

Be careful with our rivers!

Conseil de bassin versant de la
rivière Bonaventure
...belle, pour la *Vie*!


CREGIM
CONSEIL RÉGIONAL DE L'ENVIRONNEMENT
GASPÉSIE-ÎLES-DE-LA-MADELEINE
« La référence en environnement »



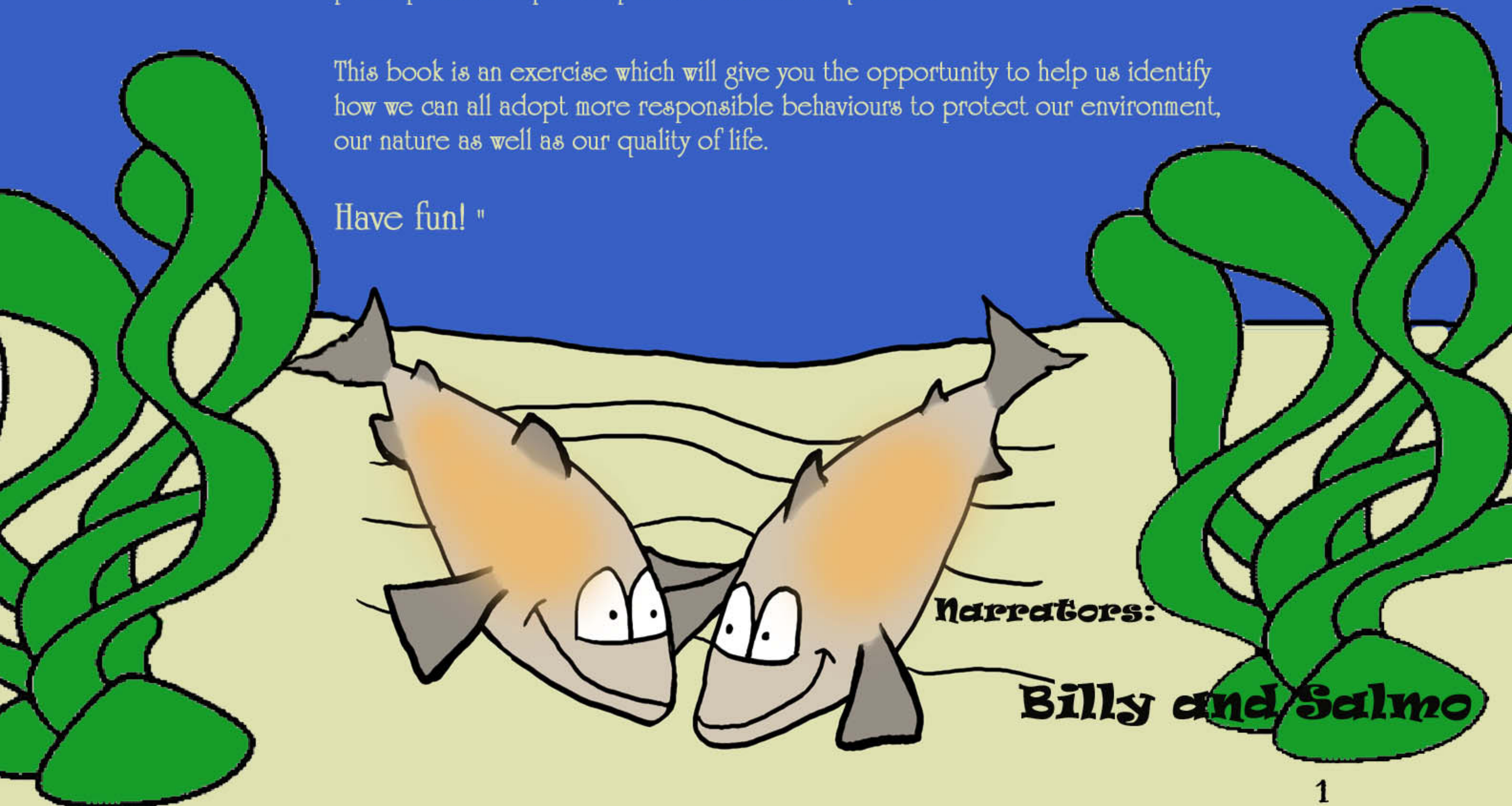
Nicolas and Sophie's story

"Hello! We are Billy and Salmo, the salmon narrators of this story. Based on our observations of our environment, we would like to share our concerns about the health of our river.

To do so, we have decided to tell you the story of Sophie and Nicolas. Through their observations and experiences, we invite you to identify human behaviours which disrupt nature as well as solutions and prevention measures that we all can put in place to repair or prevent such consequences.

This book is an exercise which will give you the opportunity to help us identify how we can all adopt more responsible behaviours to protect our environment, our nature as well as our quality of life.

Have fun! "

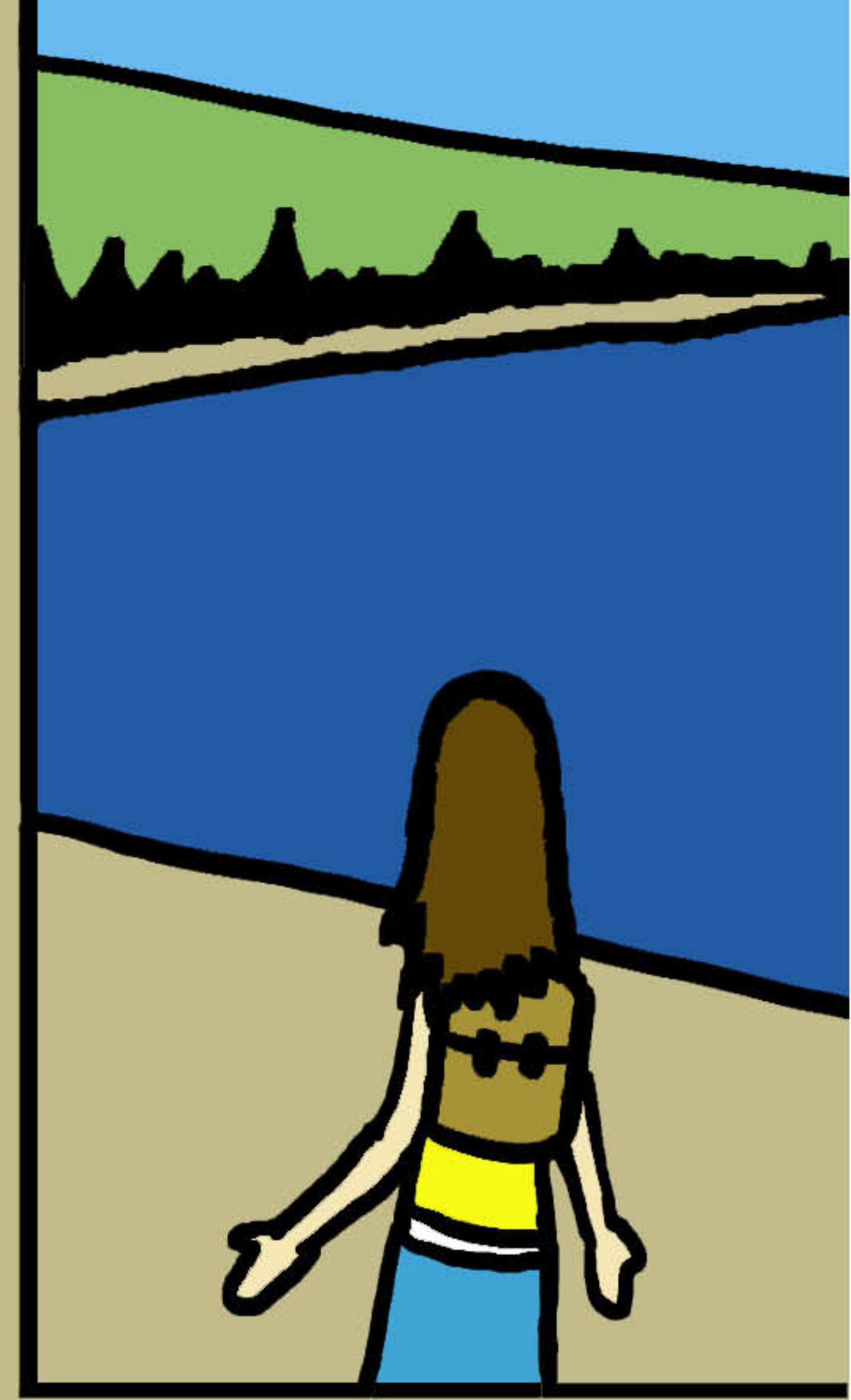


Narrators:

Billy and Salmo



Watercourses are a source of life and are also important to the economy. Industries and farmers use water from rivers to supply their factories or to irrigate their fields.



Nowadays, people enjoy more and more outdoor activities, vast wilderness areas and natural places such as rivers for recreational activities like swimming, canoeing, hiking, horseback riding and many other possibilities.

People enjoy living near rivers and streams, but human presence does have consequences for the environment. Here is Sophie & Nicolas' story.

Characters presentation...

Nicolas and Sophie are brother and sister. Each year, after school ends, they are thrilled to go to the river where they can go swimming and do horseback riding, canoeing, salmon fishing and more.



Sophie



Sophie is a very dynamic 11-year old girl who likes to exercise and enjoy all kinds of physical activities, mostly in nature.

She likes: animals, pistachio ice cream and to do pirouettes under water.

What she hates the most: mean people, people who water their lawns all the time and butter in sandwiches...Yuk!

Nicolas



Nicolas is Sophie's younger brother, 15 months younger. He is polite, cheerful, curious and a little bit lazy in the mornings.

He likes: to catch insects to see them up close and then let them go free into nature again, the smell of the river at springtime and to win races.

What he hates the most: to lose races, when his sister is bossy and his Aunt Jill's meat loaf...Yuk!

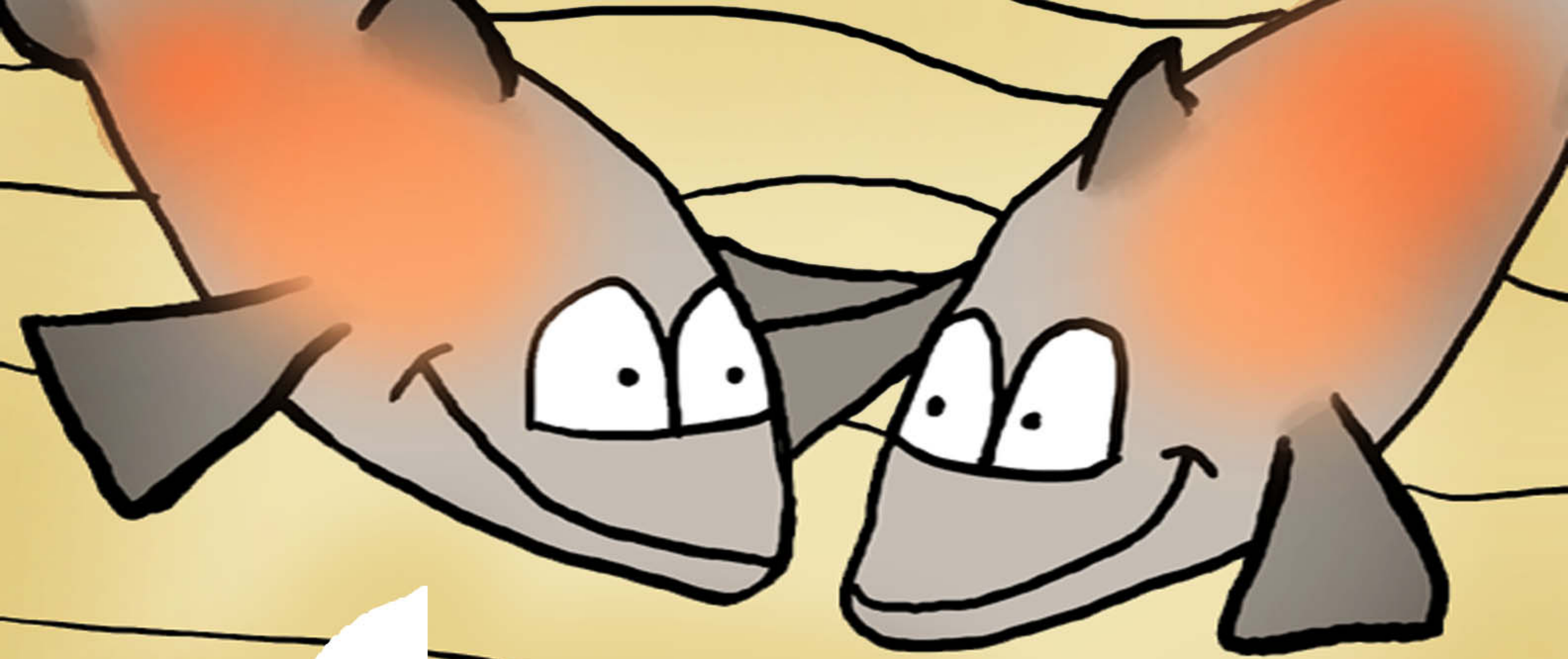
The dream... or the beginning of the story

A few years ago, Sophie and Nicolas were told they would start a new life, near the water. In fact their parents had decided to buy a property on the riverside to build their new house. They were very happy to finally make their dream come true and to offer their children a good quality of life and an open playing field.

Their father, who is very handy, helped a lot with the construction of the new house. After several months and lots of work, the family was finally ready to move into their brand new house. A feeling of excitement and happiness was in the air.

Everyone was looking forward to move into their new home. Even though winter was coming up quickly, everything was ready for them to stay warm in their home during the winter.





" Billy, we have to mention here that this family was not the only one dreaming of living close to nature. Many other houses were already established along the river's banks. All of them were really beautiful. "

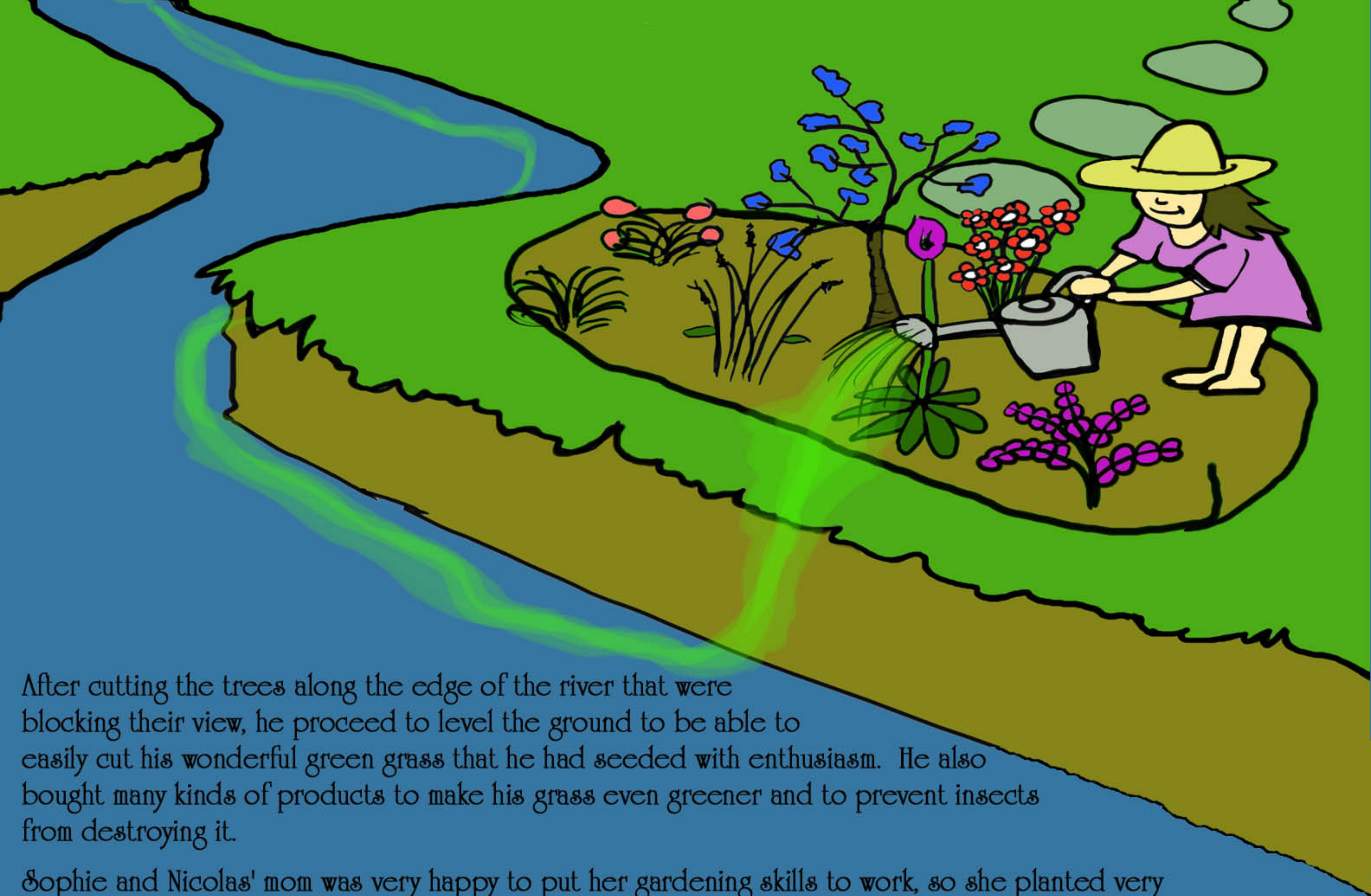
A feeling of happiness was floating in the family's house as winter came and went. Already, spring was approaching and Nicolas was dreaming of the coming days when he would play in the river and admire the beauty of insects.

As soon as the warm weather melted the snow cover, their parents wasted no time to start landscaping work on their beautiful property bordering the river. For many weeks, they worked very hard and each day their hearts were filled with joy as they contemplated the work they had done.

Sophie and Nicolas' dad cut the bushes and trees to clear the view on the river so his family could have the chance to enjoy the scenery from their balcony.

Link for further explanations





After cutting the trees along the edge of the river that were blocking their view, he proceeded to level the ground to be able to easily cut his wonderful green grass that he had seeded with enthusiasm. He also bought many kinds of products to make his grass even greener and to prevent insects from destroying it.

Sophie and Nicolas' mom was very happy to put her gardening skills to work, so she planted very colorful exotic flowers in her plant bed and rock garden. She took great care to water them with fertilizers so they would grow bigger and faster.



The family also installed a very strong and solid dock, made of concrete, so spring floods would not take it away and they wouldn't have to take it out of the water.

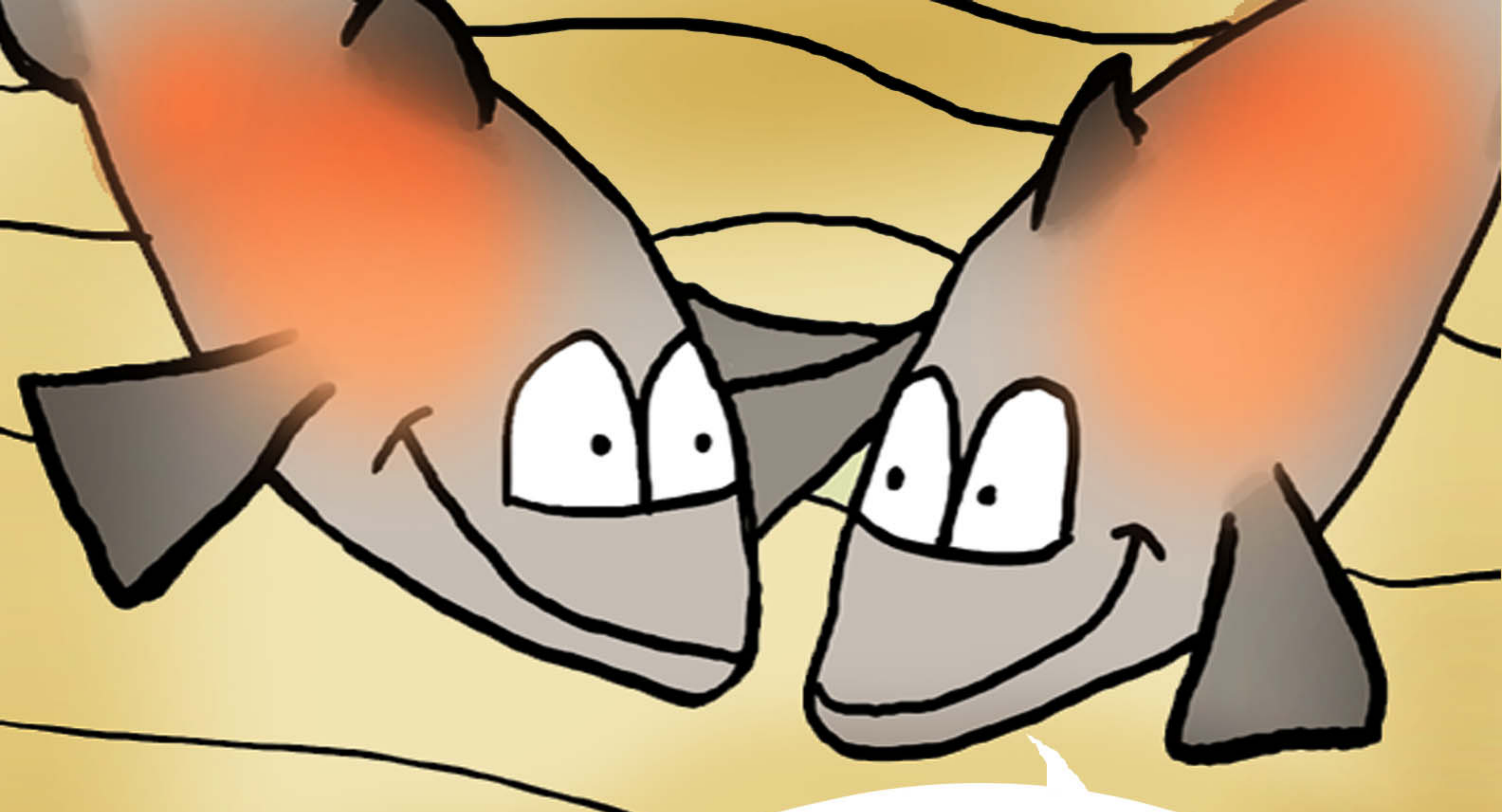
[Link for further explanations](#)



All of their friends loved to come and visit their place because they felt as if they were on vacation. "What a beautiful place", said Aunt Jill. "It's like going down south" added Uncle Bernard. Everybody was smiling and leading a happy life, just like they had hoped.

While Nicolas and Sophie's mother was enjoying fruit juice with their aunts on the dock, their father proudly invited their uncles and cousins to fish from his beautiful motorboat.

The children preferred to play in the sand, have a swing or go swimming: summertime at it's best!



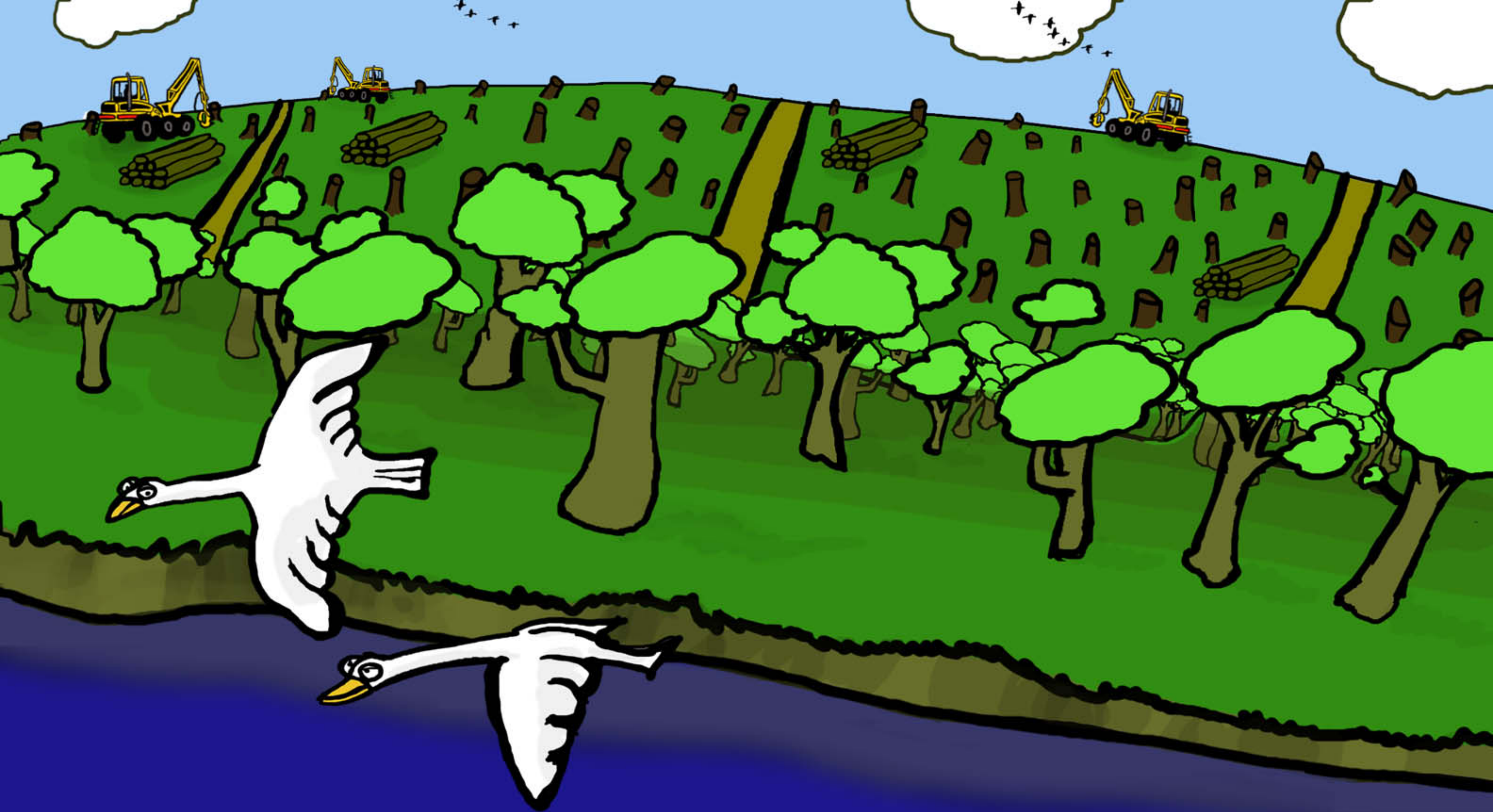
" You are right Billy, let's listen to the rest of the story. "

" But Salmo, I think some of their actions might have consequences on our environment... "



We should mention that the village in which Sophie and Nicolas had moved was growing fast. Over the past few years, tourism activities have greatly increased and new industries were established near the river using the water for their production of goods.

However, Nicolas read in the local paper that these industries did not always comply with environmental standards and that, on several occasions, there were suspicious spills in the beautiful river. Also, these industries have altered the natural course of the water in order to suit their needs.



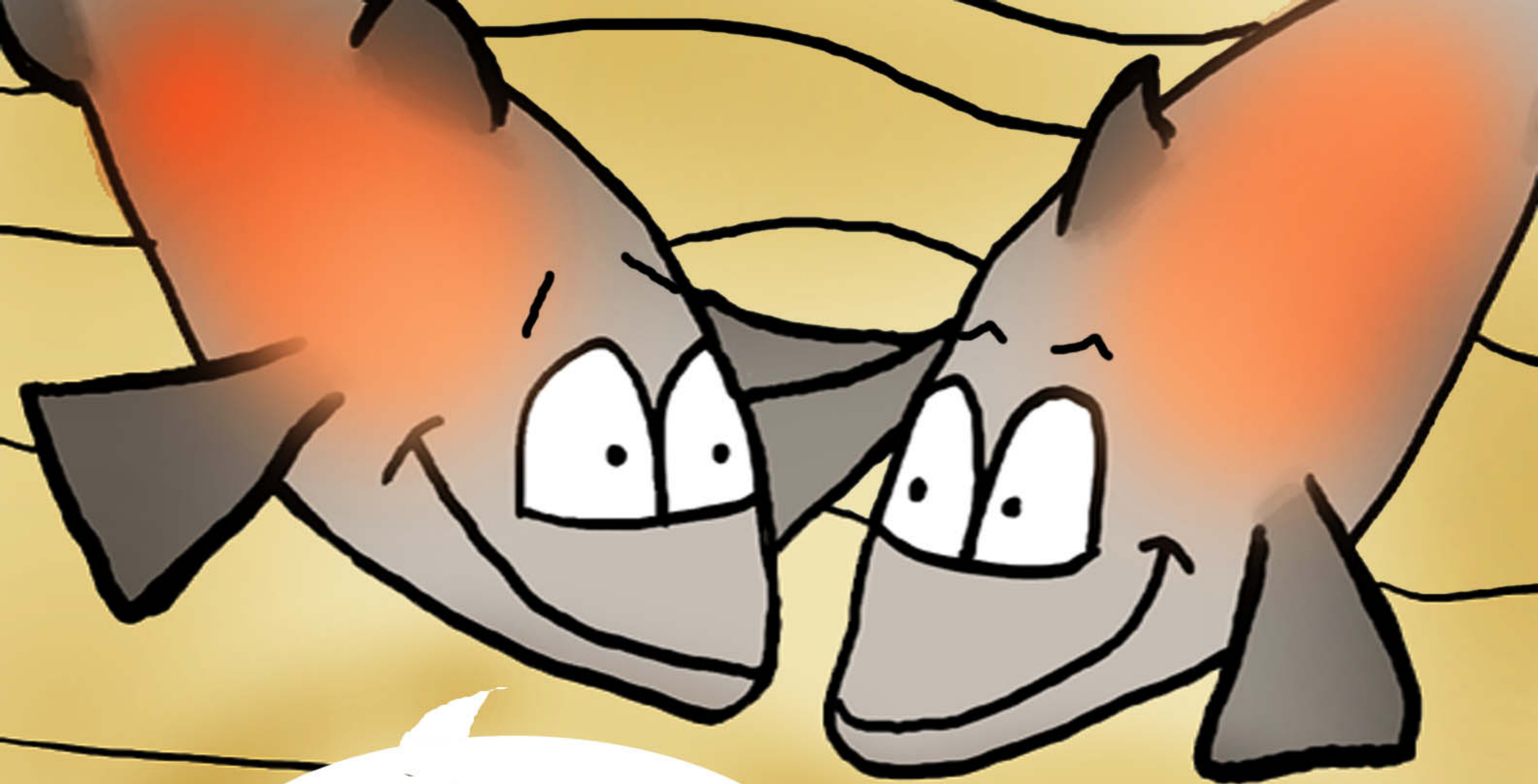
Also, Sophie noticed that numerous trees had been cut near the shore to supply the village saw mill.

In addition, the forest industry built many logging roads close to the river.



While hiking, Sophie also noticed that many neighbouring land was used for agriculture. She even saw some cows coming to the river to drink and cool themselves.

[link for further explanations](#)



" Hum, cows are still allowed to come to the rivers to drink the water? It is weird, isn't it Billy? "

" You are right Salmo, and that's not all. Let's listen to more observations from our characters. "



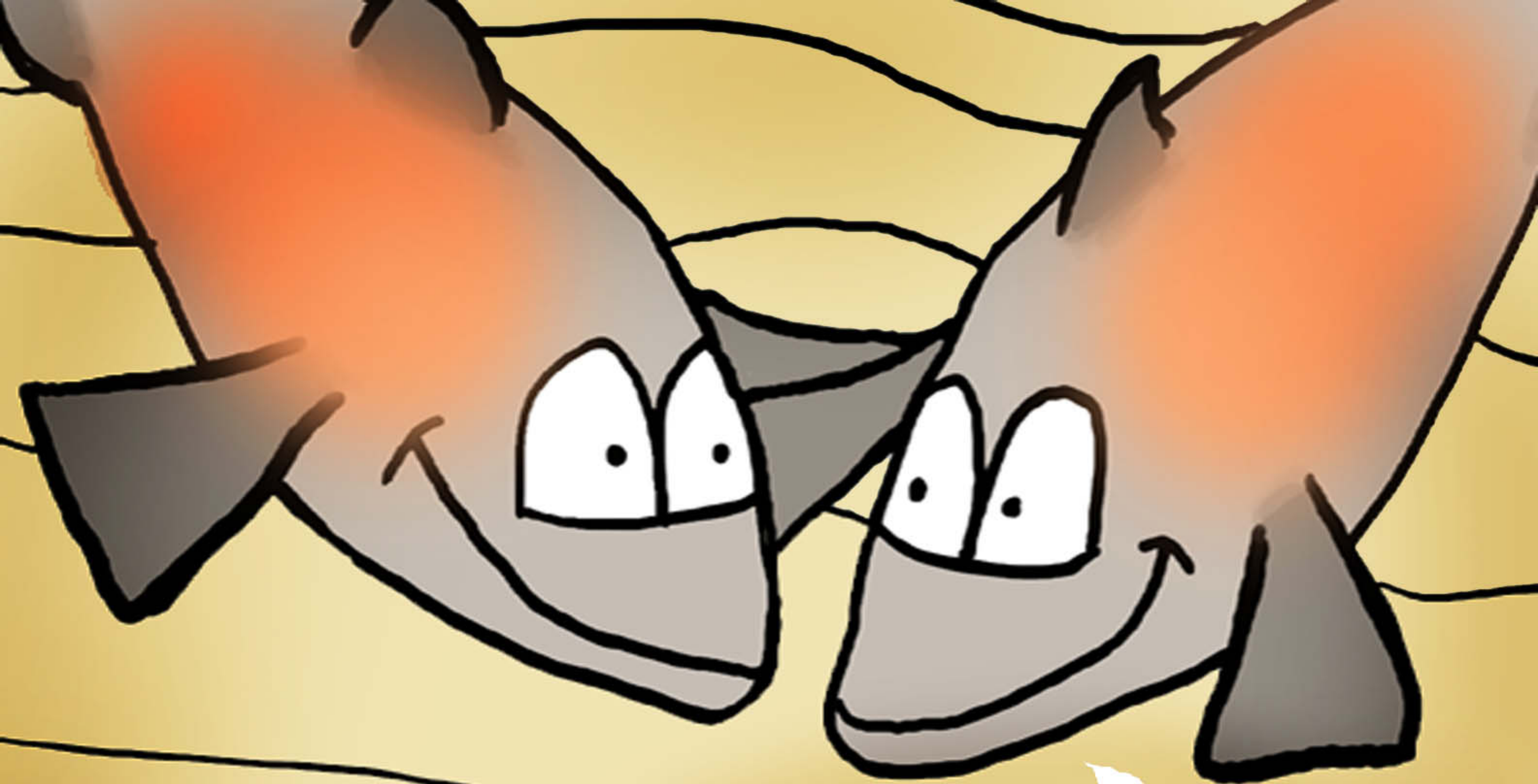
Sophie and Nicolas also noticed a large increase in tourists and river users.

When they canoe, they are not only a few of them on the river, but several other groups as well.

This situation could lead to an increased tension between river users enjoying their activities.



[Link for further explanations](#)



" I think you are right, Billy! "

" Well, I believe all these people will need to be aware of the impacts of their behaviours to preserve the harmony of our beautiful river. "



While going down the river, Sophie can notice that there are more and more cottages and houses on the river shores, and that there are fewer and fewer trees to hide them.

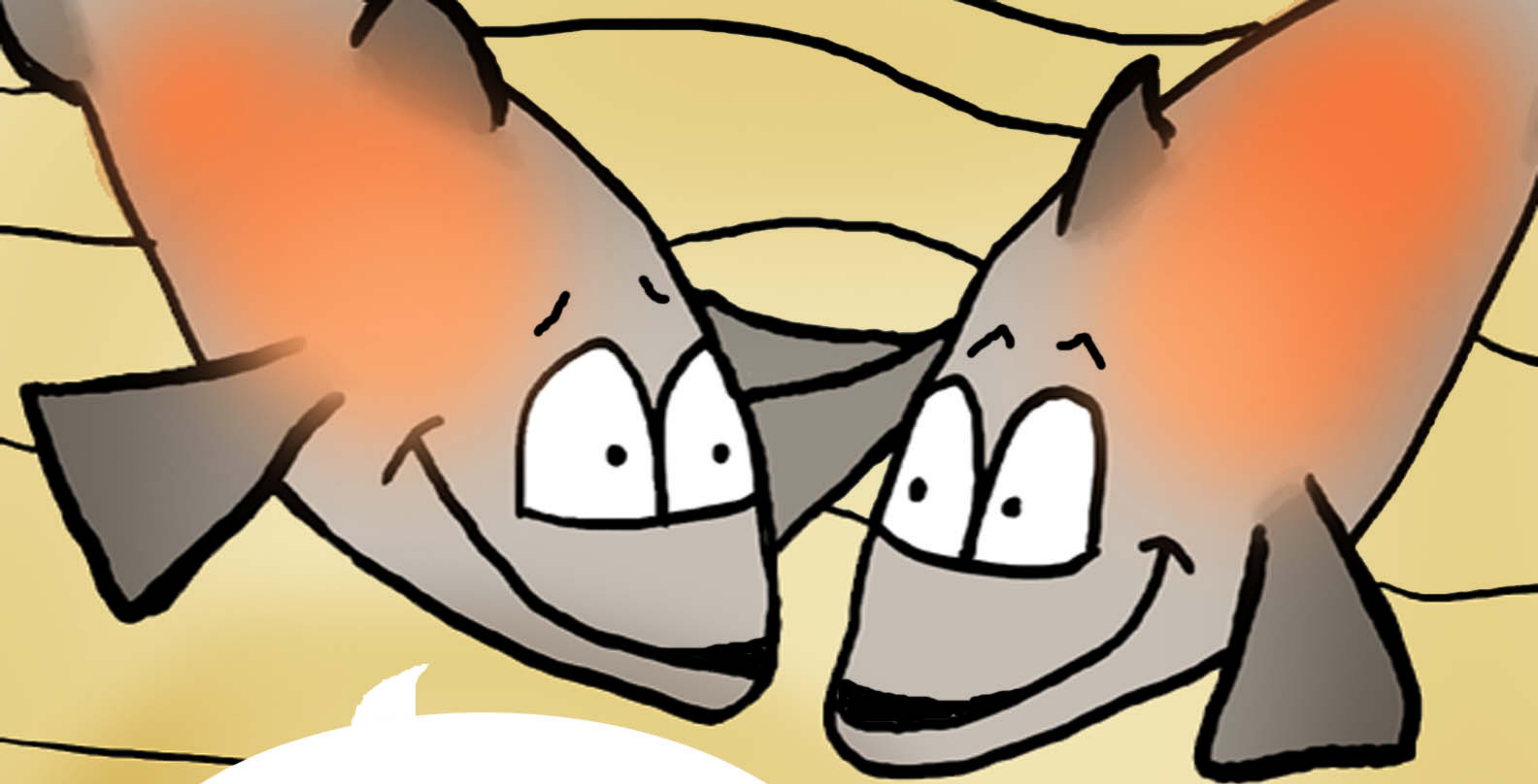
Rubbish and pieces of broken glass can even be seen in swimming areas and the other day she injured her foot while walking by the river with Nicolas.

While swimming, she sometimes sees cigarette butts floating on the water. She remembers that their teacher at school mentioned that butts and chewing gums left in watercourses could be swallowed by baby salmon and that they could die of it.

Sophie is now really upset with all of the things that she has seen, because she likes a lot to watch salmon in their natural habitat. Moreover, she heard that salmon are on the decline in the river of her village.



On top of all that, their house was flooded when the river's waters rose in spring, just like many neighbouring houses.



" Imagine Billy, that Florence, one of Sophie's friends, had said that the water level was so high at her place that the picnic table was taken away by the strong current with her little poodle Roxy on it. "

" Oh my goodness! "



At school and in the newspapers, Nicolas learned about the problem of blue-green algae which was becoming a serious issue in the province of Quebec.

Even the river near Aunt Jill's house is contaminated and swimming is no longer allowed.

According to what he heard, these algae can be harmful to human health.

Nicolas is worrying: is it possible that his dear river was a victim of these invasive algae like other rivers and lakes in the province?



" My My! Our heroes are quite concerned, just like us! Here are some of their conclusions once they realized what is happening in their environment. "

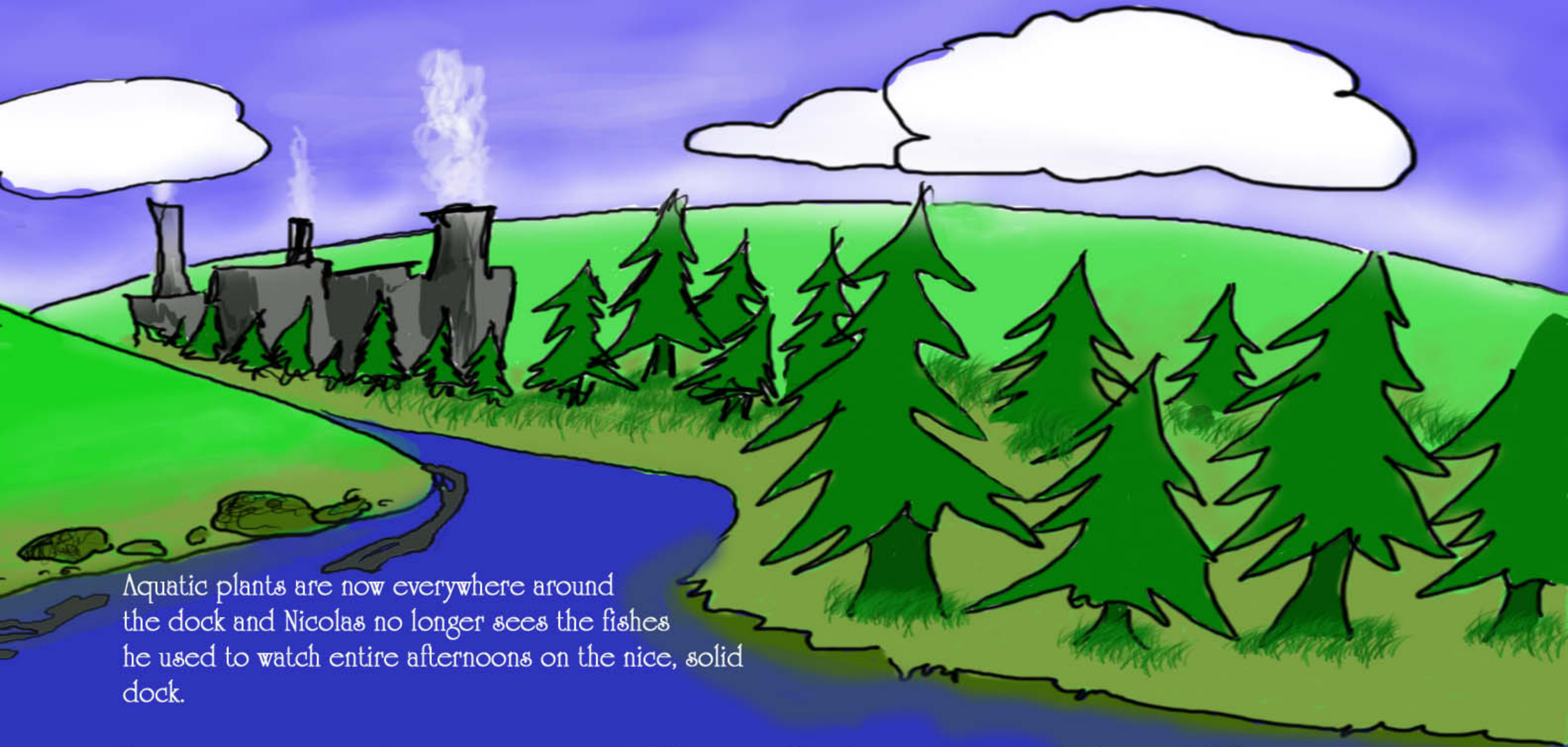


[Link for further explanations](#)

Sophie and Nicolas' mother now finds that, strangely, she doesn't have the time she once did to do things she likes because gardening now requires so much of her time. Dad spends as well a lot of money trying to limit the erosion of his land.

Nicolas is sad because the additional costs means that they will not have the opportunity to go visit his cousin who has recently moved to the United States. Each day, Nicolas and his sister are more aware that their parents don't have as much time to spend with them as they used to. Their beautiful playground has become a less interesting place since the animals they liked to watch don't come anymore. Now there's only ducks and geese that come and go, leaving small and unpleasant gifts.

Even the big tree that their father had kept on the property to build their tree house, fell down to the ground.



Aquatic plants are now everywhere around the dock and Nicolas no longer sees the fishes he used to watch entire afternoons on the nice, solid dock.

Even swimming is not pleasant anymore with all these invading algae in the water which is now dull and lifeless. Weird runoffs are coming from adjacent lands and are flowing into the river.

Sophie and Nicolas father no longer catches fishes with their uncles. Moreover, the natural and once beautiful landscape has slowly become artificial.

In conclusion, Sophie and Nicolas can't help it, they are worried and ask themselves:

"What happened to our wonderful family dream ? "



" Tell me Salmo, is there still hope for us and our beautiful river ? "

"Of course Billy, but we need to take action now! All together, we must adopt more responsible behaviours in order to preserve our environment and our quality of life. I am sure that youths that get to know our story will participate in the educative and awareness-raising process for a better world. It is the concern of all people to change and act now to preserve our beautiful river. Together, we can make the difference!"

Some questions to ponder

- In the story of Sophie and Nicolas, can you identify the issues that cause serious damage to the health of the river?
- In your opinion, what are the possible causes of these terrible situations described by our heroes?
- How these negative impacts could have been prevented by our characters and the people of the village?
- What could be done by Sophie, Nicolas, their friends and all the population of the village, to repair all these damages?
- How could we prevent the bloom of blue-green algae in the beautiful river of the village?



Further explanations

The second part of this book consists of support material in order to provide further explanations about the various subjects introduced all along the story.

By clicking on the link appearing on some specific pages, the reader is brought to another page containing extra information.

When you are done reading, click again on the link at the bottom to return to the previous page of the virtual book. This way, you can get extra information without losing track of the story.

For even more information, you can visit the websites mentioned at the end of this document.

Have fun !



Cottage and housing on the riverside: Various impacts

(page 8 of the virtual book)

A substantial increase in the number of cottages and houses built near a watercourse can increase risks of phosphorus runoff in the river. Household cleaning agents, fertilizers, defective septic tanks, tree removal and destruction of riparian zones are all factors that can increase risks of premature aging of our watercourses and the outbreak of algae and aquatic plants overabundance (like blue-green algae).

The wild nature of the river is also lost with the construction of houses and artificial landscaping. All these projects eventually scare wildlife, forcing them to move to less inhabited spaces. Shores without tree cover make a less scenic panorama, in addition to be very harmful to the aquatic environment.

[*Back to previous page*](#)



Levelling land, grass and fertilizers

(page 9 of the virtual book)

By changing the original vegetation, we create artificial conditions which affect the natural absorption of water on the ground. Moreover, when trees and shrubs are cut to seed grass, it increases the risk that the phosphorus may not be filtered and thus go directly to the watercourse. Since a simple grass cover cannot absorb as much runoff water, chemical products and fertilizers become an important source of phosphorus in watercourses. This creates the perfect conditions for unwanted development of blue-green algae.

Exotics Flowers

(page 9 of the virtual book)

Concerning the riparian zone, it is better to let nature do its work. In some cases, it is possible to plant wild species well adapted to this environment, with an appropriate level of diversity. Native species have a better chance of survival in this environment than exotic ones. In addition, it is important to have a good diversity of flowers, trees and shrubs. This way, in case of a disease outbreak, it is not the entire riparian zone that would be affected, but only a few plants here and there.

[Back to previous page](#)



Cement platform
(page 10 of the virtual book)

In order to not disrupt the flow of water, fish migration and aquatic fauna in a watercourse, it is better to build a pile dock or a floating dock with minimal disruption to the natural course of the river.

[Back to previous page](#)

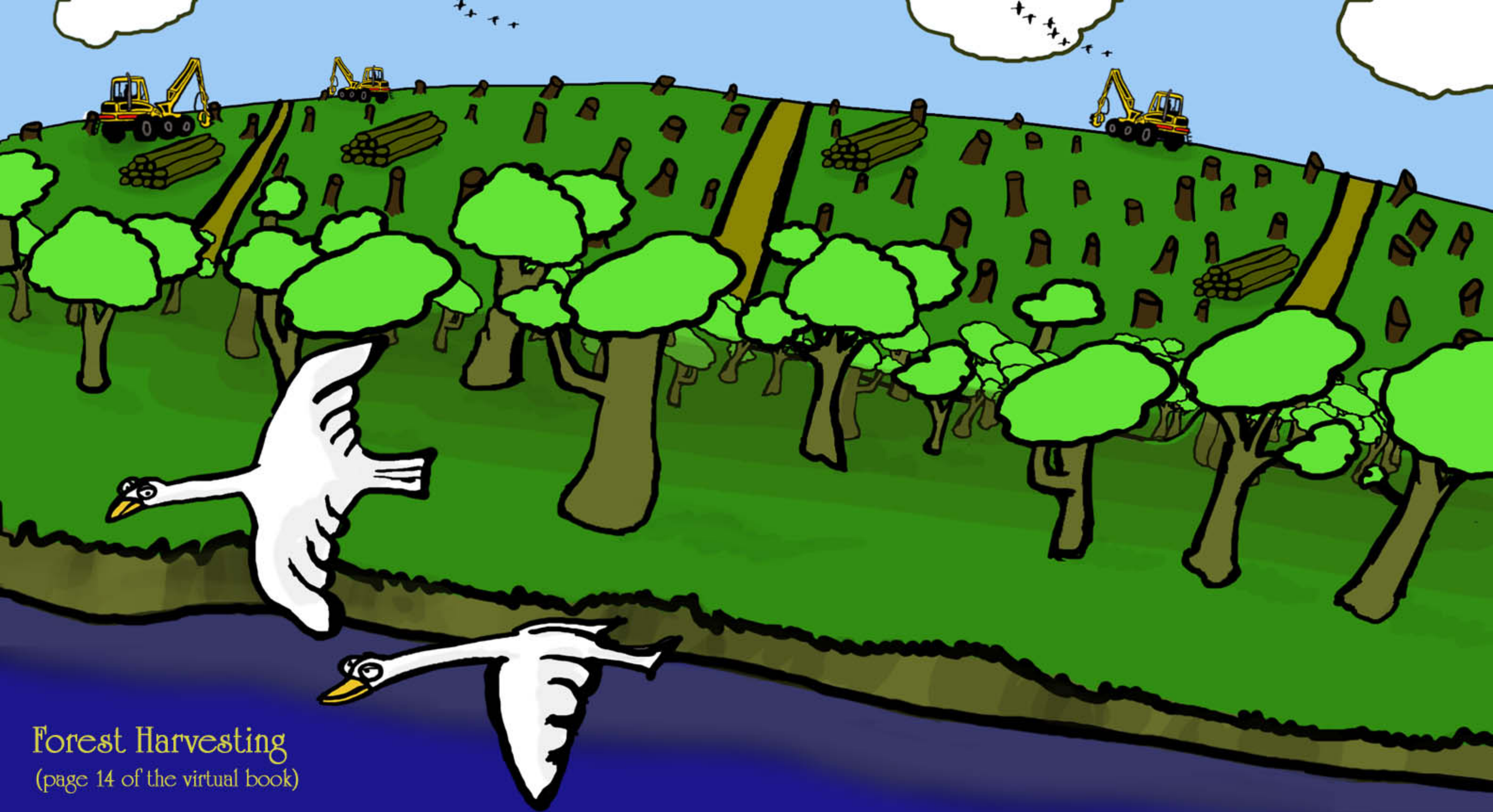


Industries

(page 13 of the virtual book)

We must be careful with impacts from industries, especially when they are established near a watercourse, because runoff pollution may exceed environmental standards. These existing standards are there to protect watercourses. Investigations are conducted in cases of doubt. However, we frequently hear that environmental standards are not always met because of the lack of enforcement. In consequence, toxic substances are still released in our watercourses, harming aquatic fauna.

[*Back to previous page*](#)



Forest Harvesting

(page 14 of the virtual book)

Forest harvesting near watercourses result in the removal of a portion of trees which would normally absorb a large amount of the precipitation and runoff water. Consequently, this water reaches the river more rapidly and in greater amounts, which increases the river's rate of flow and level. Therefore, this increase the risk of flooding. Furthermore, forest roads used to access sites with machinery and trucks for the transportation of wood are sometimes too numerous and located too close to watercourses. This allows sediments to flow into the river more easily without being trapped by vegetation which is no longer there.



Agriculture

(page 15 of the virtual book)

Agriculture practiced near watercourses can be problematic. Farmers sometimes use chemical products to prevent insect invasions in their crops or use fertilizers to enrich the soil for their plantations. All of these products flow directly into adjacent rivers through runoff. These same products can lead to excessive growth of algae and bring serious problems such as an outbreak blue-green algae. Farmers must always leave a riparian zone large enough, according to standards, in order to prevent these components from entering the watercourses. Also, direct access for cattle to creeks or rivers can cause erosion and leave unwanted gifts.



Sharing the space

(page 17 of the virtual book)

When a region deals with a substantial increase in tourist affluence in a specific area, it is possible that standards, user regulations and good practices may no longer be sufficient to meet increased traffic. But, until a new framework is implemented to supervise all activities with the additional human resources required, problems can arise. Likely, tensions and conflicts can be expected between users practicing their activities.



Back to previous page



Trash and broken glass

(page 19 of the virtual book)

Trash left in nature is pollution. Some might think that a small waste like cigarette butts and chewing gum is ecologically harmless. The problem is that baby fish in the river eat everything that floats, swallowing this waste and dying from it. In other words, our actions can directly influence the survival of aquatic species. Using glass bottles during outdoor activities can lead to broken glass left on site, which is dangerous for people's safety, in addition to the pollution it produces in our watercourses and on the shore.



Flooding

(page 20 of the virtual book)

Because of the deforestation and destruction of vegetation and trees along the riverbanks, the water that would normally be absorbed by roots runs directly into watercourses, faster than normal.

This runoff increases the level of water which overflows on the shore. The current, being more intense, can cause important damage and even lead to severe flooding.



Blue-green algae
(page 22 of the virtual book)

Back to previous page

Blue-green algae, or cyanobacteria, have been always present in watercourses, but on a microscopic scale. The problem begins when they become visible to the human eye because of their excessive growth and this result in cyanobacteria blooms. When a watercourse is affected by the growth of blue-green algae, its natural colour turns to green, just like a broccoli soup. Approximately 3500 different species of blue-green algae exist in the world.

This type of algae can release a toxin harmful to human health. They can cause skin reactions, but also vomiting, diarrhea, etc. Usually, when a watercourse is contaminated by blue-green algae it is due to a a significant level of phosphorus from human activities (household products with phosphorus, defective septic tanks, feitrtilizers, etc.) . The imperative solution is to correct these problems and to restore riparian zones.



Back to previous page

Erosion

(page 24 of the virtual book)

Erosion is a natural process in nature, however human activities increase its effects. Here are some actions or behaviours responsible for the acceleration of erosion of the land near the river:

- Eliminating riparian zone (without plant roots, soil disintegrates much faster);
- Modifying the natural course of the river or digging directly into the riverbed;
- Building direct access to the river: roads or pathways too close to the water;
- Allowing a direct access to animals to the watercourse (e.g. agriculture);
- Circulating rapidly and frequently with motorboats too close to the shore.



For more information...

Visit the following websites:

Ministère du Développement durable,
de l'Environnement et des Parcs (bilingual)

www.mddep.gouv.qc.ca

Regroupement des organisations
de bassin versant du Québec

www.robvq.qc.ca

Conseil régional de l'environnement
Gaspésie - Les Îles

www.cregim.org

Fédération interdisciplinaire de
l'horticulture ornementale du Québec
(French only)

www.fihoq.qc.ca

This document
was produced with the financial
contribution of the MDDP under the Cyanobacteria
Action Plan, 2008-2009.

By:

Conseil de bassin versant de la
rivière Bonaventure
...belle, pour la *Vie!*

and

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« La référence en environnement »



Text: Isabelle Godin

Illustrations: Jean-Pierre Godin

Editing: Michel Chouinard

Translation: Odile Arsenault, Michel Chouinard & Ana Mattos

Title of the virtual book: Jade Boissonneault

The content of the present document only engage the authors.