamp from all around, like rabbits coming out of a magician's hat. And then, as if the curtains had been raised to a performance, the Mudskippers began to entertain them in the most comical manner and performed the strangest of antics:

Some of them did push-ups, while others leapt and pranced. Still others stood on their tails!

The children and their father couldn't stop laughing. "These rascal males are doing all this to attract the females," explained the goblin. Indeed, some of the other Mudskippers, probably females, selected those of the performers who impressed them most as partners and accompanied them into their burrows, where they would mate and lay eggs.

Bauna fished out from his kurta pocket a cloth bag. "Would you like to help me catch some Mudskippers? I cook them for dinner in the night."

The two children fell in to the idea. It was quite a task as the Mudskippers being slimy, they kept slipping out of their hands. Many of them even went hop-hopping up trees, out of their reach. Nonetheless, they had a rollicking time chasing them, with screams of excitement. But alas, as luck would have it, Radhi tripped over a rock and fell. She had badly twisted her ankle. The pain was excruciating and she could not stop the tears streaming down her face. Ganesh had to carry her all the way back home.

"Is there any doctor around?" Ganesh asked Bauna.

"No doctors here on our island. But don't worry. I have a cure. Medicine from a mangrove tree."

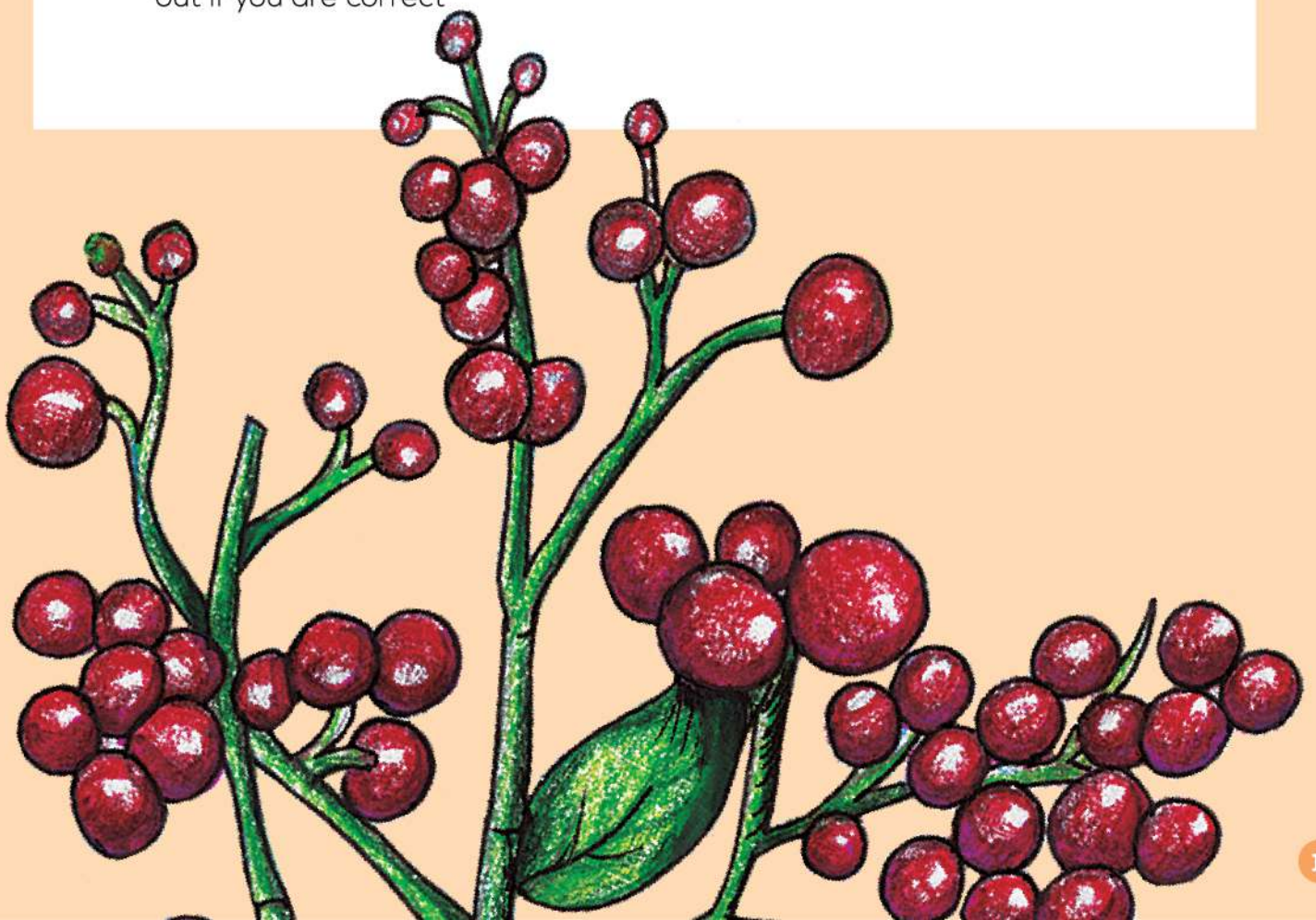
The goblin ground some fruits of Mangrove Apple to make a poultice which he applied around Radhi's injured ankle. This made her feel much better and relieved the swelling and sprain.

That night they enjoyed a dinner of Mudskipper curry and fresh shoots of the Kandal mangrove tree as salad.

While Ganesh lay in bed that night, his mind began to rove over all that they had seen and learnt about this enchanting island with its entrancing mangroves. He felt rather attached to this place. Even the children seemed to be very happy here. But what about sending them to a school? There were none on the island. And how long could he live off the goblin's resources? Surely, he needed to find a job and settle down in a house of his own? For this they needed to travel elsewhere, to a city perhaps. But maybe he would tackle these problems later. He could stay on with the goblin for another week or so....

Think, Think!

Have you thought of the answer to Bauna's question to the children? Why did Radhi see salt encrustation on the leaves of only one type of mangrove tree and not on the others? Read the next chapter to find out if you are correct



Search for the Correct Words

S I C O P L N E L D S S G P Q
G E S H F F V X E Y N V P M T
D O R Z E O J H M I A H A F W
A C L O R E C O X A I O Z M A
R N M G H M K D R Q B G J T L
Y H N M A P H S K A I E V Y C
K A N D A L O X Q M H Q B L S
M E Z Z I D B T K L P T R K Z
R G A Q Q U B P A M M G V B G
X Q Q P V F E A R M A Z U Q Z
F U O N U R L P J V U Z P H K
O A R P J V U P U D Q E H N K
M V F C Q Y H L U B M R N U T
V M Z R U R K E Q K L Q S P F
K S M S L G F A L P K Y M P L

Clues to the Word Search

- Which mangrove vegetable did the four of them have for dinner?
- The mudskippers are predecessors of _____
- Fruits of which tree did Bauna offer Ganesh and the children for breakfast?
- Peg roots have _____ for breathing
- In which part of their body do mudskippers store water to prevent themselves from drying up when on land?

(Answers are given below)

1. Kandal Mangrove, 2. Amphibians, 3. Mangrove Apple fruits, 4. Pneumatophores, 5. Gill chambers

Answers:

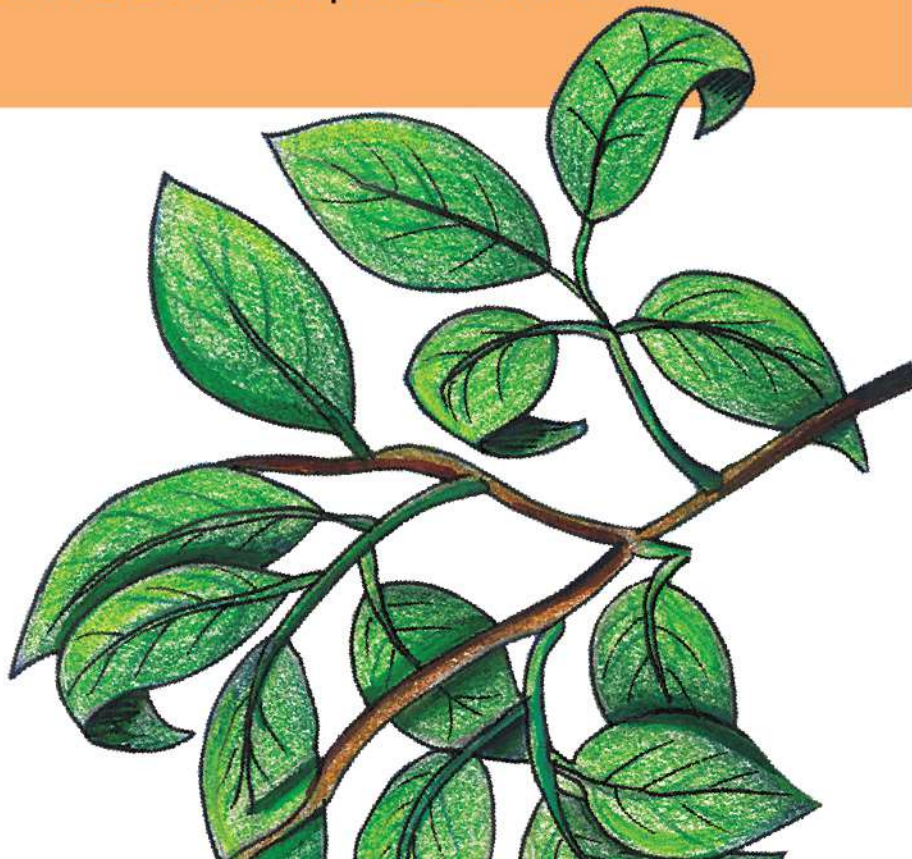


Did You Know?

The largest mangrove forest in the world is the Sundarbans which spans the Indian state of West Bengal and Bangla Desh. Located at the confluence of the Ganga and Brahmaputra river deltas, this forest can be considered as a floating forest, comprising 102 islands. The Sundarbans got its name from the Sundari tree, a beautiful mangrove species found here.

The Sundarbans are unique because they are the only mangrove forests in the world to be home to the Royal Bengal Tiger. The tigers here are adept at swimming across the large waterways.

Besides the tiger, it is a habitat rich in wildlife, especially waterfowl, and for this reason it is considered as a Ramsar Site. A Ramsar Site is a wetland of international importance and needs to be conserved and protected at all costs.



3. Mangroves Speak



Early the next morning while the children were still asleep, Ganesh explained his concerns to Bauna over cups of mint tea.

"You like our island? You stay here for as long as you like. You and children are like family to me. Do not worry about job. You do not need much money to stay here. Mangroves keep us safe. They give everything – food, fuel, shelter, medicine. I still have to show all of you sooo much. You learn much from here. Don't worry about school for children. There is school on nearby island. Boat comes here every day to take village children to school. But just now forty days long summer vacation in schools."

Ganesh felt his worries melting. What a stroke of luck that they had come upon this enchanting island with its magnificent trees. He was glad to be able to stay here longer.

Suddenly, Ganesh's thoughts were interrupted by a cry from Abhay who woke up with a start and sat bolt upright on his mattress.

"I know the answer to your question yesterday!" he cried, addressing Bauna. The creek water is saline but plants cannot drink in so much salt just as we can't. Some of them have special glands on their leaves to give off the excess salt, like the leaves of the Grey Mangrove trees Radhi tasted yesterday. Other trees have guards on their roots that do not allow the salt to enter at all."

"And what about some mangroves that do not have special glands nor glands on their roots?" queried Bauna beaming away.

"Those – those I guess, just shed their leaves or bark where all the salt has collected."

"Shabash, very good, you have very intelligent son, Ganesh. This is education. See? By staying on in this island they learn lots."

"Bauna Kaka, where are we going exploring today?" Radhi came hobbling to the table.

"Today we give your ankle rest. I have arranged special surprise for you in the village. Eat breakfast quickly and I show you surprise."

Both Radhi and Abhay were dying of curiosity. They gobbled up their breakfast in five minutes and were ready for the surprise.

Bauna took the three of them to the village square. Here under the shade of a huge Karanj tree sat a group of children. On seeing Bauna and his guests they broke into wide smiles, exposing pearly white teeth and stood up, folding their hands and greeting them with a "Namaste".

"These children will perform special skit about mangrove trees for you. That is my surprise," said the goblin man, his eyes dancing more than ever.



Radhi and Abhay were most delighted. All four of them sat cross-legged on the ground, in anticipation of the performance. The village children got into their costumes, wearing head dresses of different types of mangrove leaves and soon began:

Narrator: Good morning, you are about to watch the play 'The Magnificent Mangroves'.

The scene: An island called Khubsuratban, which was once covered with mangrove trees. Some foreigners from another land came and cut down the mangroves from a large section of the island to make way for cottages where they now live. The few mangroves that still stand are trying their best to protect Khubsuratban:

Meswak Tree (singing):

Come birdies, come.

My fruits taste yummy yum-yum.

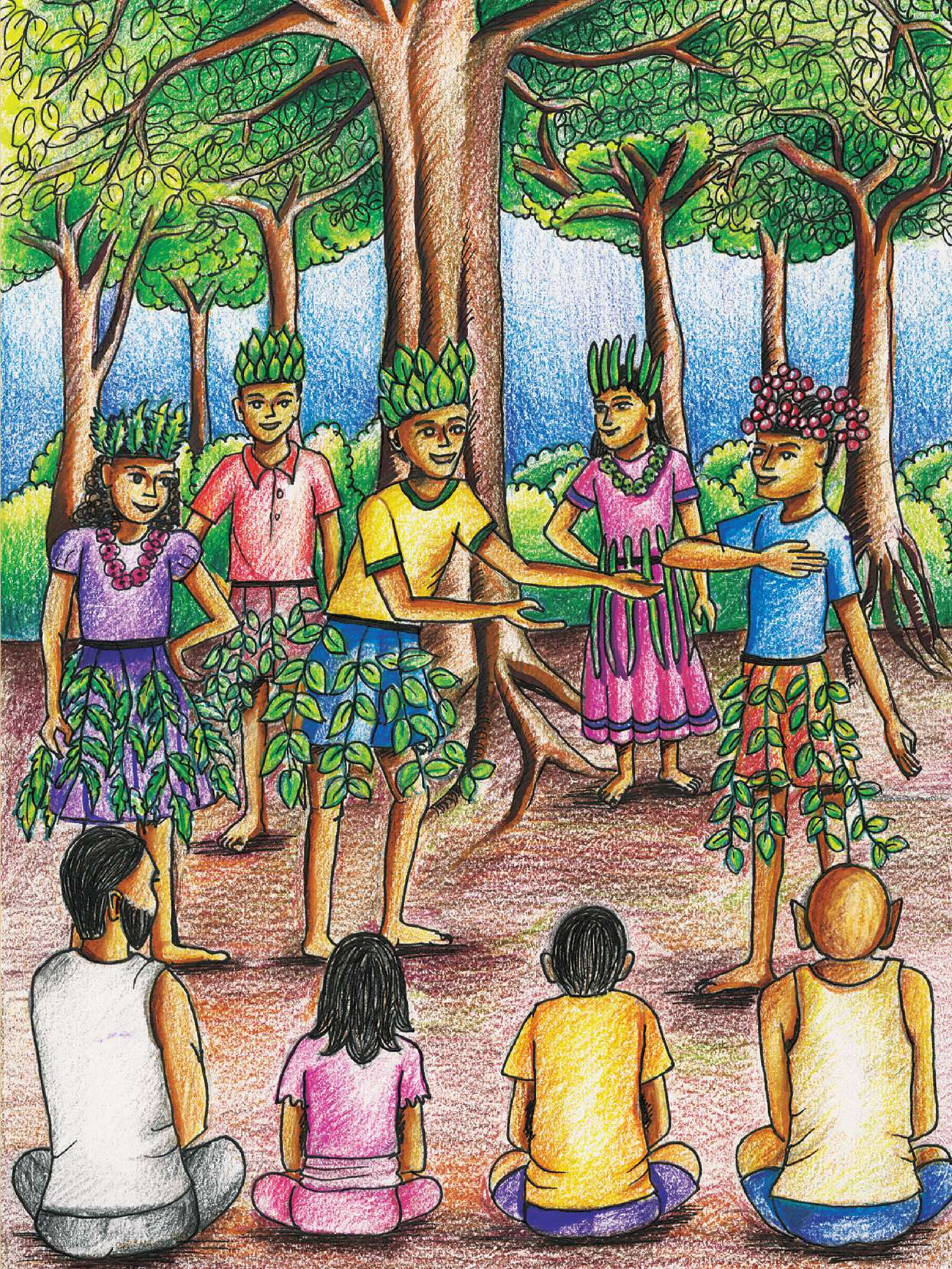
My leaves green and shiny

My berries red and juicy,

Don't I look a stunning beauty?

Grey Mangrove: Hey Meswak, stop showing off. First of all, you are not even a true mangrove like the rest of us. You don't have peg roots like us Grey Mangroves and my cousins the White mangroves, nor do you have stilt roots like the Red Mangroves. And you don't have any salt-excluding glands on your leaves.

Orange Mangrove (calling out from far off in the sea): Hey don't forget to mention me, the Orange Mangrove with my knee roots. I am bravest



of the lot. I am the first to face the ocean waves as they come rolling in landwards.

Meswak: Hah! Did you say bravest? You look the oldest with your bent arthritic-like roots. And I don't need to have weird-looking roots like you guys because I am not foolhardy enough to grow in tidal water. I believe in standing on firm ground beyond the high tide line. And talking of salt glands, well, I am most tolerant, I don't mind some salt in the water I absorb. I could call myself a mangrove associate, nevertheless. So there!

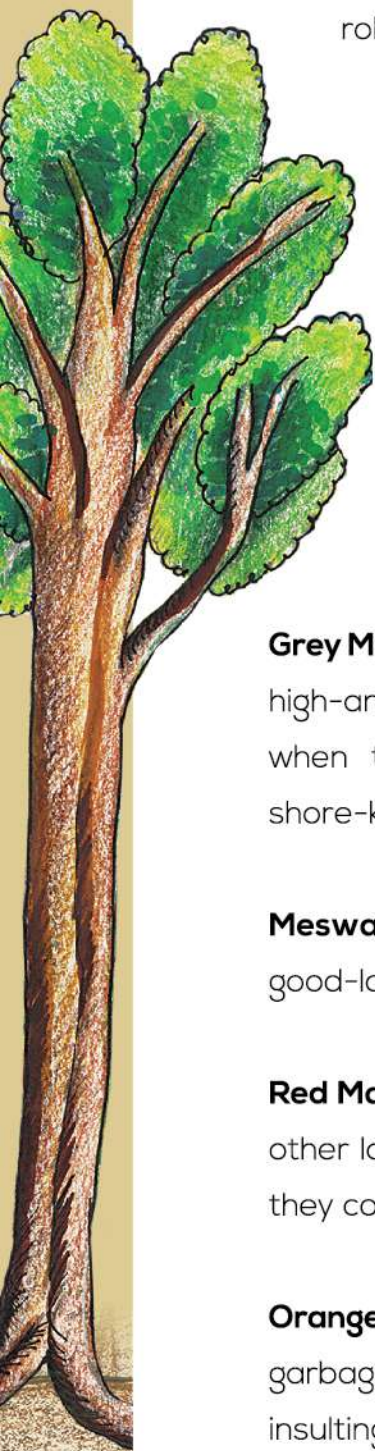
Grey Mangrove (yawning): I am bored of your prattle. Don't forget, Miss high-and-mighty Meswak, it is we true mangroves that protect the land when there are squalls and cyclonic storms. We are the true shore-keepers.

Meswak: Shore-keepers or doorkeepers. You are not half as good-looking as me. Your leaves are an ugly grey on the underside.

Red Mangrove: But now those foreigners who came here from some other land have cut down so many of our dear relatives. Just so that they could build homes close to the sea.

Orange Mangrove: And what's more they have started dumping some garbage and rubble on us. As if we are some dumping grounds. How insulting.

Grey Mangrove: My peg roots have begun to feel choked with the



dumping. Cough, cough!

Orange Mangrove: I too feel suffocated. I wish they would realise how valuable we are and stop dumping on us. What will become of us?

Narrator: A few days later the skies turn steel grey. Strong gusty winds start howling. The sea becomes angry and black, choppy and turbulent, churning up gigantic waves that come crashing to the shore. The foreigners in their settlement get alarmed.

Mr Pedro (one of the foreigners): Oh no! A storm is brewing up. A-a very devilish storm. Everyone better stay indoors.

Mrs Rosy: I'll tell Larry to inform everybody to stay indoors.
(Larry runs from cottage to cottage, warning all the settlers about the terrible storm.

Narrator: The cyclone is soon upon the island. The clouds burst and there is a very heavy outpour of rains.

Orange Mangrove: Come on friend mangroves, let's all brace ourselves to fight the storm. Flex your muscles. We shall break the force of the wind and waves!

Red Mangrove: I am all ready and charged up for the battle.

Meswak: I too will try my best to fight the winds, though I am only an associate mangrove. I too would like to be considered as a hero.





Narrator: The mangroves do their work of shielding that part of the island that was in their shadow but where they had been cut down by the foreigners the barrage of wind and rain played great havoc. That part of the island was unprotected and most vulnerable. Finally, the storm subsided and all was calm.

Mr Pedro (Coming out of his cottage): Oh no, oh no! The roof of my house has blown off. Just as if it was a sheet of paper.

Mrs Rosy: One part of my house has completely caved in. Thank goodness no one was hurt.

Narrator: One by one, each of the foreigners came up with a woeful story. None of their houses had been spared by the devilish storm. They decided to leave the island and go back to where they had come from.

A few weeks later...

Grey Mangrove: Ahh! Now that the foreigners have left there is no more dumping of all kinds of hurtful things around us. My pencil roots feel better, I can breathe freely.

Narrator: And the Red Mangrove calls out to one of its propagules that is growing on the mother plant itself.

Red Mangrove: My little darling, you can't remain attached to me any longer, you have become quite big and heavy. It is now safe enough for you to detach yourself from me and jump down. The pure wet mud of



the marsh will easily help you to anchor yourself and grow into a handsome new Red Mangrove tree, just like me.

Little Mangrove propagule: I-I feel a wee bit scared, Ma.

Red Mangrove: It's all right, I am there to watch over you, go ahead. Nothing to be scared of, dear.

Little Mangrove propagule: One, two, three, **MUMMEE!** (he jumps)

Narrator: The little Red Mangrove propagule makes a safe landing. He easily gets anchored in the wet mud.

Orange Mangrove: May many more of our propagules grow into healthy mangroves.

Meswak: I must say you guys did a great job in fighting off the storm. And you taught those foreigners a lesson. You mangroves are needed to protect the coastal shores, I admit.

HURRAH FOR ALL OF YOU MANGROVES! May your tribe increase and may you always thrive.

Radhi, Abhay and Ganesh were tremendously impressed by this play. They just couldn't stop applauding at the young performers and thanked them profusely.



"And thank you too, Bauna Kaka, for arranging this entertainment for us," said Radhi hugging the goblin man.

"We got to learn a lot about mangroves too," remarked Abhay. Bauna stroked his long beard and gave a beaming smile to one and all.

That evening he announced: "Today I treat you to very different food." He took Abhay along with him to the creekside to help him collect the Telescopium shells while the tide was out. Indeed, the shells looked like long telescopes.

Back at the house, they were astounded to see the little goblin roast the shells on his charcoal fire. That was their special treat. A dinner of Telescopium shell fish. In no time they had gobbled up the roasted flesh mixed with some spices. Radhi collected the empty shells to make a necklace for herself.

Soon after they lay down to sleep that night, nature decided to unleash her fury. The sky echoed with rumblings of thunder accompanied with flashes of lightning just like the story in the play they had watched. Radhi was frightened. She went up to where her father was sleeping. "Don't worry," he consoled her. "This island is well-guarded by the mangrove soldiers. They will fight the storm just like they had done so in the play today."

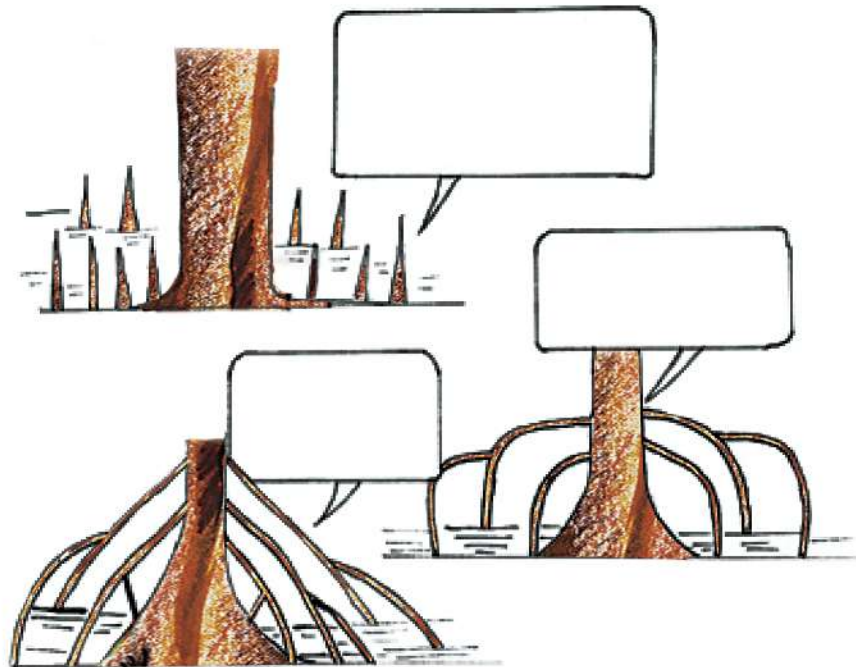
Now Test Your Grey Matter

- In the skit performed by the village children why did the Red Mangrove propagule remain attached to its mother plant till it had grown fairly heavy and big before it detached itself and fell into the mudflat? Why couldn't the seeds of the Red Mangrove have just dispersed from its fruit the way it happens in the other trees?
- Mangroves grow where there is constant movement of water. Seeds would just be carried away by the water. They would not get a chance to get firm anchorage in the mud. That is why mangroves are adapted to grow by 'vivipary' which means live birth. The new plant grows on the mother plant for some time so that it gets heavy enough. The propagule is a structure which adds to its weight.



Can you identify these roots and the mangroves they belong to?

Involve the roots you have identified in a dialogue by filling in the speech bubbles:



-
- Stilt roots – **Red Mangroves**
 - Kneel roots (roots bent at right angles) – **Orange Mangroves**
 - Upward pointing pneumatophores or peg roots – **Grey Mangroves**



4. Meswak Story

“Bauna Kaka,” called Radhi one morning. “Why do you brush your teeth with a stick? Do they not sell toothbrushes in the village market?”

The goblin man found this funny. He burst into guffaws of laughter and stamped his thighs. “That is not just an ordinary stick. It is root of Meswak. Meswak has medicines in its roots and makes gums and teeth strong. All people on island use Meswak roots. You see all islanders having sparkling strong, white teeth.”

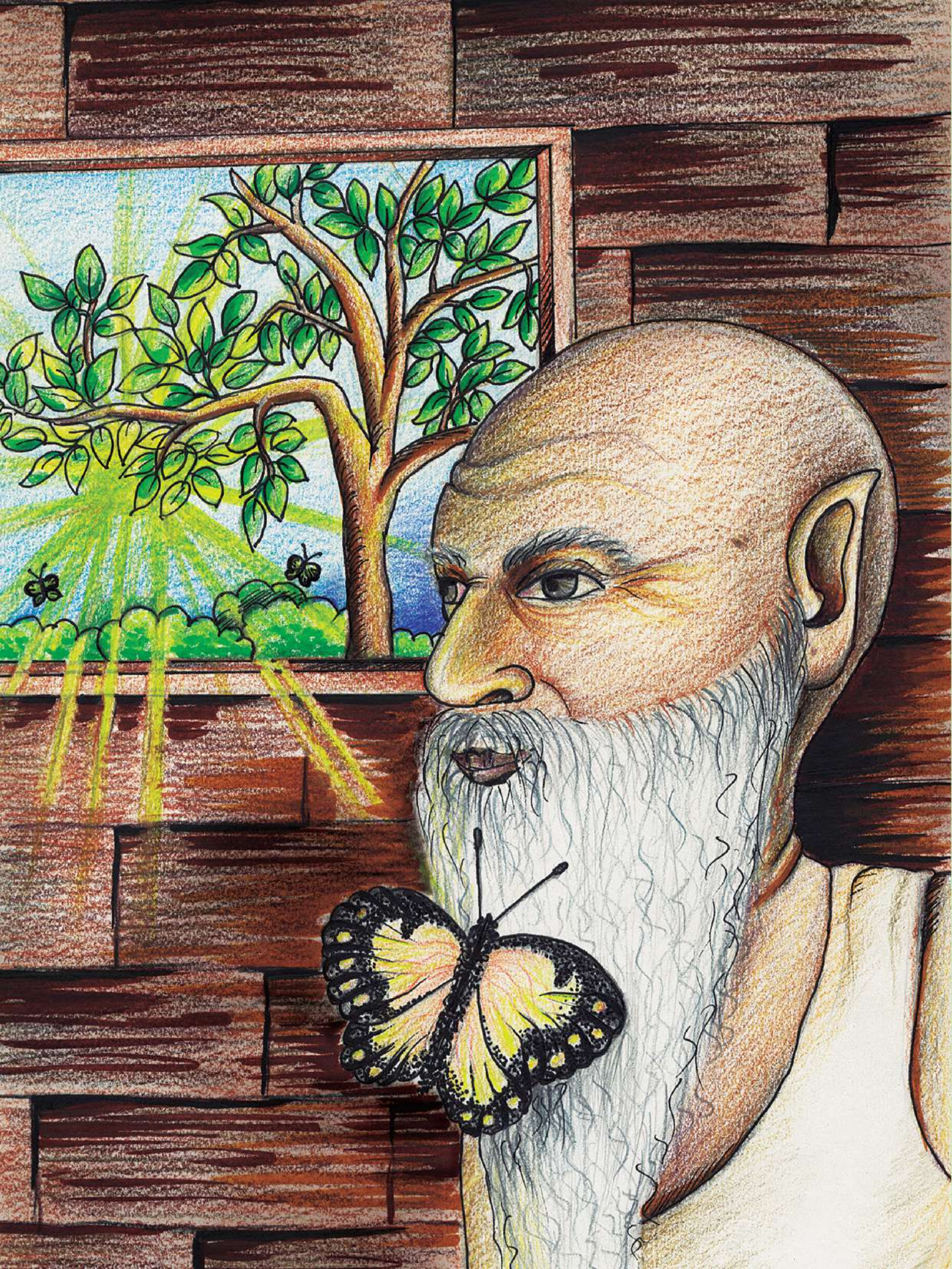
“No wonder, even the very old people have not lost their teeth here,” remarked Abhay. “I remember grandpa had lost so many of his teeth, he had to wear dentures, false teeth. Why don’t we too use Meswak roots, Papa?”

“You can,” said Bauna before Ganesh could give an answer. “There is whole grove of Meswak trees at far end of village, next to creek. On your way there you may even meet the youngsters who performed skit for you yesterday.”

Abhay didn’t need any second telling. He was off in a trice.

When he reached the grove, he froze in his tracks, spellbound by what he beheld. The Meswak shrubs with their fluorescent green shiny leaves, were covered with red, purple and pink berries. And perched on the trees, feasting on the luscious berries, were parties of birds – the





golden orioles, vivid green parakeets and chestnut brown red-whiskered bulbuls. Every now and then they would burst into song, to express their joie de vivre, their joy of life. It was a mesmerising scene. Abhay stood there for a long time, awe-struck and full of wonder. At long last, remembering what he had come here for, he steeled towards the trees to collect the roots, taking utmost care not to frighten the birds. But the birds were so enjoying their breakfast, they did not mind Abhay's presence at all. A parakeet even pooped on his head!

After collecting some roots and even berries, he ran back to Bauna's house, bursting to tell all of them his story.

"Look! There are two caterpillars on this leaf of the Meswak which you have also plucked off," exclaimed Radhi. They are eating the leaves greedily. They must be really hungry."

"I too am hungry for breakfast," said Abhay. "I could eat a plate piled with Telescopium shellfish right now."

"Ho, ho!" snorted the goblin man. "These are caterpillars of Salman Arab butterfly. This butterfly found commonly in mangroves. Pinkish yellow with black pattern on wings."

As if to prove him right, a butterfly, glowing orange in the morning sun, flew in through the window and sat on the goblin man's white beard.

"It's the Salman Arab!" cried Ganesh and the two children in unison. And they all laughed.

"I suppose I should go after breakfast and return these caterpillar fellows to the Meswak trees where they can chomp away on more leaves," said Abhay.

Celebrating the Meswak Trees

The young lad made his way
Excitedly, at the break of day
To the grove of Meswak trees
That grew beside the creek
Just a little beyond the bay.

The roots of the Meswak trees
Were used by the communities
As toothbrushes, if you please
The best tooth brush to help keep
Your teeth strong and clean.

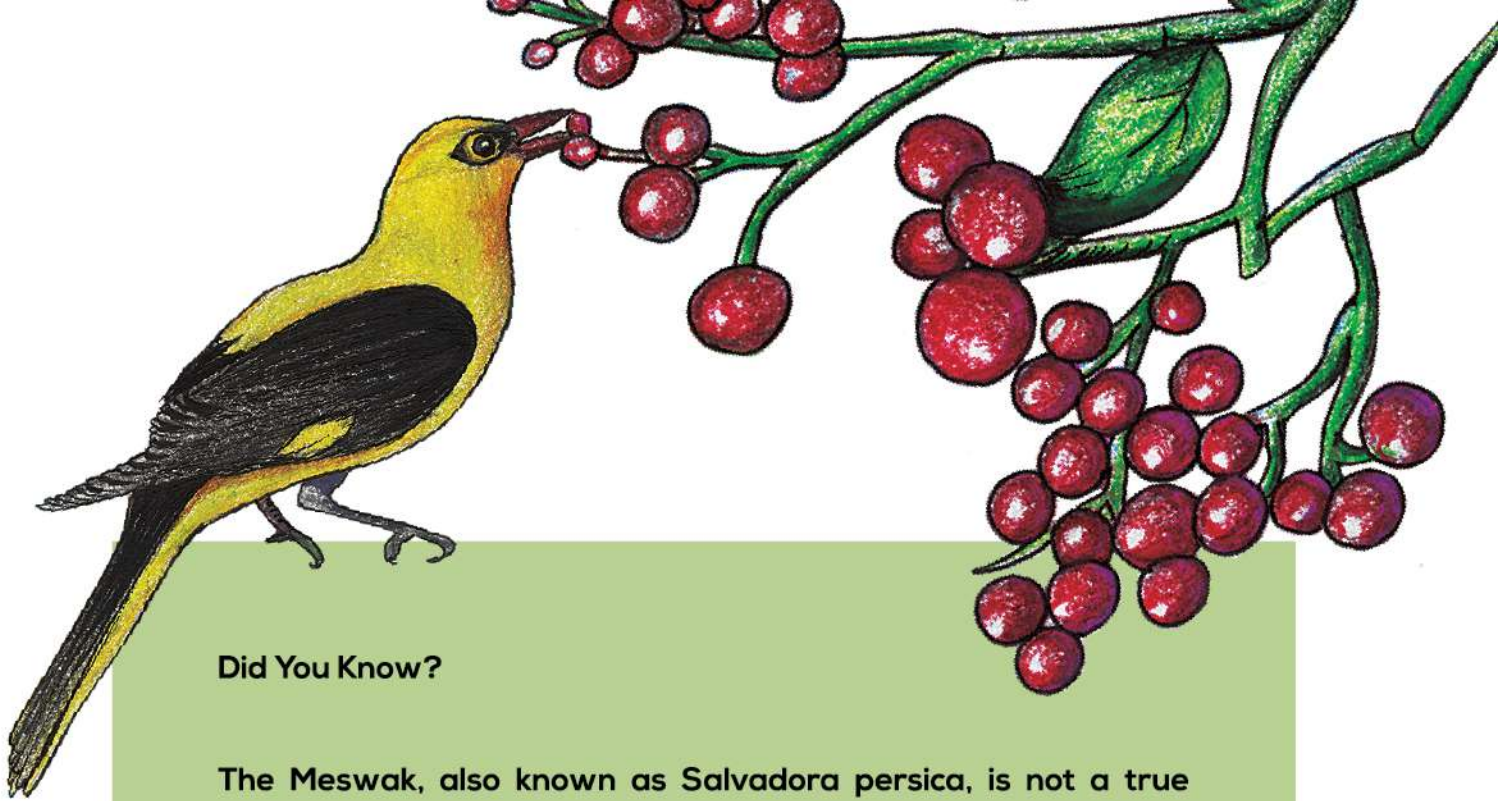
The lad stopped in his tracks
When he beheld the glorious sight
Of Meswaks with leaves shiny bright,
The tree laden with bunches
Of purple, pink and red berries.

And oh what joy, along came birds
Flocks and flocks – may be hundreds
To feast on the berries and make merry!
Orioles, parakeets, and even bulbuls
All delighted on the luscious fruits.

And while they ate joyfully
They rendered melodiously
Songs to celebrate the bounty
Songs to thank from their hearts
The generosity of the Meswaks.

Having collected just a few roots
And a handful of berries, the boy returned –
He dared not disturb the happy birds.
His head full of cherishing memories
He related to friends and family
The awesome Meswak tree story.





Did You Know?

The Meswak, also known as *Salvadora persica*, is not a true mangrove tree as it is not adapted to survive in the moving tides. You must have found that out while reading the skit 'The Magnificent Mangroves' in the previous chapter. Though it does not have salt glands to exude excess salt from the water it may absorb like other true mangroves, it can withstand salty water. That is why it is found growing just beyond the line where the high tide reaches. Thus, we can consider this tree as a mangrove associate.

The leaves of the *Salvadora* are waxy and fluorescent green.

The fruits of the Meswak tree are eaten, not only by birds, but are also consumed by us humans in the form of a fermented drink. Villagers even eat its tender shoots in salads.

Its roots are astringent and medicinal, so they help keep the gums strong when used as toothbrushes. The roots are even made into toothpaste. Wouldn't you want to use Meswak toothpaste?



5. *Battle by the Bay*

One morning Bauna decided to take Ganesh and the children canoeing to a different part of the island in his canoe. A thick cloud of mist descended upon them while they rowed. The trees on either side of the creek appeared as dark silhouettes, painting a very mysterious scene. They could see shadows leaping out of the water and arcing their way back with a splash.

"Dolphins, I am sure!" cried Abhay with mounting excitement. The dolphins came so near that the children could even reach out and touch them. By and by the mist cleared as they made their way all around the island and the sun shone brilliantly in the sky.

Here on this remote part of this island the mangroves were denser, the trees appeared taller and even their pneumatophores appeared thicker and longer, more carrot-like than pencil-like. Bauna told them that these were the roots of Mangrove Apple trees, not of the Grey mangroves they were so accustomed to seeing on his part of the island. Lining the shore further on were trees they had never seen before. They had long, palm-like leaves and clusters of very straight stilt roots jutting out from their base.

"Those mangrove plants called Kewda," Bauna explained. "We make ropes from their leaf fibres, see?" He lifted the anchoring rope that was lying in the canoe as he spoke. Radhi looked very impressed. "The mangrove trees around your part of the world seem to be so useful," she





said. "They give you almost everything you need."

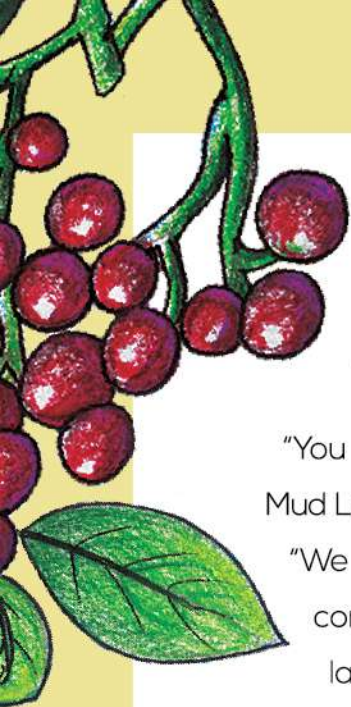
"Very true, little one. Mangroves give us everything free. That is why we do not need to earn much money," said the goblin man.

Suddenly, the silence around was broken with an explosive chattering 'laugh'. Abhay and the children jumped out of their skins. The goblin man giggled. "That loud cry frightened you? It came from Stork-billed Kingfisher," he said, pointing to a branch overhanging the creek. All eyes turned to see the biggish kingfisher sitting pretty. He looked rather handsome with his turquoise blue wings and tail, orange belly, brown head and to top it all, a long, thick, blood-red bill. As if to give them a demonstration of how efficient a hunter he was, he dived, straight as an arrow, cutting into the water with nary a splash and went back to his perch with a fish in his bill. He tossed his wriggling prize a few times and then swallowed it up, head first.

The amusing drama having ended, Bauna allowed his canoe to glide into a part of the island that formed a kind of bay. Here he tied his boat to a large boulder. "I take you to very ancient temple," Bauna told the three of them and they all stepped out onto the marshy path. They had to watch their step to avoid tripping over the poky pneumatophores and other entangled roots. Surrounding the stilt roots of a Red Mangrove they came upon large mounds of mud.

"Aah, any guesses who made these mud mounds?" Bauna teased, his eyes twinkling like those of a beetle.

"Termites?" Radhi ventured.



"Why would termites make their homes here where the water covers everything during high tide?" Abhay retorted.

"You are right, my boy. No termites here. These mounds made by tiny Mud Lobsters. They come out at night. Just now they are sleeping inside."

"We have Mud Lobsters for dinner tonight, very delicious. Yum yum," commented Radhi in a squeaky voice, mimicking Bauna. They all laughed.

Soon they came upon the ancient temple, almost hidden behind the curtain of verdant green. It was made of stone but was in ruins. Parts of its walls which still stood the test of time had carvings of animals – a snake coiling around a mongoose, a turtle crawling out of the sea, a Mudskipper with abnormally large fins and all kinds of birds. All the animals found around the mangroves.

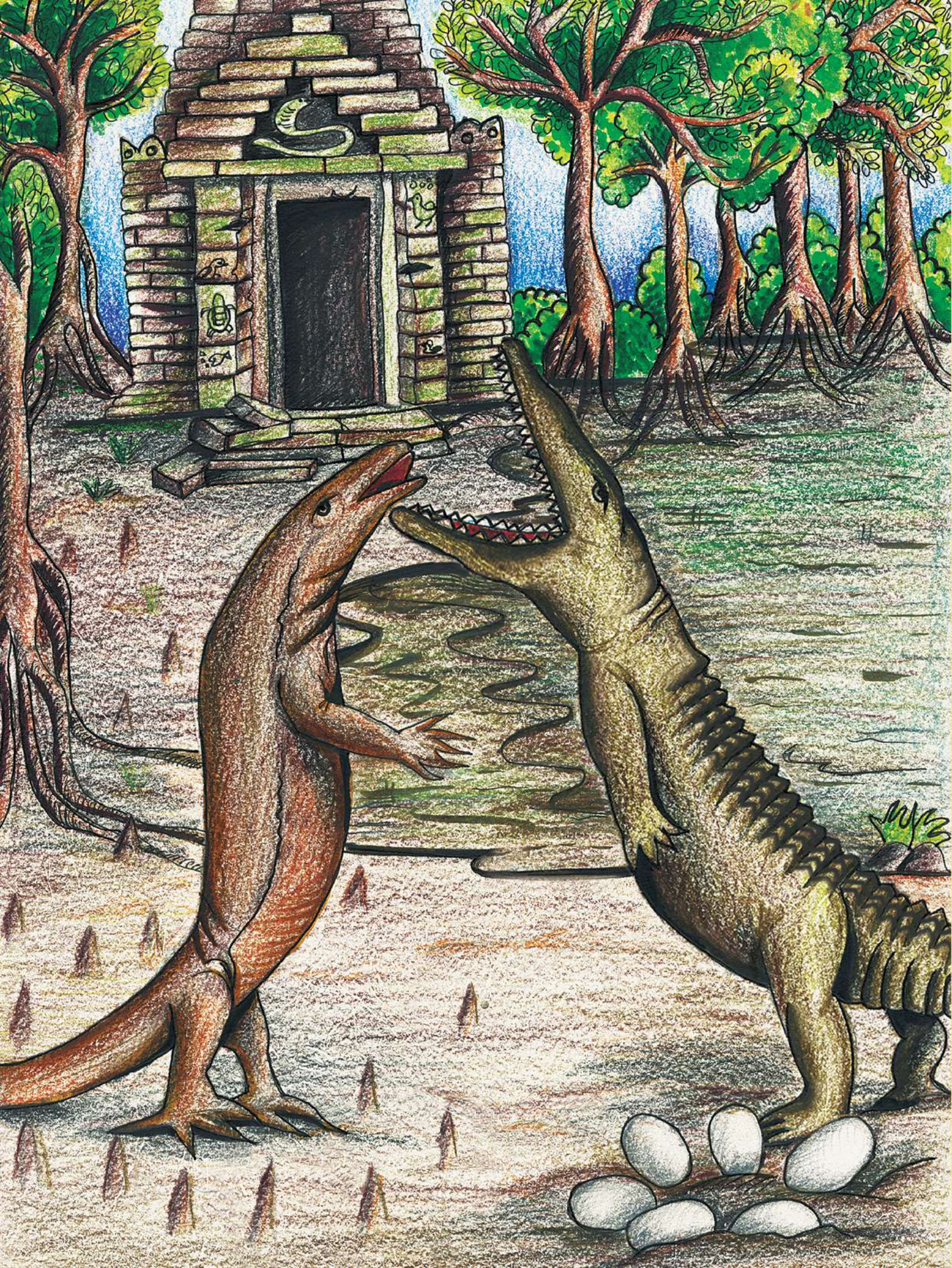
"We wait here at a safe distance and watch," the goblin man advised.

"This temple gives me the goose-bumps," said Radhi. "I think it has many secrets inside it."

Even as she spoke, a face peered out from within. It shot out a long blue tongue and began flicking it.

"That is a Water Monitor Lizard," whispered the goblin man. "Radhi is right. The temple has many secrets. This lizard is one of them. It lives here, I wanted you to see it."

Before their very eyes the deadly-looking lizard walked out of its home,



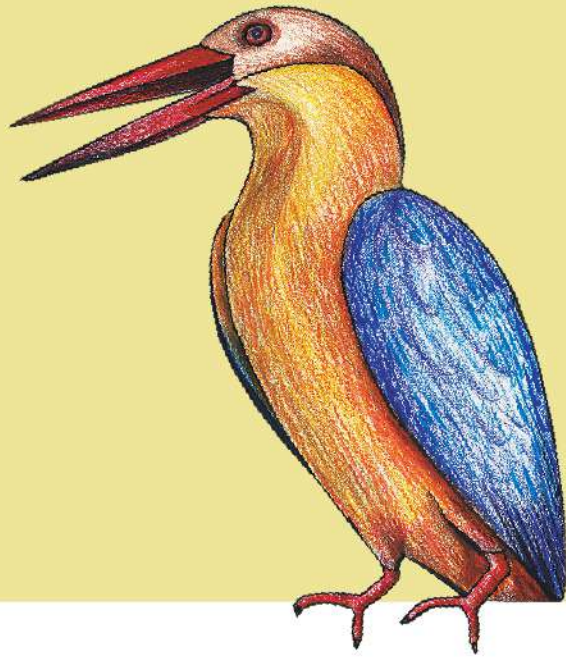
the temple. It was huge, about two metres in length. The four of them stood rooted to the ground, awe-struck, their eyes following its moves. After flicking his tongue for some time, as if smelling the air around, the lizard went straight to a mound on the water's edge. This mound was different, not like the mounds made by the mud lobsters. The reptile clawed at the loose mud exposing the contents within - eggs, plenty of them.

"Crocodile eggs!" Bauna whispered in their ears.

Just as the Water Monitor Lizard was about to help himself to one of the eggs a log of wood lying by the side galvanized into action. The 'log of wood' turned out to be a crocodile, the mother of the eggs. Viciously she opened wide her jaws exposing dagger-like teeth and grunting loudly. The lizard was not intimidated and hissed back, as if challenging the croc to a fight. A battle of jaws and claws ensued. The crocodile, however, was not one to spare anybody who had attempted stealing her precious eggs. After some time, the egg thief, probably realising his opponent's strength and fierce mood, decided to change his tactics from fighting back to escaping. He simply turned tails and with surprising swiftness, climbed up a nearby tree, out of reach.

The mother crocodile turned her attention to her brood of eggs that were now exposed and vulnerable to attack by other greedy thieves. She flung sand on them with quick leg movements and then, satisfied that they were well-concealed, she crawled into the water for a cool swim.

The lizard had been watching all this from his perch on the tree. Now that the coast was clear, he climbed down and once again made for the nest.



After having helped himself to the entire clutch of eggs he crawled back into his secret home in the temple, leaving behind only the broken egg shells.

Radhi looked very upset. "The poor mama crocodile has lost all her babies," she quivered.

"That is how nature works. The Monitor Lizard too has to eat," the goblin man consoled her. "Not to worry, the mother crocodile will build a new nest and lay another clutch of eggs."

Back at Bauna's home that night while they all sat around the stove having their dinner of Mud Lobsters, nobody spoke. They were thinking about their day's adventure and about the battle between the two reptiles.

Did You Know?

Water Monitor Lizards, in spite of their size and weight, are ace swimmers. They use the raised fin on their tails as rudder to steer through water.

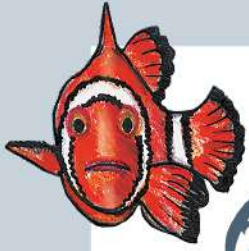
Can you unscramble them?

The following scrambled words represent the creatures Ganesh and the children have come across among the mangroves, ever since they came into the 'new world'.

1. UD SMKPEPIR
2. DILFREBRCA (2 words)
3. ARTWEONIMROTZLIDRA (3 words)
4. PIHLDON
5. RDOCCOLIE
6. UMDOBSLTRES (2 words)
7. SSOGYLSHARMSKENA (3 words)
8. MANALSBRAA (2 words)

(Answers are given below)

-
- | | |
|-----------------------|-------------------------|
| 1. Mud Skipper | 4. Dolphin |
| 2. Fiddler Crab | 3. Water Monitor Lizard |
| 5. Crocodile | 6. Mud Lobsters |
| 6. Mud Lobsters | 7. Glossy Marsh Snake |
| 7. Glossy Marsh Snake | 8. Saliman Arab |
| 8. Saliman Arab | |



6. Underwater Adventure

"Bauna Kaka, thanks to you we have got to eat all kinds of sea food and mangrove vegetables," Abhay declared one day. "But we haven't eaten any fish, yet."

"Aah, you read my thoughts, Abhay. I was planning to take all of you fishing today." Bauna became thoughtful, tapping his finger tips against each other. "Hmm, we will go to a very different place. Where creeklet meets the sea. Lots of different fish there."

So, without wasting much time, they helped the goblin man load his boat with wooden poles and a fishing net and paddled off. They passed the very spot where Ganesh and the children had first landed so many moons ago. They even saw their own boat, Samudree Devee, bobbing up and down where they had anchored it. 'How long ago it seems, when we first landed here,' Ganesh thought. 'So many things have happened since then. Our lives have changed so much in these past three weeks.' In fact, this place with its unique mangrove ecosystem seemed to have grown upon him just as it had caught on to the children. Had he started growing roots to this place, just like the anchoring stilt roots of the mangroves? Were he and his children going to spend the rest of their lives here?

He broke out of his reverie when Radhi pointed to a cormorant perched on the bow of the Samudree Devee. It had stretched its wings out to dry them, reminding Radhi of a witch, draped in a long-sleeved black gown.



Their attention was drawn to a White-bellied Sea Eagle perched on the branch of a tall tree, surveying all around as if it was on sentry duty. Then with the grace of a galloping steed it swooped down towards the water, both legs bent forward in readiness. A mere dip in the water and with super sharp marksmanship it had already caught a fish in its left leg talons and swerved up again victoriously. But lo and behold, another White-bellied Sea Eagle appeared as if from nowhere. This second bird believed in short cuts. It tried to grab the fish from the hunter bird that had taken all the trouble. But the latter was not one to give up. The two birds locked talons. The result was a dogfight in the air with the two birds whirling round and round like the blades of a windmill, neither wanting to give up. The first bird lost its grip on the fish that fell back into the water, still struggling.

"Perhaps the fish may have survived, perhaps not," said Bauna. "But neither bird got to eat it."

Soon their boat came upon a clearing which was surrounded by mangroves. The water here was amazingly calm, in spite of it being connected to the sea. The water's surface was like a glass mirror, not a ripple to mar it. A variety of fish of various hues could be clearly seen swimming about and drew squeals of delight from the children.

They paddled towards the shallows where Bauna planted the wooden poles he had brought along in the creeklet's swampy bed. The poles were fixed at two opposite ends. The fishing net was tied to the poles so that it stretched across.

"Now we wait for fish to collect in net," he announced. "In meantime we can all swim



here, water safe from crocodiles and jelly fish.” All three of them jumped to the idea.

The water was deliciously cool, offering respite from the heat. Abhay and the children were good swimmers and spent a lot of time exploring underwater. It was a different world here, simply awesome. The mangrove roots were covered with purple, pink and red Sponge colonies. Sea anemones grew out of the creeklet floor, their dancing petal-like tentacles appearing like flowers. They could barely conceal their excitement when they saw a Giant Clam, moving the two shelled halves of its body very slowly, exposing a blue iridescent interior with numerous tiny eyes.

At long last, having satisfied their appetite for exploring the underwater world but ravenously hungry for food, they gathered some of the fish that had collected in the small net and climbed back into the boat. No point in being greedy and taking all the fish.

“Mangroves make the restless waters of creek and sea calm,” the goblin man was in his element, proud to be talking of the role of mangroves in nurturing marine life. “That is why fish and other sea creatures have their nursery here. What you saw today is only small part of this watery world. The sea has lots more – beautiful coral colonies.”

“We want to see the corals!” demanded both siblings in unison, almost knocking the goblin man over.

Bauna scratched his bald head. “The best way to do that would be





to go scuba diving in the sea.”

“But what about the scuba diving equipment?” Ganesh asked. “Where do we get that from?”

The ever-resourceful goblin man smiled mischievously and his beetle-like eyes twinkled and danced. “There is scuba equipment in the school. Some foreigners who came here long ago left it behind. I go tomorrow and get it.”

The next day, true to his promise, Bauna rowed all the way to the school and got the equipment. Then began the scuba diving lessons. All three of them had to be trained to use the equipment and also the sign language they should use underwater to communicate. All three were eager and quick learners.

It was not long before the four of them began their ‘operation coral hunting’. “We stay in water only for half an hour,” Bauna had instructed just before they began their deep-sea dive. The goblin man had to tie up his long beard in a knot so that it would not come over his face while in the water. He looked so comical, Radhi and Abhay couldn’t stop giggling.

The half an hour underwater was like a mesmerising dream. Rainbow-hued corals of all kinds of shapes – like those of a human brain, a stag’s horns and even like those of a dead man’s fingers pointing upwards – came their way. Several Clown Fish – orange with broad white bands – swam in and out of the labyrinths formed by the corals. But what they saw next nearly made their eyes fall out of their sockets.

A Parrot Fish with its strong beak-like mouth began munching on some of the coral!

It seemed too soon when the goblin man signalled the thumbs-up sign for them to come out of the water. But, where was Abhay? Hadn't he been with them all the while? They had all been so intent in exploring the underwater that none of them had noticed he was not there with them.

"Don't worry, Abhay is very good swimmer. He will soon come out," the goblin man tried to console Ganesh and Radhi. But the minutes seemed to tick by and there was no sign of the boy.

"What if the oxygen in his cylinder got over? What if a shark has attacked him? What if he has got lost in the sea? I better go back to look for him." Ganesh voiced his fears with mounting panic.

"You stay here, I'll go as I know the ocean well," Bauna offered.

True enough, Abhay had got lost – lost to the surreal mind-blowing sea world. On and on he swam and came upon something that gave him the goose bumps. A shipwreck. He was sure it was a ship although it was overgrown with sea weeds and corals, as he could see parts of it – the mast, the hull.. He was engrossed in swimming in and out of the so-formed maze when Bauna found him. The goblin man too was astounded by this discovery but he did not want to linger on, the boy's father was waiting with ever-increasing anxiety.

Back at Bauna's house, while they hungrily chomped away on charcoal

grilled fish, they listened, all ears, to Abhay boasting with his mouth full, about his day's incredible adventure.

"This is what village elders often talk about," said Bauna. "Long ago, before I was born, the Portuguese had come sailing this way. But even before their ship could reach the shelter of mangroves a storm turned the schooner over."

"I could even see part of the ship's name – DEUS".

"DEUSA DO MARI!" the goblin man clapped his hands and danced a jig excitedly. "That means sea goddess in Portuguese."

Radhi's jaw dropped almost to her knees with sudden realisation. "But even our boat has a name which means sea goddess: Samudree Devee. What a coincidence!"



Some Interesting Trivia

The differently shaped bodies of the corals are actually made of calcium carbonate deposits. Inside these shapes are the living part of corals, the polyps. They feed at night when they shoot out their tentacles to draw any tiny bits of food from the water.

Why, do you think, are corals so brilliantly coloured?

The corals owe their colours to the microscopic algae cells that live inside the polyps called zooxanthellae.

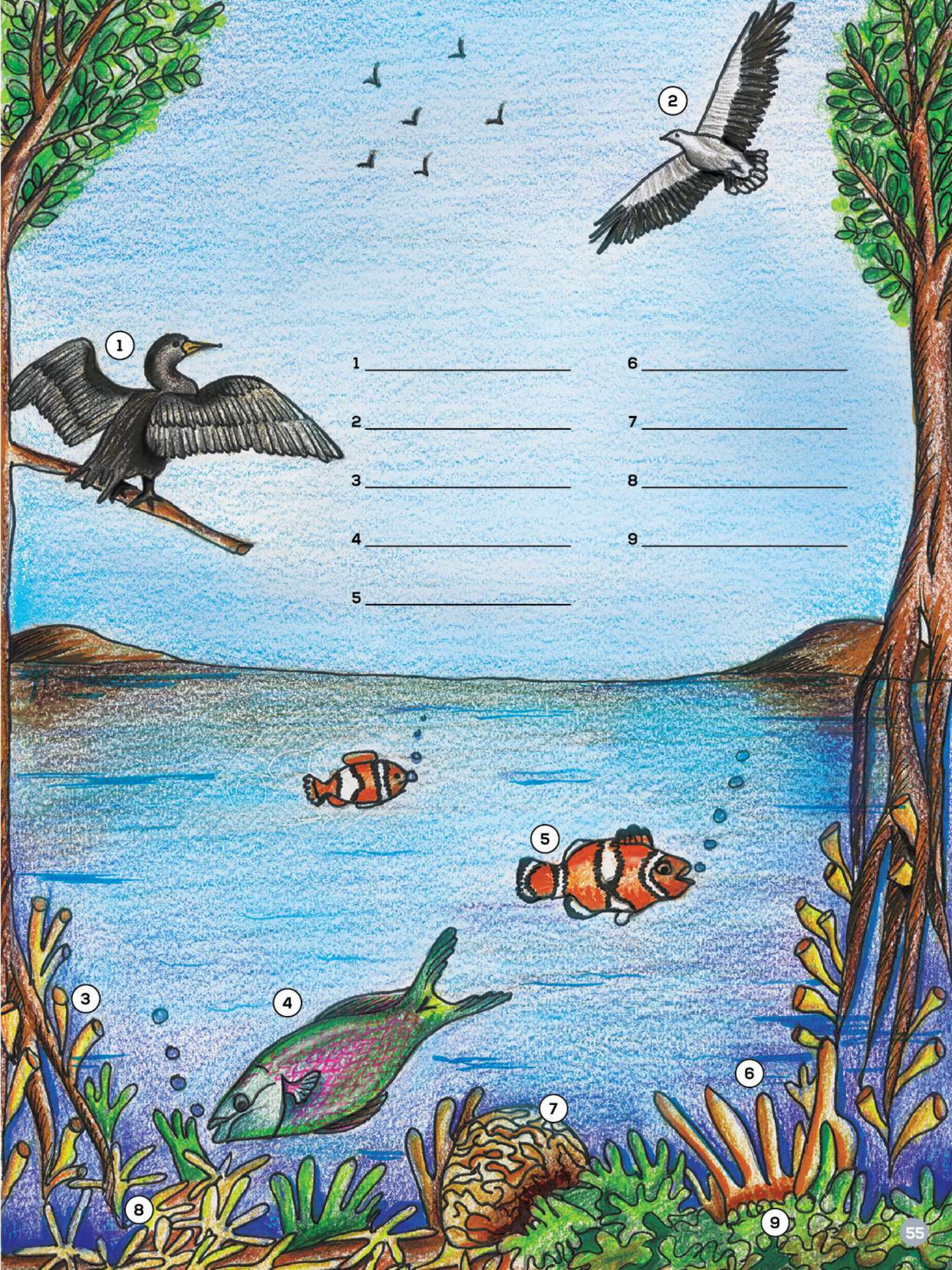
How Well Do You Know the Mangrove Ecosystem?

The picture beside depicts all the fauna (animals) mentioned in this chapter. Can you identify them?

- a. Brain Coral
- b. Dead Man's Fingers Coral
- c. Clown Fish
- d. Parrot Fish (with a beak-like mouth, about to eat the coral)
- e. Sea Anemones (looking like flowers)
- f. Cormorant (perched on the pole)
- g. Stag-horn Coral
- h. Sponge colonies (mostly on the stilt roots of the mangrove)
- i. White-bellied Sea Eagle (flying)

Answers: a-7, b-9, c-5, d-4, e-6, f-1, g-8, h-3, i-2

(Answers are given below)



1

2

1 _____

6 _____

2 _____

7 _____

3 _____

8 _____

4 _____

9 _____

5 _____

7. Mangrove Planting Spree

"I feel guilty. I have sad news which I didn't tell you earlier," declared the goblin man in his squeakiest voice one day, his eyes drooping.

The three of them looked at him enquiringly with bated breath.

"When I went three days ago to Vidhyasagar Island to get scuba equipment, I was shocked to see school building partly collapsed in storm that took place one month back."

The three of them were shocked and bombarded Bauna with a barrage of questions.

"Oh no!" Ganesh exclaimed. So, aren't they going to repair the damage?"

"One month back? Does that mean it was the same storm that brought us to Mangal Dveep Island where we met you?" enquired Abhay.

"Aren't there any mangroves on Vidhyasagar Island to protect them against the storm, Bauna Kaka?" asked Radhi.

"I answer all your questions," said the goblin man holding his hand up to calm them.



"School has no money. Waiting for Government to give grant. That will take very long time. Yes, all havoc took place on Vidhyasagar Island that same night when you landed here and met me. Radhi, little one, you are right. No mangroves on Vidhyasagar Island. All destroyed by greedy people who wanted land to build on them. They were foreigners. They came, did much damage by cutting and killing mangroves and they leave; went back to their country."

"Bu-but, which school do I send my children to now?" asked Ganesh, almost choking.

"That is saddest part. You will have to leave this place and settle in some big city like Bombay. There plenty of good English schools."

The news came like a stab in the heart. Neither Ganesh nor the children wanted to leave.

"But don't worry. You can come here every summer vacation. Bauna Kaka will be waiting to take you scuba diving and cook delicious food for all of you," said the goblin man trying to sound light-hearted and performing a kind of jig to cheer them up.

"Yes," said the children's father. I promise that we will visit every summer."

"So, we still have about fifteen days before you leave. What would you like to do?"

"I have an idea, Bauna Kaka," exclaimed Abhay, brightening up. "Why

don't we plant mangroves around the coast of Vidhyasagar Island?"

"Brilliant idea! All people there will be happy as they know. Mangroves are needed to protect them during cyclones."

"Why don't we go and collect mangrove seeds from our island right now?" demanded Radhi.

"No seeds for mangrove. They reproduce in different way. Come, I will show you."

So off they all went to where the mangroves were thickest on Mangal Dveep.

"See these?" Pointed Bauna to little baby plants that had begun growing on the Red Mangroves. "Seeds of mangroves do not come out. They grow while they are still with their mothers."

"Oh yes," said Abhay, "I remember the island children mentioning this when they performed the skit for us."

Just then, a female jackal and her almost adult-sized pup stepped out from a den inside the stilt roots. The mother gave them a stern look and walked on. The pup gave a yelp and followed close on his mother's heels.

"The mother jackal's pup refused to let his mother out of his sight. He





was holding on to his mother's tail all the while," observed Radhi, "just like the baby mangroves!"

They all laughed at this observation.

"I wonder why the baby plants have those long green tails," remarked Abhay. "Are those the propagules they were talking about in the skit?"

"Yes, baby plants with their tails are called propagules. By the time tail has grown long and heavy, baby plant has also grown big enough to leave its mother. It falls down by its own weight, floats about for sometime and when it is low tide, the roots get anchored in the soil."

"So, do we look out for the propagules and collect them?"

"Yes, we will collect as many propagules as we can. We will first plant them in clay pots. We will let them grow for some time in pots and then transplant them on Vidhyasagar Island."

The rest of the day was spent in collecting the propagules of Red, Grey and Orange Mangroves. In the evening Bauna and Abhay went to the village market to buy clay pots. Each propagule was gently laid along with some saline mud in a clay pot, its temporary home. By the time they had finished giving all the propagules a home, night had drawn nigh and they were ravenously hungry. But Abhay and the children refused to let goblin man cook for them that night as he too had worked so hard all day and was exhausted. They stuffed themselves instead, with a salad of mangrove leaves and shoots that did not require any cooking.

In the days that followed, Radhi kept a strict watch on the propagules. First thing in the morning, she would step out of the house to greet them and see how much they had grown. Much to Bauna's amusement, she would talk to them and even sing to them. Needless to say, the baby mangroves grew very rapidly. Ten days after collecting them and potting them, Bauna decided it was time to transplant them on Vidhyasagar Island.

With much fanfare, all the mangrove pots were loaded onto Bauna's boat and off they rowed. The village children who had performed the mangrove skit for them also followed with their parents in another boat. They too wanted to take part in the mangrove planting operation.

At Vidhyasagar Island they were greeted warmly by the school headmaster. "We shall be ever-grateful to you people for bringing the mangroves back to our island," he said, thumping Ganesh jocularly on the back.

The island began to buzz with activity as men, women and children, all came to plant the mangroves. In no time, every one of the hundred propagules were given a new home. Then the skit performers began to dance and sing around the mangrove saplings. Radhi and Abhay, not to be left out of the merry making, joined them. And then, to everyone's amusement, the goblin man began prancing and leaping in tune to the beat of the song. He looked exactly like a gnome out of a children's story book. At last, having had their fill of fun, the four of them decided to head back to Mangal Dveep Island. But the school headmaster wouldn't hear of it. "How can we let you leave without eating? Our womenfolk have prepared a special feast for you."

He led them to the village square where they were pleasantly surprised to see large pots on charcoal fires being tended to by some of the elderly women. Their mouths began to water uncontrollably at the delicious spicy aromas of various curries that wafted to their nostrils: curries of crabs, lobsters, shrimps, even their most favourite Telescopium shells!



Needless to say, there was much laughter and camaraderie while the island people and their guests all feasted to their hearts' content in the shade of some spreading Peepal trees.

When at last they found themselves rowing back to Mangal Dveep, it came with sudden realisation to Ganesh that they had only four days left before they embarked on their voyage to Bombay. "Only four days left and I still have to repair our boat and refuel her!"

"We will go and check in morning," said Bauna. "Tonight, you sleep like baby, don't worry about anything."

Abhay thought he saw Bauna's eyes twinkling more than usual. He wondered whether the goblin man who was always full of surprises, had something up his sleeve.

Do you think the goblin man had some secret surprise for Ganesh and the children? What, do you think, could it be? Read the next chapter to find out.

Tap Your Grey Cells

(Answers are given below)

Mangroves grow in water-logged soils that are swampy.
Can you think of other names for swamps?

Suppose the seed of a land plant such as jamun were to have a conversation with a mangrove propagule, what would they tell each other?

Can you write an interesting dialogue between them?

Answers: Quagmire, wetlands, jheels, marshland, bogs, mire.



8. *A Fitting Farewell*

Ganesh was restless during breakfast the next day. He was impatient to go have a look at his boat which had been anchored for so long, unattended and in need of repairs.

At last everybody finished eating and they headed to the bay. Surprise of surprises! Samudree Devi looked brand new – repaired and wearing a coat of fresh blue and white with its name repainted in bright red. Indeed, the boat seemed to be waiting for them, bobbing cheerfully with the gentle ripples that played around it.

The goblin man was delighted to see the surprised looks on their faces. Abhay, Radhi and Ganesh, all three of them seemed to be frozen in time, gaping away as if they were dumbstruck. He smiled beamingly from ear to ear, his white teeth sparkling in the sun, reminding Radhi of the nacre (mother of pearl) on the inside of the Giant Clam they had seen during their underwater spree. “Heh, heh! Always trust me, Bauna, to take care of everything!”

Ganesh and the children shook out of their trance and rushed to the goblin man, giving him a warm hug. They nearly toppled him over! “When could you have done all this, Bauna Kaka?” Radhi asked. “You were with us all the time.”

“I imagine you must have been working on the boat early in the mornings, before we all awoke,” remarked her father.

All too soon the day arrived when Ganesh, Abhay and Radhi had to leave the island of paradise that they had grown to love so much. It was evening by the time, with heavy hearts and tearful eyes they got into their boat. All the islanders from both Mangal Dweep as well as Vidhyasagar had come to see them off. Many of them brought gifts of honey, mangrove concoctions that could be used as tonics or medicines and a variety of dried sea food.

One of the village women put a garland of Orange Mangrove flowers around the bow of the boat.

A large flock of red-whiskered bulbuls, thronging the Meswak Trees some distance away, were renting the air with their tinkling melody.

'Are they singing a goodbye song to us?' Radhi wondered. But the goodbye song was suddenly interrupted when a large cloud of rose-pink and black birds descended noisily, driving away the bulbuls with their harsh cacophonous calls.

"These are Rosy Starlings. They come here to mangroves this time of year," explained Bauna. No sooner had the cloud of five hundred or more Rosy Starlings descended on the Meswak tree than they rose again as if on command and, wonder of wonders! They began performing an aerial show, much to the amusement of all those around. In perfect unison they flew together to form various shapes – now a balloon, then a swinging pendulum, then a large letter 'V'.... On and on they performed till the sun began to lower in the sky, when they flew back to the Meswak Tree to roost for the night.





“Rosy Starlings came specially to give you a fitting farewell,” called out the goblin man as he waved at the three of them and their boat began to glide away once again towards the beckoning ocean, to take them to an unknown land, a new world once again.



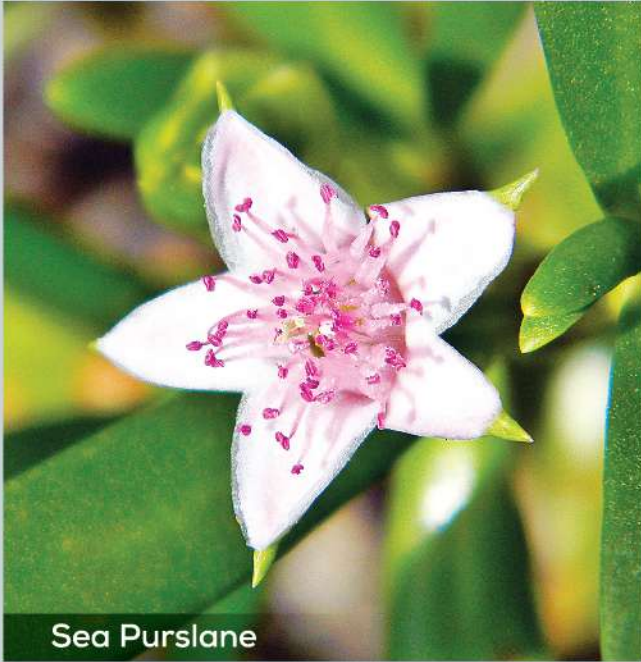


Sequel

As was Ganesh's greatest wish, Radhi and Abhay joined a well-reputed English school in Mumbai. But he didn't forget his promise to Bauna and to his children. They made the long sea journey every summer vacation to Mangal Dveep Island to meet the goblin man and renew their relationship with the islanders. In no time, the mangrove saplings they had planted grew into imposing trees and once again Vidhyasagar turned into an island of dense mangrove forests.

After Abhay and Radhi completed their college education, the family returned to Mangal Dveep Island for good. Abhay spent all the money he had earned in Mumbai to build a new school for the children of the mangrove islands. Radhi and Abhay spent the rest of their lives teaching in the school. You can rest assured they were very happy doing what they always wanted to do – to be living among the mangroves.

Some Common Mangroves & Associates of Pirojshanagar





Apple Mangrove



Common Derris



River Mangrove



Meswak



Indian Tulip

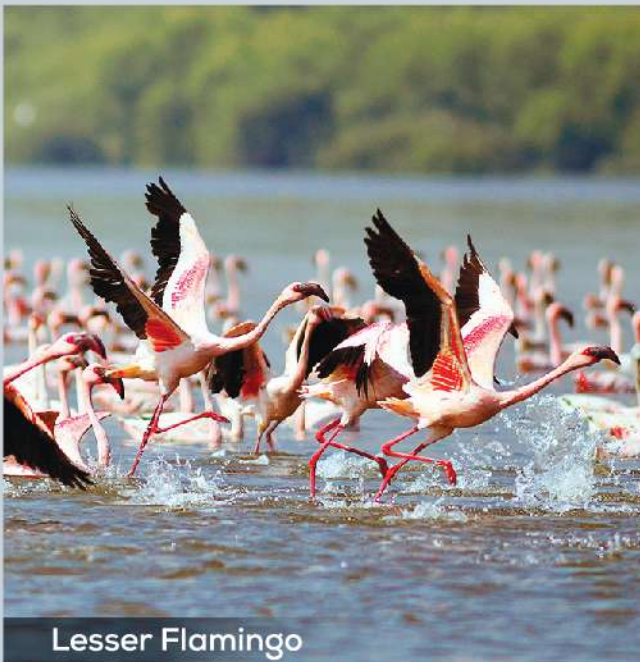
Wildlife of Pirojshanagar Mangroves



Common Kukri



Fiddler Crab



Lesser Flamingo



Baya Weaver



Golden Jackal



Common Kingfisher



Salmon Arab




Signature Spider



Tree Frog



Painted Grasshopper



The Godrej mangroves at Vikhroli form one of the largest green lungs of Mumbai, managed by Godrej & Boyce Mfg. Co. Ltd., through a three-pronged strategy of research, conservation and awareness. So far, the amazing biodiversity documented in this area spans 16 true mangroves and mangrove associates, 208 birds, 82 butterflies, 80 spiders, 75 insects, 31 reptiles, 22 fish, 13 crabs and 7 prawn species. In addition, over the decades, there have also been sightings of the Golden Jackal, Wild Boar and Indian Grey Mongoose in this wilderness.

Located on the western bank of Thane creek, Godrej mangroves offer important ecosystem services such as prevention of coastline erosion, carbon sequestration, strengthening livelihood for the local fisherfolk, regulation of local climate and an educational and research avenue for academia. It is remarkable to know that these mangroves form a habitat for wildlife in the busy Mumbai Metropolitan Region.

Every year, thousands of citizens are sensitized about the diversity and importance of mangroves through nature trails, poster exhibitions, presentations and articles in media by the Godrej team. To know more about this unique ISO 14001 certified forest, visit www.mangroves.godrej.com and download our Mangroves app from Play Store in your mobile.

Godrej