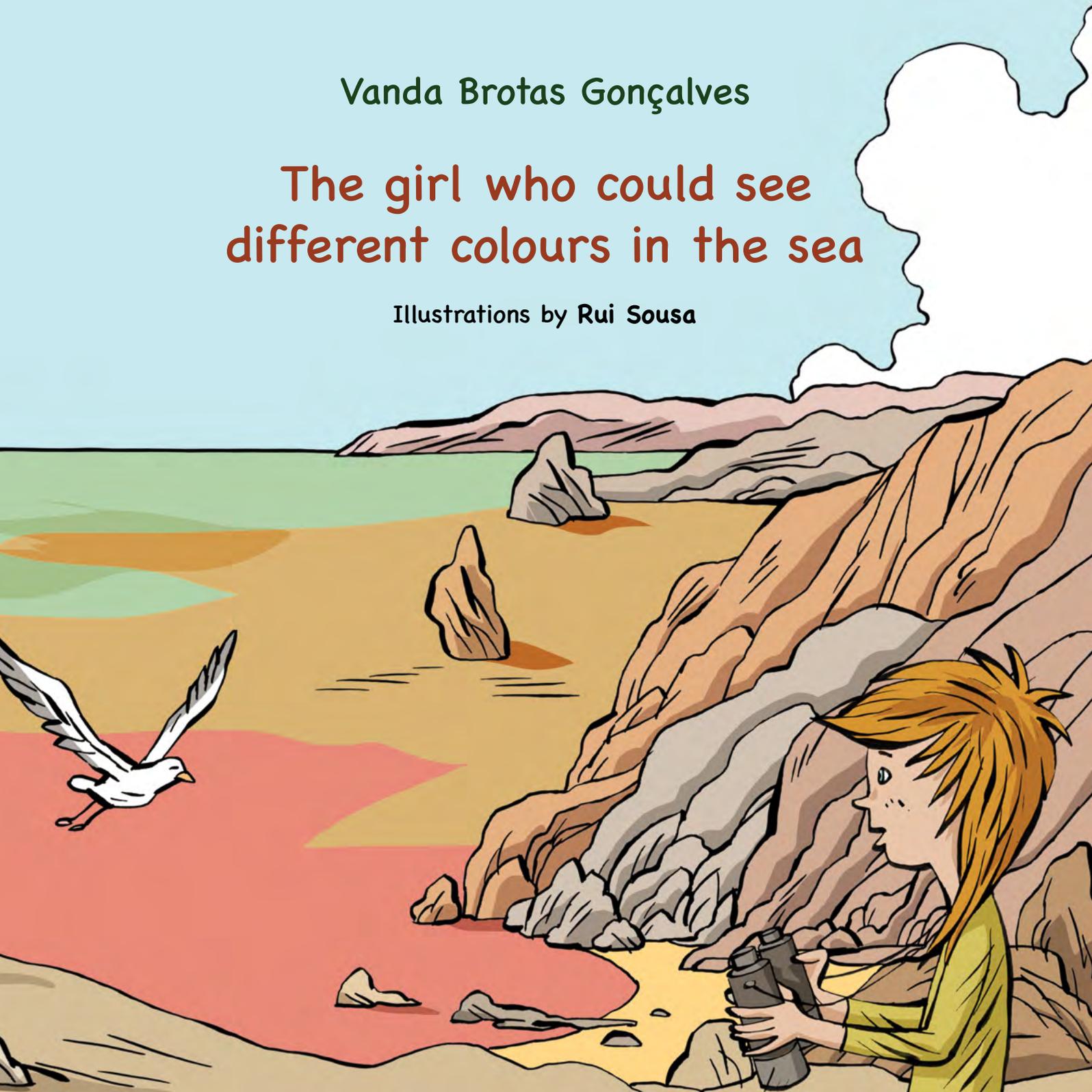


Vanda Brotas Gonçalves

The girl who could see different colours in the sea

Illustrations by Rui Sousa



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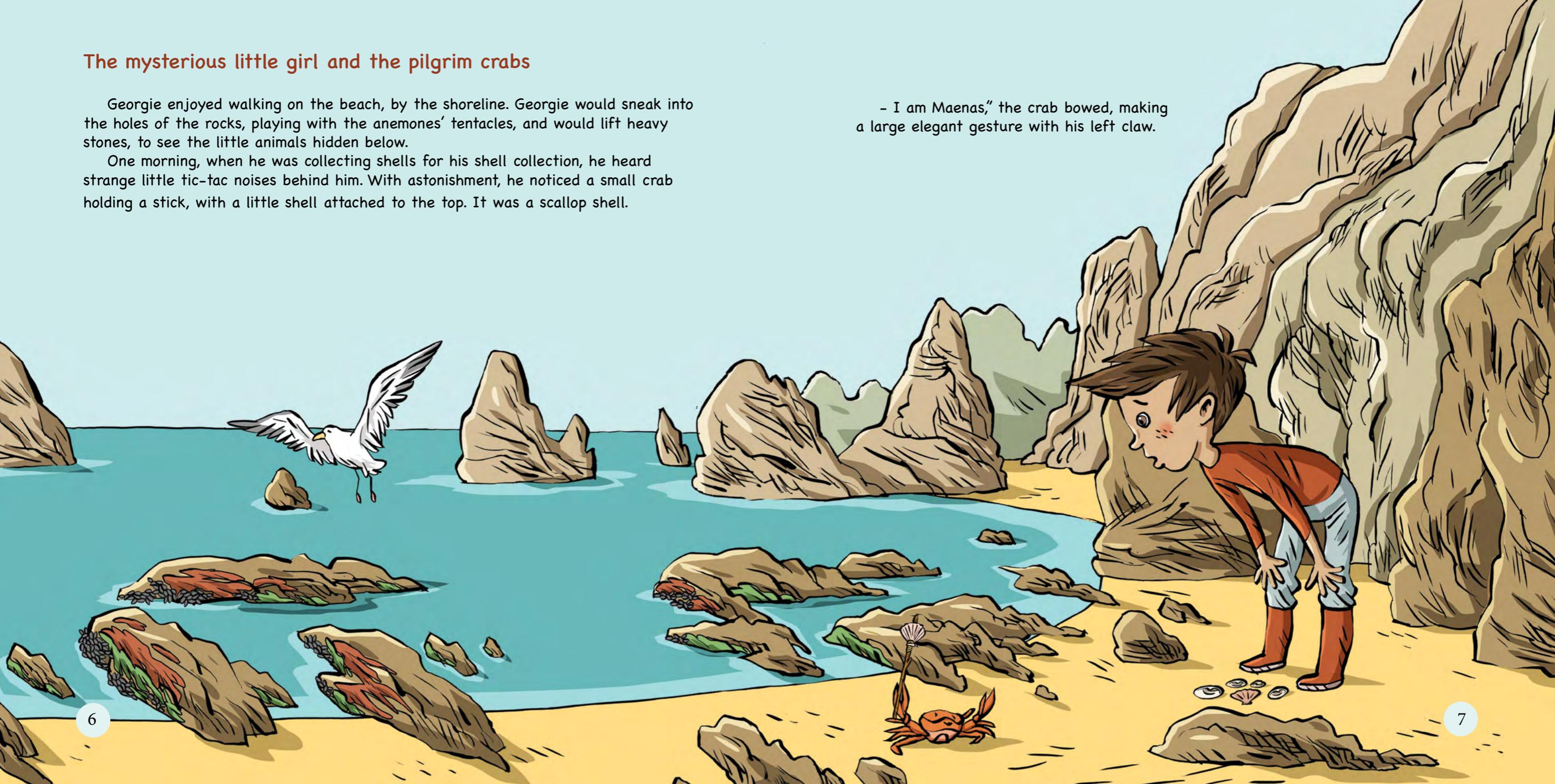


The mysterious little girl and the pilgrim crabs

Georgie enjoyed walking on the beach, by the shoreline. Georgie would sneak into the holes of the rocks, playing with the anemones' tentacles, and would lift heavy stones, to see the little animals hidden below.

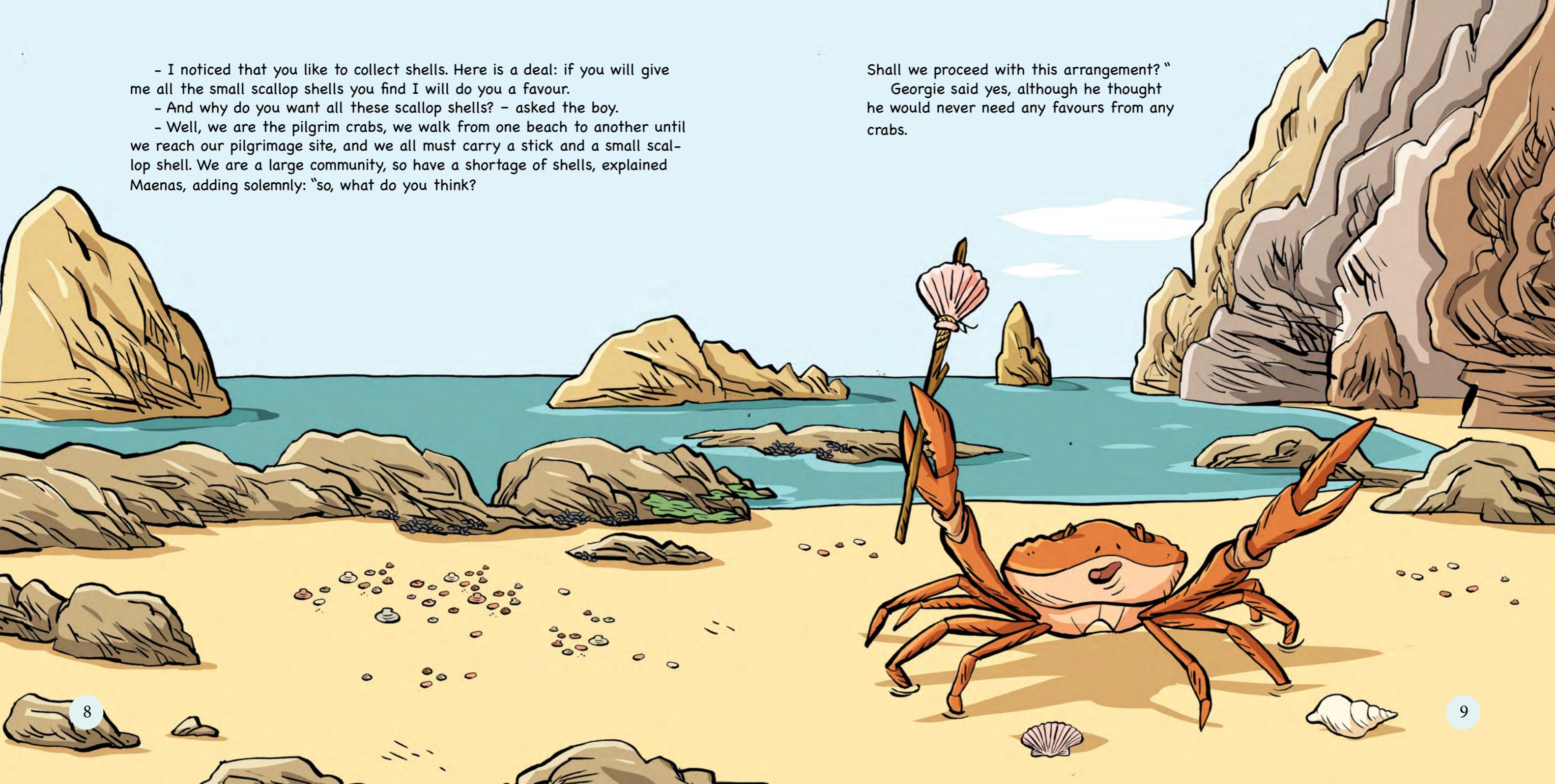
One morning, when he was collecting shells for his shell collection, he heard strange little tic-tac noises behind him. With astonishment, he noticed a small crab holding a stick, with a little shell attached to the top. It was a scallop shell.

- I am Maenas," the crab bowed, making a large elegant gesture with his left claw.



- I noticed that you like to collect shells. Here is a deal: if you will give me all the small scallop shells you find I will do you a favour.
- And why do you want all these scallop shells? - asked the boy.
- Well, we are the pilgrim crabs, we walk from one beach to another until we reach our pilgrimage site, and we all must carry a stick and a small scallop shell. We are a large community, so have a shortage of shells, explained Maenas, adding solemnly: "so, what do you think?"

Shall we proceed with this arrangement?"
Georgie said yes, although he thought he would never need any favours from any crabs.

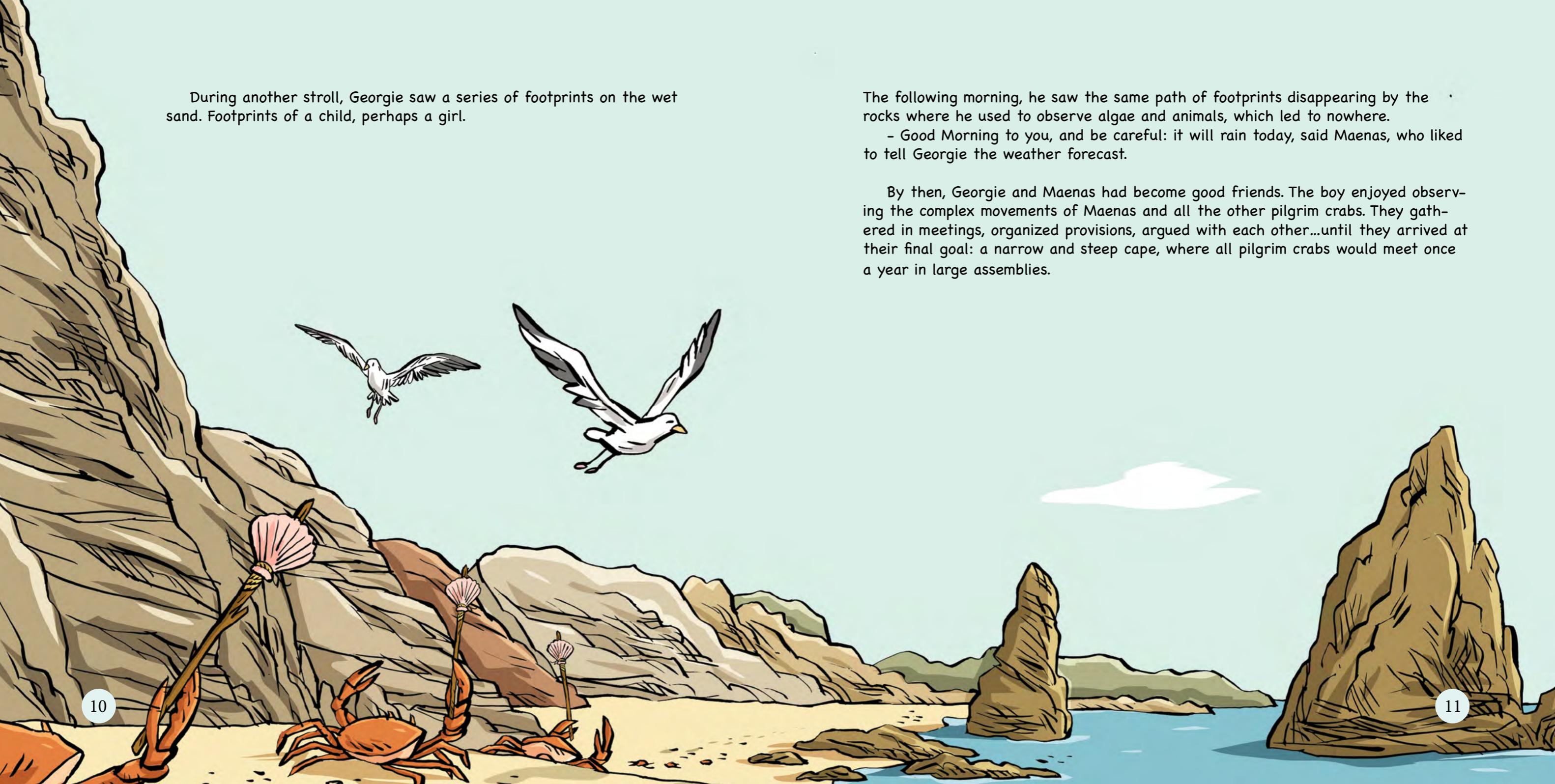


During another stroll, Georgie saw a series of footprints on the wet sand. Footprints of a child, perhaps a girl.

The following morning, he saw the same path of footprints disappearing by the rocks where he used to observe algae and animals, which led to nowhere.

- Good Morning to you, and be careful: it will rain today, said Maenas, who liked to tell Georgie the weather forecast.

By then, Georgie and Maenas had become good friends. The boy enjoyed observing the complex movements of Maenas and all the other pilgrim crabs. They gathered in meetings, organized provisions, argued with each other...until they arrived at their final goal: a narrow and steep cape, where all pilgrim crabs would meet once a year in large assemblies.



Georgie decided to go earlier and earlier in the morning to find out who was the owner of the footprints. On Tuesday, he saw a little girl running ahead, however, when he reached the edge of the rocks, she had disappeared.

- I think the time has come for me to pay you back that favour - it was Maenas, behind him, with a wicked smile.

- How can you help? - asked Georgie.

- Well, I am a very clever crab, and I have seen that you are intrigued with the footprints. The owner of the footprints is a little girl with red hair, who comes every morning, just after dawn, goes up the cliff, and stays there looking at the sea for a long time, explained Maenas.

He then went off immediately, as he had been summoned to solve an urgent problem.



On Wednesday, Georgie brought binoculars, and confirmed what Maenas had told him: on the top of the cliff, there was indeed a little girl with red hair, looking at the sea. He then realized she was texting on her mobile.

- Strange, - he said to himself, why does she go up there to send text messages, away from everyone?

He decided he would follow her. He waited and waited, and when he was about to give up, he saw her running down from the top of the cliff.

- Hello, are you lost? he asked, not very sure how to start the chat.

- No - she replied, without stopping running.

- What's your name? - he dared to ask.

- Madeleine.

- What do you do up the cliff every morning? - Georgie asked her.

- It is none of your business, - she replied, abruptly, starting to run to the village.





The girl who could see the invisible

On Saturday, whilst walking along the beach, Georgie saw Madeleine chatting with a fisherman.

Both were studying a large map very attentively. Georgie saw that Madeleine had her hands open over the map, where the fisherman was drawing circles. He also noticed that Madeleine had her fingernails painted with bizarre colours.

The following day, he waited for her on the beach. He managed to get a better look at her fingernails and realised that each one was painted a different colour but before he could ask the question, she rapidly put her hands in her pockets, declaring:

- I know what you are thinking, but I am not going to explain to you why my fingernails are painted with different colours.

- Don't you worry, - said Georgie, apparently (but just apparently) uninterested - I have three sisters and many cousins, and each one paints her fingernails differently.

They said goodbye and went their own way.

Madeleine chose different locations for her observations. The coast had small inlets, beaches, rocks, coves, capes and many cliffs. But thanks to Maenas, Georgie always knew where she was. He would wait for her when she was coming back from her observations, saying:

- Hi, how are you? - as if he was there by chance.

Using their complex information net, Maenas and his pilgrim crabs always knew where Madeleine was each morning. To Georgie, Madeleine's behaviour was a challenging mystery. Why did she go to the top of the cliffs every day to send text messages?

Why did she have a different colour on each fingernail and with unusual colours, such as several tones of Blue, Green, or Brown? Bizarre colours indeed, even for a bizarre girl like her. Why did she have a different colour on each fingernail and with unusual colours, such as several tones of Blue, Green, or Brown? Bizarre colours indeed, even for a bizarre girl like her.

- How do you know where to find me? - Madeleine asked Georgie, one day.

- Ah, - replied Georgie, smiling - that is my secret!

- I do know that you want to understand what I do every morning. That is my secret. So, if I tell you my secret will you tell me yours?

- Perhaps, I will think about it - he replied, pretending to be indifferent, - see you tomorrow.

Next morning, Georgie climbed directly to the top of the cliff, where all the coast could be seen. Madeleine was already there, attentively observing the surface of the sea.

When she saw him, she smiled and started a long explanation.

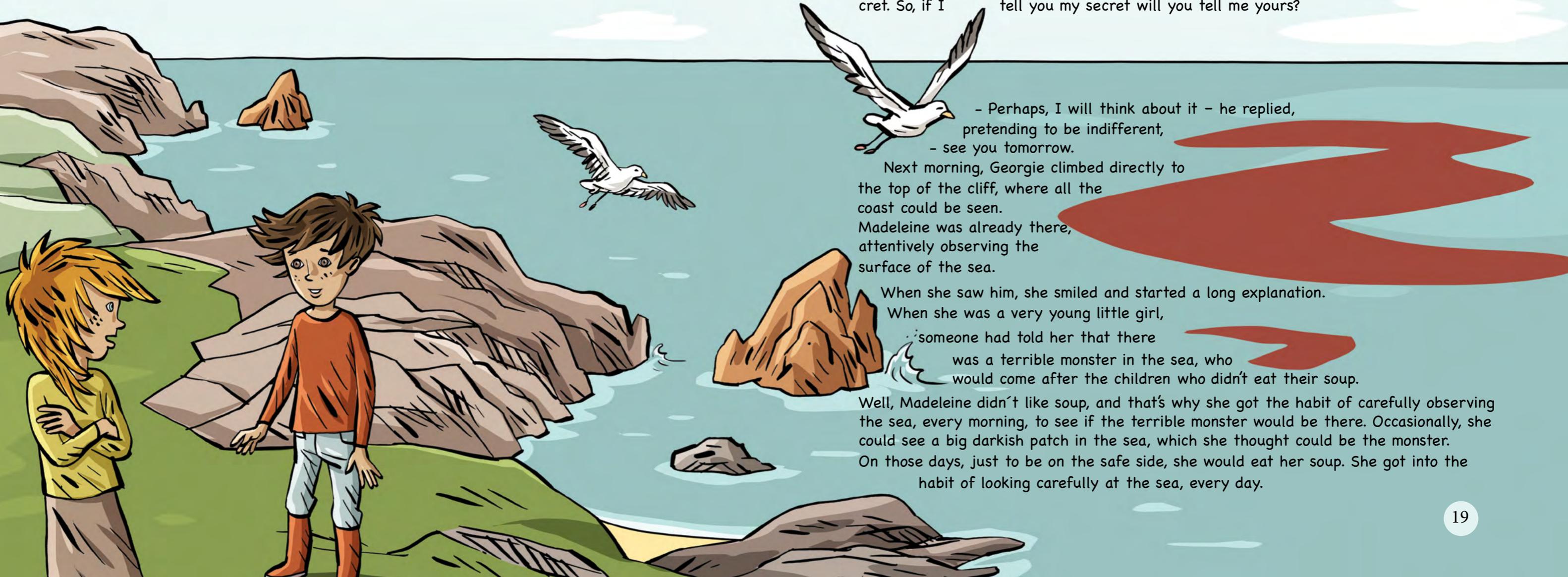
When she was a very young little girl,

someone had told her that there

was a terrible monster in the sea, who would come after the children who didn't eat their soup.

Well, Madeleine didn't like soup, and that's why she got the habit of carefully observing the sea, every morning, to see if the terrible monster would be there. Occasionally, she could see a big darkish patch in the sea, which she thought could be the monster.

On those days, just to be on the safe side, she would eat her soup. She got into the habit of looking carefully at the sea, every day.



She realized she could see patches of different colours in the sea. The colours were complex and varied from several tones of green and blue, to brown and red as well. She also realized that the coloured patches moved slowly on the vast surface of the sea.

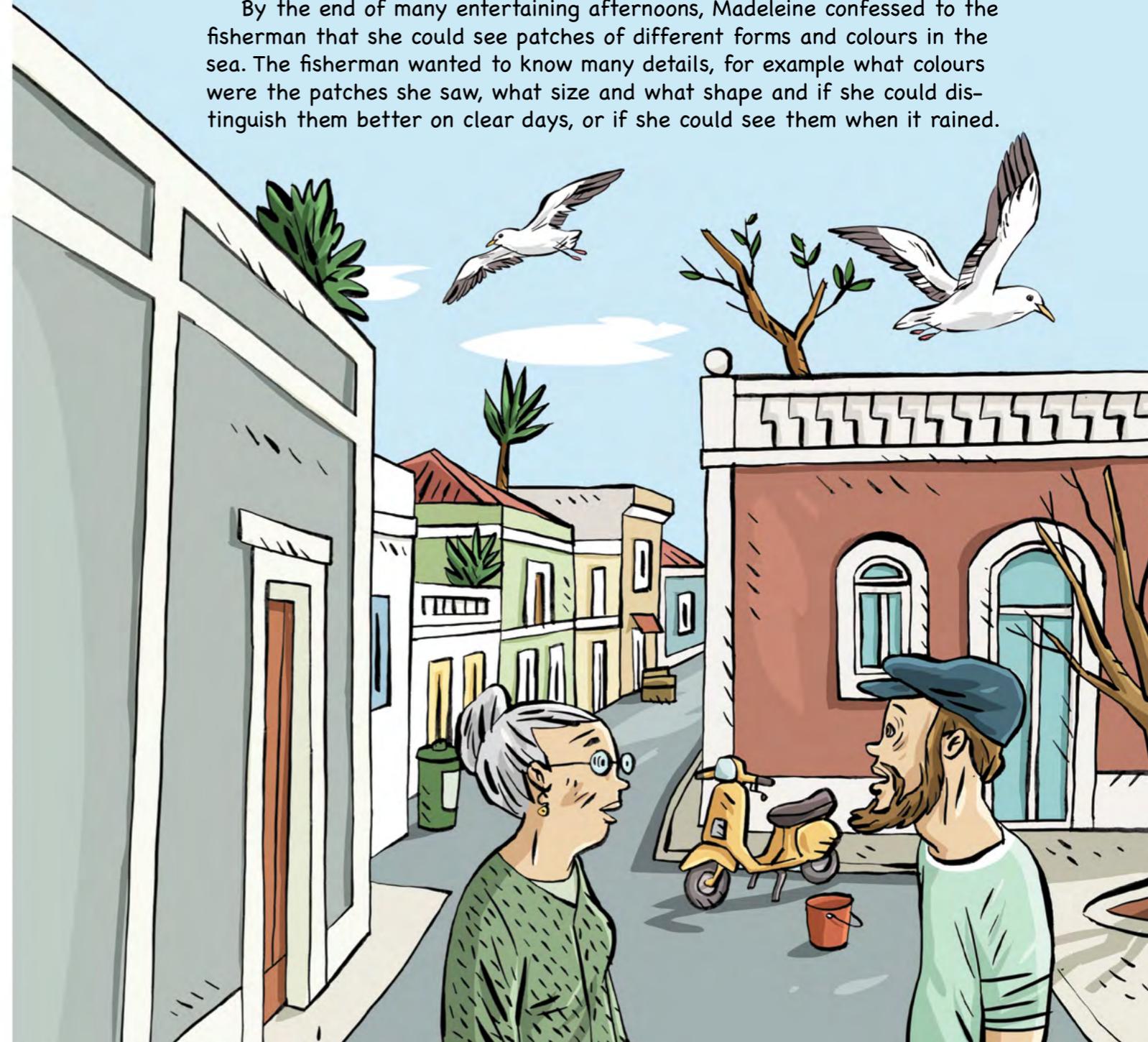
She therefore concluded that there was no monster at all, (which was a major relief for the soup issue), but she could not understand what those coloured patches were. Or why sometimes she could see the patches, and sometimes they were just not there.

Initially, she thought that everyone could see what she saw. But after carefully comparing what she could see with what her little brother could see, (after dragging him to the top of the cliffs), she concluded that this was not the case. Her brother could see several tones of blue, or grey, at the surface of the sea, when the sky was clouded, or more greenish waters, nearer the shore, but he could never see the diversity and the complexity of the colours she could distinguish. She realized that only she had this ability. But she didn't tell anyone about her powers of seeing different colours in the sea, and made her brother promise that he would not tell anyone.

But the little brother told his mother, asking her not to tell anyone else, and the mother told the grandmother, worried about the weirdness of her daughter, and the grandmother told their neighbour, the fisherman, asking him please do not tell anyone. She didn't want anyone thinking strange things about her grand-daughter.

The fisherman was interested and intrigued. He thought he knew everything about the sea, but he had never heard of someone seeing so many different colours in the sea. He decided he would become friends with Madeleine. He started by explaining to her that there were no terrible monsters in the sea. He showed her a big book, with illustrations of fish, dolphins, octopus, crabs, starfish and jellyfish, explaining where all these animals lived, their names, and what they ate. He also explained to her which species he caught in his fishing nets.

By the end of many entertaining afternoons, Madeleine confessed to the fisherman that she could see patches of different forms and colours in the sea. The fisherman wanted to know many details, for example what colours were the patches she saw, what size and what shape and if she could distinguish them better on clear days, or if she could see them when it rained.



With time, he realized that there was a connection between the colours Madeleine could see in the sea, and the quantity of fish he would catch. Sometimes, but not always, when she had seen strong coloured patches his nets would return full of fish. And when she told him that the water was just dark blue, the fisherman knew it was not worthwhile taking the boat out: as he wouldn't catch many fish.

They developed a very simple but ingenious method whereby the fisherman would catch larger quantities of fish with less effort, and Madeleine could feel proud and happy with her ability to see the invisible, and not ashamed of her special powers, as she did up till then.

The method they invented was as follows:

Every morning, very early, Madeleine would go up to the cliffs, and observe the sea with her binoculars. Then she would compare the colours she could see with the colours of her fingernails.

In order to establish an efficient and clear communication system with the fisherman, she had varnished her nails with different colours, from dark-brown to deep blue, going through many shades of yellow, red and green. Those on the left hand were brownish, yellowish or reddish, whereas those on the right hand displayed greens and blues.

They had set up a quite clever code. Madeleine would send a text message from her mobile, saying 1-3. The fisherman knew then that she was referring to the varnish colour of the little finger of her left hand, and the patch she was observing was located at 3 o'clock. Or for example 9-12, which meant ring finger, right hand, patch located at 12, in the centre.



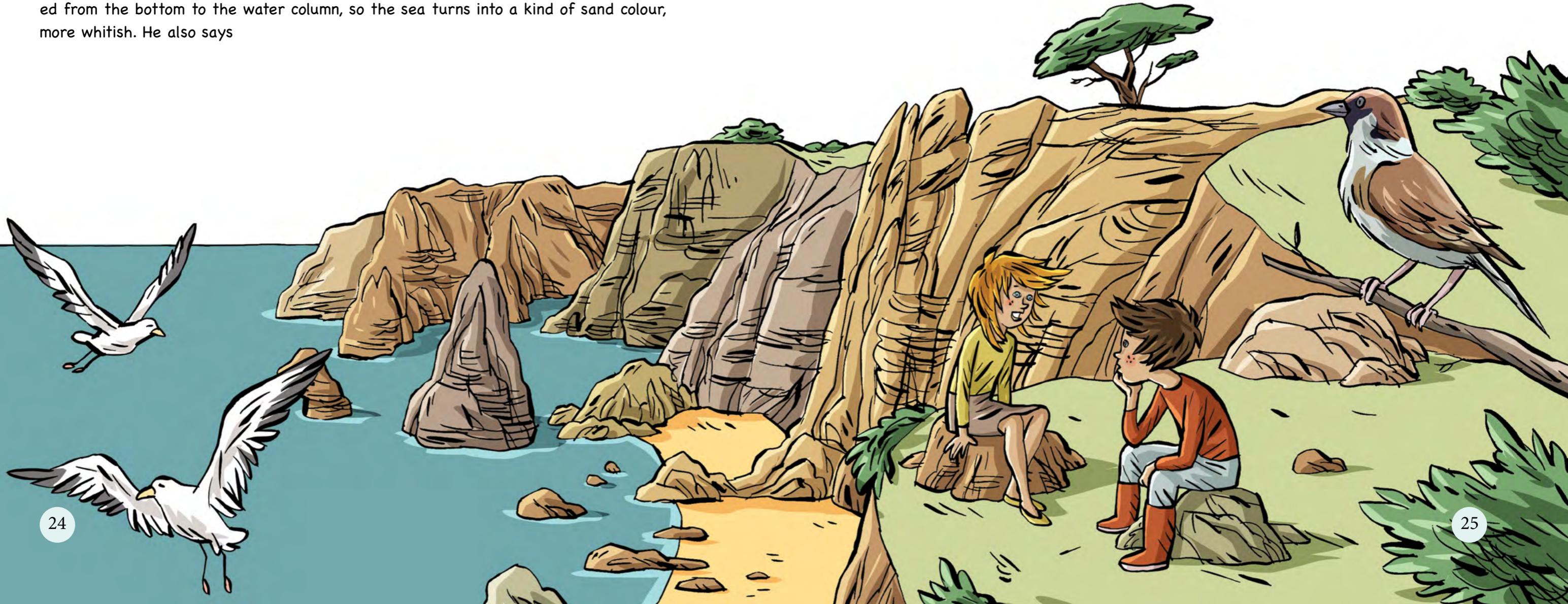
Georgie was thrilled and excited with what Madeleine had told him. He asked her to describe as exactly as she could the patches she could see in front of them, detailing their form and colour. He compared it with he could see, and found that where he could see just the surface of the sea, she could see several intensely coloured patches.

- But what do you think we are seeing when you see these coloured patches? - he asked.

- My friend the fisherman says that when the sea is rough, sand particles are lifted from the bottom to the water column, so the sea turns into a kind of sand colour, more whitish. He also says

that when the sky is cloudy, the sea turns grey. But he doesn't understand why I see all these different colours; he thinks that what I am seeing is plankton. But I do not know exactly what plankton is, and he doesn't know much about it either, as no one buys plankton at the market. - she explained.

- Well, in this case, we must talk to a scientist who studies the sea! - decided Georgie - I know one, he is the Distracted Scientist. Let's go and talk to him!



Madeleine disappears

A couple of days later, they went to see the Distracted Scientist, who had round glasses and was wearing wrinkled shorts.

- GM, Please CI - welcomed the Distracted Scientist.

- GM is good morning and CI is come in - whispered Georgie to Madeleine, seeing her astonishment. - He speaks with acronyms, in order to save time.

The Scientist took them to his office, and, while sitting in front of his computer, tapping leisurely, listened to the strange account that Georgie and Madeleine were telling him, stuttering a bit.

- But you really see these coloured patches?? - asked the Distracted Scientist.

- Is it possibly to see the plankton? And what exactly is the plankton? - Madeleine had decided to go forward with direct and incisive questions.

Plankton - explained the Scientist - is divided into phytoplankton and zooplankton. Phytoplankton is constituted by microscopic algae and zooplankton by minute animals, almost all being crustaceans. The zooplankton eats the phytoplankton, and the small fish and larvae eat the zooplankton. Then, the bigger fish eat the small fish. That's how the marine food chain works. One can only observe plankton with a microscope.

He cut short the explanation yelling WAM and focused on writing in the computer. Georgie and Madeleine looked at each other, without understanding what WAM was.

- Well, I am sorry - said the Distracted Scientist - but I have received an email which must have an IR, we will talk again another time, as today I am very busy as I must finish a paper. Anyway, phytoplankton cannot be seen with the naked eye, unless it is very, very concentrated. It may happen occasionally, when microalgae grow so much and so fast that they form patches on the sea surface, sometimes of a reddish colour.

He said goodbye to them, with a PTSY.



They left the Distracted Scientist feeling somewhat disappointed. To cheer themselves up, they decided they would have a big ice cream. The following days, they went on with their occupations. Very early in the morning, Madeleine would go up to the top of the cliffs, to observe the patches on the sea and communicate with the fisherman. Georgie went on with his investigations. He was very curious about some very small animals, with many feet, called isopods, which would run away, very scared, when he lifted the stones, during low tide.

As they were on holiday their afternoons were spent chatting with the fisherman. They learnt where the different fish lived and how and when could they be caught...

One day, a strange woman appeared. She had a very white skin, a very big forehead, raven-black hair, very clear blue eyes, with thick black eyeliner. Her clothes were black, a sort of trousers under a kind of dress. She stopped right in front of them and gave them a card, which had "Name: Ophelia, Occupation: Talent hunter" on it. Without understanding why, Madeleine shivered deeply. The following morning, the bizarre woman was on the beach, with two not-very-friendly-looking-men watching Madeleine.

Georgie asked Maenas who the characters were. However, Maenas, who always knew everything, just knew that they were not from the village and they were not tourists; they had come from far and spoke a strange language.

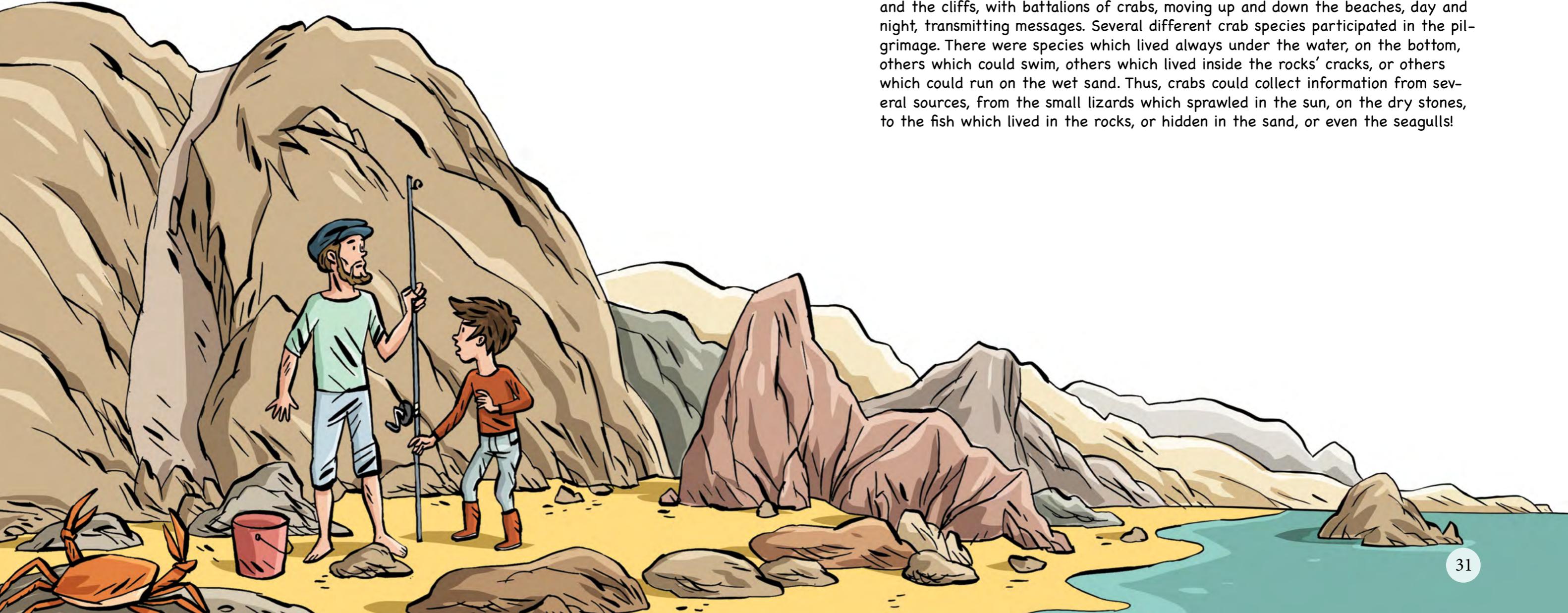


Next day, Madeleine's footprints didn't show up on the wet sand. Georgie asked Maenas, and asked the fisherman, but no one, with or without claws, had seen her. Georgie, Madeleine's family, everybody in the village went looking for the little girl on every cliff and in every backyard, all day and all night. But Madeleine had disappeared without a trace.

It was then that Maenas surprised Georgie stating:

- You will see now how important our pilgrimages are: because of the extremely competent organization we need for our pilgrimages, we have connections with all sea and land animals, with wings, legs, or scales. Together, we form a complex network to gather information which is then channelled to me.

Under the guidance of Maenas, a prodigious enterprise started over the coast and the cliffs, with battalions of crabs, moving up and down the beaches, day and night, transmitting messages. Several different crab species participated in the pilgrimage. There were species which lived always under the water, on the bottom, others which could swim, others which lived inside the rocks' cracks, or others which could run on the wet sand. Thus, crabs could collect information from several sources, from the small lizards which sprawled in the sun, on the dry stones, to the fish which lived in the rocks, or hidden in the sand, or even the seagulls!

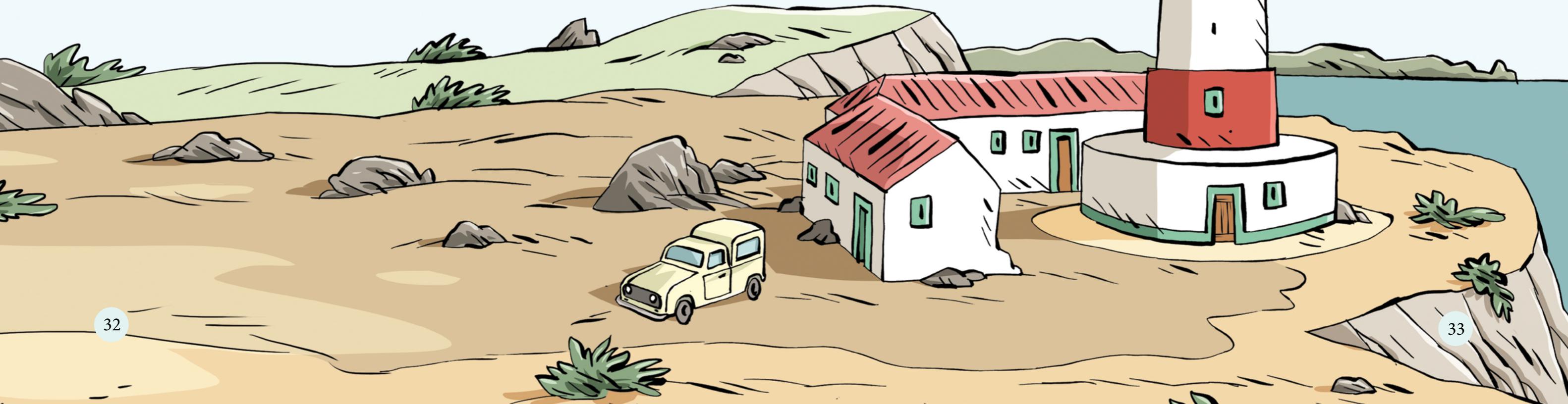


So, the pilgrims crabs learnt from their seagull friends, that there was a little girl in the Lighthouse top room.

Georgie wanted to save Madeleine as soon as possible, with the help of Maenas. In fact, Maenas was a very good and experienced strategist, he loved to make plans. He explained to Georgie that they should have a Plan A, a Plan B and a Failing Plan.

- But why do we need to waste time on a plan which is going to fail? - Georgie was nervous and irritated, he wanted to act fast, to save Madeleine as soon as possible.

- Well, it is always advisable to have a good Failing Plan, because, while we think about what is bound to fail, we get ideas that will not fail. Hence, we have to be calm, to sit down, and think about a Plan A, a Plan B and a Failing Plan. - Clarified Maenas.



The Unscrupulous Scientists

Madeleine had been a prisoner in the Lighthouse for the last three days. She had been kidnapped by two men with their faces covered.

Right on the first day of her imprisonment, Madeleine had been forced to observe the sea and describe accurately the colour patches: where were they, the area they covered, which was their exact colour. Firstly, she refused to cooperate, but then Ophelia arrived, the strange woman with the very white skin, the raven-dark hair, dressed in black, with a thick black eyeliner around her very clear eyes, who threatened her:

- If you refuse to cooperate, I will make a spell around your house, and everyone will be without television and internet for three years, three months and three days. And your hair will turn green!

- But why did you kidnap me? Why do you want to know about the colour patches of the sea, if you are not fishermen? - Madeleine was feeling hopelessly desperate.

- We are scientists, we study the satellite images which give us an indication of the plankton concentration, and you can help us a lot, with your ability to see the different colour patches on the sea. You have not figured it out yet, but what you see are phytoplankton cells, and the more concentrated they are, the stronger the colour you see.

Madeleine realized she had been kidnaped by some Unscrupulous Scientists. She didn't know if Ophelia was an unscrupulous scientist or a witch. However, her spells sounded true and terrible, Madeleine didn't want her house without internet, or, even worse, her hair turning green, but she wanted to gain some time, so she kept asking questions:

- But why did you kidnap me, can't you study plankton without me?

- You have not yet realized that you have supernatural powers. We do not know how, but you are able to see phytoplankton cells, which are invisible to everyone else, as they are so tiny. The patches that you see are constituted by billions and billions of cells, and the colours you identify are related to how many billions of cells there are per cubic meter, and also to which species they belong.



- If there are billions of cells per cubic meter, how many are there in a teaspoon? - Madeleine asked to gain more time ...

- Well, explained the Unscrupulous Scientist, if we consider that there are one billion cells per cubic meter, there are one million cells per litre hence, there are 200 times less in the teaspoon, (as a teaspoon is equal to 5 millilitres) which would be 5000 cells.

- As many as that? And what is their size?

- They are very very small - the Unscrupulous Scientist went on with the explanation, because, although unscrupulous, he was a scientist, and he enjoyed explaining things; - the biggest are around a fifth of a millimetre, and then there are cells so minute that they can only be observed with an electron microscope (a special kind of microscope).

- Enough! Biology lessons are over! - screeched Ophelia, irritated, grabbing Madeleine's arm - now girl, take these binoculars and tell us about the patches you see, describing their colour and size.

However, Madeleine would not give up easily:

- But, can't you see that if I understand, I will be able to help you better? What do satellites have to do with me or with phytoplankton?

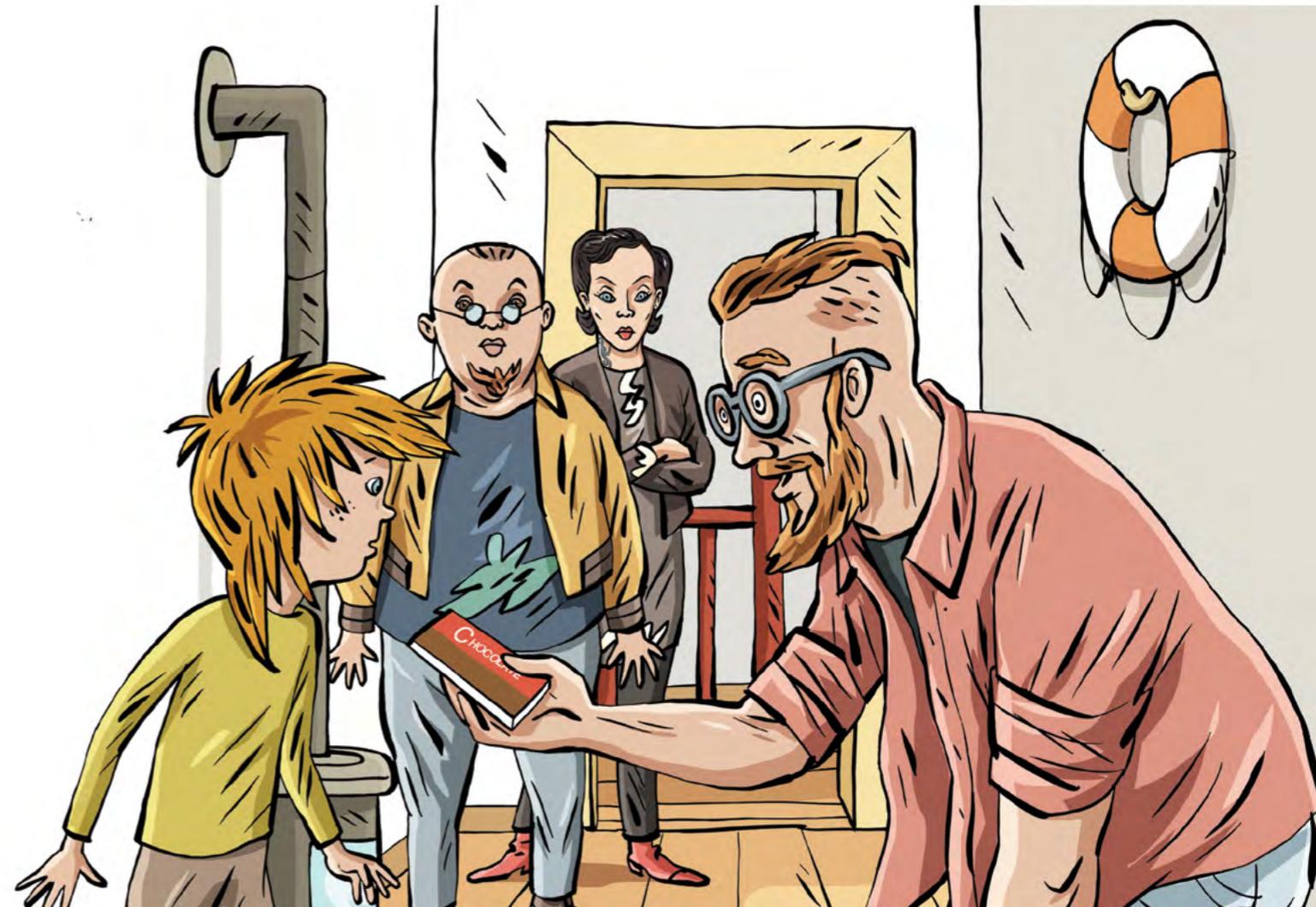
- She is right - said the Unscrupulous Scientist, the one with bushy eyebrows. - Well, this is the thing. The satellites we study, have sensors which are sensitive to the colours reflected by the surface of the sea (in a much better way than our eyes). We receive coded information from the satellites (a kind of computer signal you see...), which we plot as images to obtain a sort of a photograph of the surface of the sea. We then have to relate these images to the quantity of phytoplankton cells which exist in the sea. So, we must go on oceanographic cruises to sample water, measure the actual concentration of phytoplankton in the water, make other complicated measurements, and all this costs an enormous amount of money. We need to gather a lot of data and a lot of images, but with you, we will save a lot of money, because you can tell us where the phytoplankton patches are located. So, take your binoculars, start from the left, and tell us where you see the patches, and with which colour.

This time, Madeleine had to obey and describe what she could see, while the two Unscrupulous Scientists took notes on their computers.

The next day, Ophelia and the two Unscrupulous Scientists, came to see her in a very happy mood.

- We have analysed the satellite images from yesterday and verified that your observations matched the information from the satellites. You were very useful to us!

They gave her a chocolate and asked her to describe the colour patches she could see from the window, following the same method as the day before.



On the third day, the Unscrupulous Scientists and Ophelia appeared even more cheerful, congratulating her for her accurate observations.

- Can I go home now? - asked Madeleine.

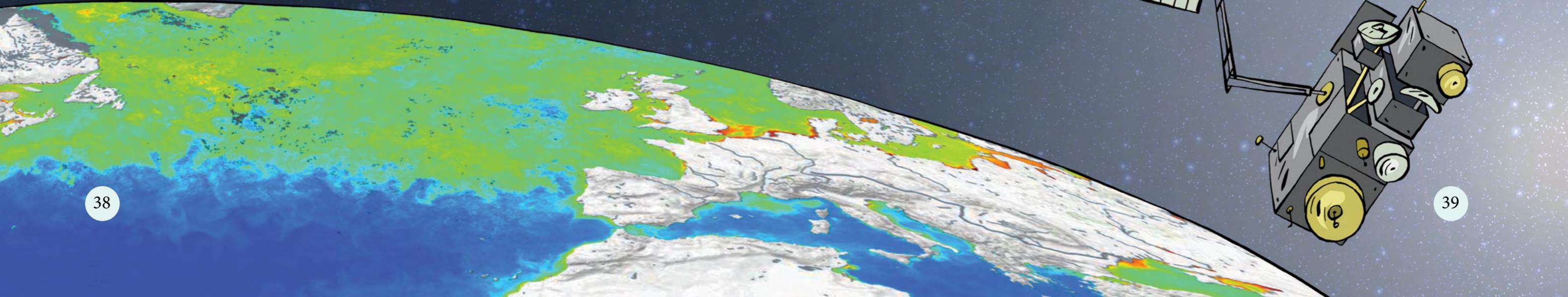
- Of course not! You are precious to us. Tomorrow, we will take a flight in a helicopter, and you will tell us what patches you can spot in the sea.

- And after that, can I go home? - she asked again

- Afterwards, - said Ophelia, with her high-pitched voice, - you will stay with us forever and ever! And you can never tell anyone that you've helped us!

Madeleine burst out into tears, she would never ever go back home and see her family, Georgie or the crab Maenas. She was crying so much, that her tears prevented her from seeing the patches of colour in the sea, so the Unscrupulous Scientists left her alone, promising that they would return later.

Madeleine did not know that a new satellite that measured the colour of the sea had been launched a few days earlier, and that there was strong competition between various scientists' teams and that the team winning the project would be the one relating the concentration of phytoplankton in the sea with the satellite image the best. This team would gain a high status and prestige as well as a large sum of money. When Ophelia and the Unscrupulous Scientists realized Madeleine's special powers, they did not hesitate and kidnapped her.



The Escape

Meanwhile, alone in the top room of the lighthouse, Madeleine regretted her powers of seeing the invisible. She cursed the plankton, the satellites and the scientists with or without scruples. Then she saw three geckos perfectly aligned on the wall.

She got close in order to see better: there was no doubt, the three geckos were moving their three tails simultaneously, as if they were dancing.

She looked even closer. One of the geckos had a minute paper roll in its mouth. It was a message from Georgie, which said: "when they bring your dinner, run downstairs as fast as you can, we will be waiting for you at the door".

When the man with the striped T-shirt, dark beard and big sticking out ears, brought her dinner, she was lying on the floor, pretending to have fainted. He set the food tray down, to see what was wrong with her. In that precise moment, Madeleine jumped up and fled out of the door, which she locked from outside. She started running down the long spiral staircase, which was in complete darkness.

She was very afraid of the darkness, but she was even more afraid of Ophelia and her team of Unscrupulous Scientists. Meanwhile, the man had broken down the door and was running down the stairs after her, shouting terrible threats: I will pull out your fingernails! But Madeleine kept running down the stairs in the darkness.





Finally, she reached the lighthouse outdoor, where Georgie, Maenas, hundreds of pilgrim crabs and an agitated flock of seagulls were waiting for her. As soon as Madeleine was out the door, the crabs, helped by the seagulls, raised a fisherman's net in front of the door. As soon as the man came out of the door, still shouting terrible threats, he was caught in the net.

Georgie and Madeleine ran as fast as they could till they reached the road, where the Distracted Scientist (who was not distracted any more) was waiting for them in his car. He had realized the special powers of Madeleine and the scheming and shameful plan of the Unscrupulous Scientists.

Without wasting any time, they contacted with the heads of the European Space Agency, telling them everything that had happened. Their story raised the utmost interest in the Agency, and the Distracted Scientist was asked to write a scientific paper. Science needs papers to go forward, they explained.

Some time went by, and the Distracted Scientist wrote a paper, helped by new observations made by Madeleine, on the top of the cliffs, and by the fisherman.

Georgie went on with his morning strolls by the beach, making a new friend, Octopus, with whom he played several games. First, they would play hide and seek, where Octopus would change the colours of his skin, disguising himself amongst rocks, anemones, sea urchins, or algae; and then they would play tic-tac-toe on the wet sand, where Octopus would win most of the times as well, using its eight arms with extreme skill and speed.

However, Georgie would never say no to a good chat with Maenas, who always had interesting topics to talk about. Maenas, once again, had been elected to organize the pilgrimage for the following year, so he was extremely busy, thinking about his Plan A, Plan B and Failing Plan.

- This year, - he confessed proudly to Georgie - I have a fantastic Failing Plan! It is the best Failing Plan I have ever imagined. I will explain it to you at some point, but not now, as I must attend a very important meeting.



The following Autumn, Madeleine was invited to give a talk at the Big Conference about the Colour of the Sea, describing her special powers of seeing the invisible patches in the sea.

Madeleine was very nervous and excited when she went up on the stage in the big amphitheatre which had dark-blue chairs. However, she did indeed very well. She had rehearsed her speech 17 times in front of her little brother. Everybody could understand her powers to see the plankton patches in the water, moreover, everybody found that the fingernails and the text messages codes were absolutely brilliant.

In the end, everybody stood up, applauding loudly. After thanking and thanking again, Madeleine, was very happy to answer a few questions.

- Are you going to continue using your special powers to see the invisible?

- Yes, I will go on training my powers of seeing the invisible, - replied Madeleine - but what I really want is to become a scientist when I grow up because, much more important than seeing the invisible, is to understand it!



Text Boxes

Box 1. See if you guess

If Madeleine wanted to send a text message to the fisherman indicating the colour of her left hand thumbnail, and a colour patch located at 10am in the horizon, what would be her code? Imagine now that she wanted to indicate the nail colour of her right hand index finger and a patch located at 2pm. What would be the text?

2-2m puu 01-5m :lamsvu

Box 2. The acronyms of the Distracted Scientist

GM - good morning

CI - come in

IR - immediate reply

WAM - Wait a minute

PTSY - Pleased to see you

Box 3. Phytoplankton

Phytoplankton are microscopic organisms, generally single cells drifting in the ocean's currents, that live near the sea surface where there is enough light for photosynthesis. As well as light, these organisms need nutrients to grow and multiply. Phytoplankton include a variety of types of different forms and colours: the different colours are caused by different pigments. Hence, these tiny cells might be green, blue-green, yellowish, brown, red...

Through photosynthesis, phytoplankton produce oxygen, essential for life on Earth. For each two molecules of oxygen in the air, one comes from marine phytoplankton and the other comes from plant vegetation. Phytoplankton are the basis of the marine food chain. Hence, in general terms, regions with high abundance of phytoplankton are rich in fisheries. However, this relation it is not as simple as it is pictured in the story, there are many factors to consider...

Box 4. Satellites and remote sensing

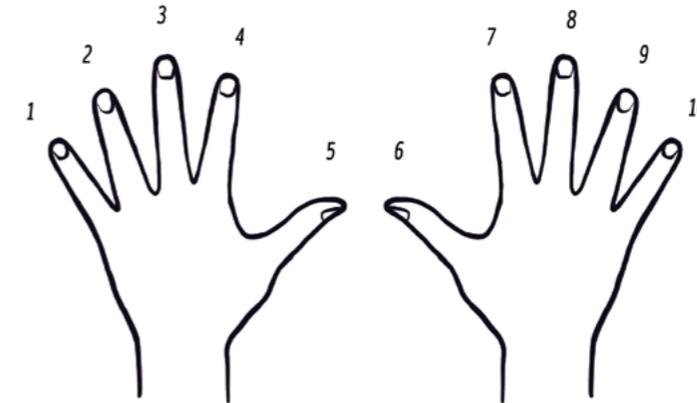
Satellites orbit the Earth while measuring the light leaving the sea surface. This light provides information on the concentration of phytoplankton cells. However, this information must be regularly checked by comparing with cell concentration measured in the sea.

When the sky is cloud covered, the clouds prevent the sea reflectance reaching the satellite sensor. Sentinel 3 is a new satellite launched by the European Space Agency (ESA) that orbits around the Earth and can "see" the same spot on Earth every two days, at approximately the same hour.

Box 5. What is a paper?

Scientists write the results of their experiments or investigations in papers, which are published in scientific journals. A paper has to be very clear, unbiased and describe in detail the way the results were obtained (so that other scientists might follow the same methodology).

Results are often presented as graphs or figures, and the ideas to explain the results are discussed.



Vanda Brotas Gonçalves is a marine biologist. Professor at the Faculty of Sciences of the University of Lisbon (FCUL), and a Researcher at the Centre MARE. Her main research line has been phytoplankton ecology, and satellite remote sensing of ocean colour (which is a measure of phytoplankton biomass), portrayed in this story.

She wrote *Histórias para meninos não quero* (Stories for Children I Don't Want To) now part of the National Reading Programme; *O namorado da minha mãe* (My mum's boyfriend), *A história do azoto bom em pequenino e mau em grande* (Nitrogen, a goddy or a baddy?, available online: http://echanges.fc.ul.pt/docs/2019/Nitrogen_final.pdf) and *Os meus amigos Triops* (My Triops friends), edited by Liga para a Proteção da Natureza.

The present book is a translation of *A menina que via o mar de várias cores*, published by Gradiva

Rui Sousa was born in Lisbon in 1966. Finished his degree in Arts, at the Faculdade de Belas-Artes of Lisbon, in 1992. In the last thirty years he's divided most of his work between illustration and painting, collaborating with editors, newspapers and magazines, and performing exhibitions.

Together with Animanostira, directed the animation film *Um caso bicudo* (*A difficult case*).

He is the author of four childrens' books.

As a complement of his trips, he also worked as «Urban Sketcher», with published notebooks.

The sea is blue for everyone. Except for Madeleine, who could see several different colours in the sea, but didn't know what those colours meant. Her friend Georgie helps her try to understand her special powers to see what no one else can. Madeleine is kidnapped by the Unscrupulous Scientists: they had figured out that Madeleine's power to see the invisible was extremely valuable. Will Georgie with the help of Maenas (a clever and bossy crab) manage to save Madeleine? An exciting adventure by the seashore which will reveal amazing things about the invisible marine microorganisms.

