

ANNELISE SCHNEIDER MERCER
&
VANESSA APARECIDA CHEK



TALES
ABOUT
FISH SO,
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DON'T
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“O livro foi realizado como um projeto para o curso de Zootecnia da UFPR, para a matéria de Piscicultura, composto pelas alunas Annelise Schneider Mercer e Vanessa Aparecida Chek, com o intuito do ensinamento da piscicultura para jovens de 12 a 17 anos do Programa Bom Aluno do Brasil, orientado pelo professor Antonio Ostrensky Neto com auxílio do Instituto Bom Aluno - Curitiba/PR”

Dedicatórias – Antonio Ostrensky Neto, Instituto Bom Aluno.

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ZOO, WHAT?



From the depths of the Atlantic Ocean lived Faust, a

fish that could not swim. He had always been criticized throughout his childhood, and now in his teens, wanted to change that trauma that remained in his life. His parents never judged him for it, they always commented that the most important thing was the essence that each one had inside the heart. But, Faust was in the phase of adolescent rebellion, and was not satisfied with such defect that existed in his fins.

He always remembered that in his childhood, going to school on sunny days was a martyrdom, because he knew it was swimming day. Time and again, Catarino, a shark who was Fausto's neighbor, tried to capture him, kid stuff, his luck that he could sink and nothing bad happened. He would come home, weep, cry ... His mother Faustina would try to comfort him, and there was nothing that would make little Faust calm. Faustina had always been devastated, she was talking to Faustão, her father, who could not see her son in that situation, and they had better seek help. They hired the most famous dolphins from the Atlantic Ocean, the best sharks in the Pacific Ocean, the most respected psychologists, therapists, priests, healers, nothing to keep their son calm and learn to swim.

But, this trauma was beyond what they could think, Faust had a dream, and that dream was to be the best swimmer in the Atlantic Ocean. In his bedroom, he collected magazines, photos, newspapers from world-famous swimmers: Michele Phelps,

Cesarina Cielo, Iana Thorpe, among others ... And this, left his parents devastated, after all, how could he become a great swimmer with defects and your fins?

Like every teenager, he dreamed everyday about his professional life, but he knew he would have to choose another area to play in spite of his frustration.

In his senior year, he went through psychologists to choose a career that would help him be happy. In the office of his psychologist. Latrina, Fausto did his tedious vocational test, after all, he was very discouraged that he could not follow his dreams.

Ms. Latrina appears with the result and comments with Fausto on some professions.

Latrina - Fausto, my dear, how is your last year of school, almost making the inscriptions for the entrance exam?

Fausto - Ahhh, lady, I do not know if I can fit into anything, my great dream can not be fulfilled, I wanted to be a professional swimmer very early on, but as you know, I can not swim.

Latrina - Well, your vocational test has given us a lot of legal areas, but maybe the one that fits you the most can bring your dream to reality.

Faust excited - A is? Can you explain better?

Latrina - Of course! The Zootechnology course, have you heard?

Fausto - Zoo, zoo what? Do you work at the zoo? Is it veterinary type?

Latrine laughing - No Fausto, many people even confuse this course with zoology, veterinary medicine, etc etc etc ... But, I believe that this will help you and encourage you, I will explain better about what this professional does.

This course seeks productivity and profitability in raising animals and developing animal products such as meat, eggs, milk and its derivatives. The zootechnician operates throughout the animal production chain. He studies the psychology, cattle breeding, sheep farming, goat breeding, swine farming, poultry farming and echinoculture, among other crops of other animals. In addition, the company manufactures rations, vitamins and health and animal hygiene products. They also work in the food industry and food production. Fausto, in addition promotes genetic improvement and applies breeding techniques. You know what that means?

Fausto - Wow, that's amazing, I never knew this profession, but I do not understand very well, I really love animals, I believe that this course would be really cool to me. But what exactly does that mean?

Latrina - As we know, your problem is genetic, we have already seen this in your medical reports, and Animal Science as you say, does genetic improvement in the species, even if you cannot fulfill your biggest dream of being a swimmer, you can help other species of fish not to have the same problem as your

fins. It will be able to deepen with researches and it will be of great importance for all.

Fausto was very excited by all this explanation of Latrina, and felt more relieved to be able to know this new profession, which is so little known but, of great value, in addition, he knew that his problem also affected other fish, and could contribute with an improvement for science. He came home very excited, as his parents never saw him before, commented on his test, what the profession was, and how he could help other fish with the same problem he had. His parents were very happy with his choice and they never saw the eyes of Fausto shine like that day.

Glossary:

The Zootechnist work in the animal production, preservation of the fauna, breeding of company animals, leisure and sport, being essential professional in all agricultural activities. It is capable of managing, planning and managing agribusiness ventures, such as farms, farms, agroindustries, getting involved from production to commercialization, streamlining and making the process effective. It operates in all sectors of animal production from nutrition, genetic improvement, reproduction, sanitation to rural management, respecting animal welfare, considering the economic and environmental sustainability of the property, bringing to the consumer products of animal origin with quality and biosafety.

It develops activities that aim at the preservation of the environment through the defense of the fauna and orientation of the creation of the species of wild animals. In addition, he is a professional who still works in biotechnologies such as genetic manipulation, molecular markers, reproductive and nutritional biotechniques. It develops researches in public or private institutions, generating knowledge and technology, informing and implementing through rural education and extension.

Subjects studied: Animal nutrition; Soil Science and Forage Farming; Molecular Biology and Animal Genetic Improvement; Animal Production in Zootechnical Crops; Management in Agribusiness; Applied Biotechnology in Animal Science; Agricultural Activities with Environmental Sustainability; Technology and Biosafety of Products of Animal Origin; Sociology and Rural Extension; Creation and Preservation of Wild Animals; Creation of Companion Animals, Leisure and Sports.

The Bachelor in Animal Science or Zootechny can act in agribusiness activities, with wild animals, company, sport and leisure, both in public and private, on farms and farms; in agroindustrial establishments; in feed industry, pharmaceuticals, biological and other inputs for animals; in educational institutions and research centers; in agricultural consulting companies; in commercialization of agricultural inputs and products

**THE GREEN FISH OF THE
CLOVER OF LUCK**



In the Diomedes Islands, located in the middle of two continents, was a tent where an old man lived, Sergio, with a white beard and mustache, a belly and always tired, and his wife, Mariana, a brunette with curly hair and a delicate body. They lived in the worst poverty for some years and their assets were the tent and a net that he himself made to fish and thus, to have food for both, besides a lake that was almost dry near home.

On a Friday he threw the net into the sea and seeing great movement of the waters, he thought he had caught a school of fish in the shallows, was very glad, as he went pulling the net to see the fish, he found that there only was a small fish. He was furious, but then realized that it was a special small fish, a little green fish with a clover drawn in the fins. When he caught the fish, he was startled when he heard the fish asking for help with a human voice:

"Sir, please let me out to sea to swim freely, and I'll help you wherever you need!"

The man thought, he thought, and then he said he did not need it and let him go again to the sea to swim free.

He went back to the tent and his wife was waiting for him hungry, hoping the man would take fish for them to feed. Seeing the old man come with only a few nuts, he asked him about the fishery:

- How was the fishing today?

"I've been fishing for days. I actually got a little fish today, green whiting with flippers, but he begged me to let him go and I could ask for anything.

- Oh, man! You had a great opportunity in his hand and released it into the giant sea!

Angry with her husband for having lost that chance and not having caught anything, she asked him to go back and ask for a solution so they could start making money.

The next day Sergio returned to the sea and called: Little fish, with shamrocks that the light glows green, where are you?

After a few seconds the little fish appeared and then asked what the old man wanted, and he said:

"I need to do something to give me money and food!"

Quickly the little fish told him:

- This is easy! Make a fish farm and you will have money and food! And then the goldfish was gone ...

Arriving at home the old man told his wife that the fish told him to make a fish farm. Mariana then said:

"And why did not you go to the psychologist yet to see what this is like?"

The old man then walked for about two hours to the center of the town where they lived in search of a psychologist. Arriving at one of the psychologist's written plates, he entered.

And then he ask the psychologist how he would make money and food.

The psychologist without understanding asked him:

- How so?

And the old man answered him:

- I asked a lucky fish how I could make money and food and he told me to do a fish farm and then I came here to find out how I do it.

- Ahhhhh, I get it now. But in fact I do not work with it, psychology works with behavior and mental processes, psychic phenomena ... You would have to look for a specialist in that area!

Him, quite upset, left the office and walked two more to his house. Arriving home his wife asked him:

- And my dear, did you find out? And he answered him,

- No! It was in a psychologist, but he talked to look for a specialist in that, just do not know who to look for now, I've never heard of Fish farming. His wife became pensive and went to bed, because it was late at night.

During the night the old man dreamed that he went to a small college in the city to ask what this fishery was, and then a university professor told him that it was the creation and study of fish, a very simplified answer.

Sergio woke up early and when he was having breakfast he remembered the dream and then ran off to the sea without saying anything to his wife.

Arriving near the sea he called:

- Little fish, with shamrocks that the light glows green, where are you?

In a few seconds the goldfish appeared and so he did not run away and help the old man, the old man took it and held it with both hands saying:

- You told me to do a fish farm and I did not even know what that was, I suffered a lot until I found out why you just said that day and left! Now you really help me, how am I going to make a fish breeding?

The small fish suffocated by being pressed in the hands of the master told him:

- I will help you! Let me go, go home and you'll see!

The old man was suspicious, but he released the goldfish and went home.

Arriving home, his wife came to meet him all smiling and happy! Speaking:

- My love, come and see what you can do! I am proud of you!

He looked at the nearly dry lake and then realized that it was full of water and lots of fish inside! In addition, he had several bags of fish feed and a few crops around the little lake, and a college technician to explain how to handle the lake and the fish, so the couple would have food and how to make a little money!

The old man then reflected: This lucky fish has appeared to improve my life, because with all this I can continue creating fish!

GLOSSARY

Pisciculture:

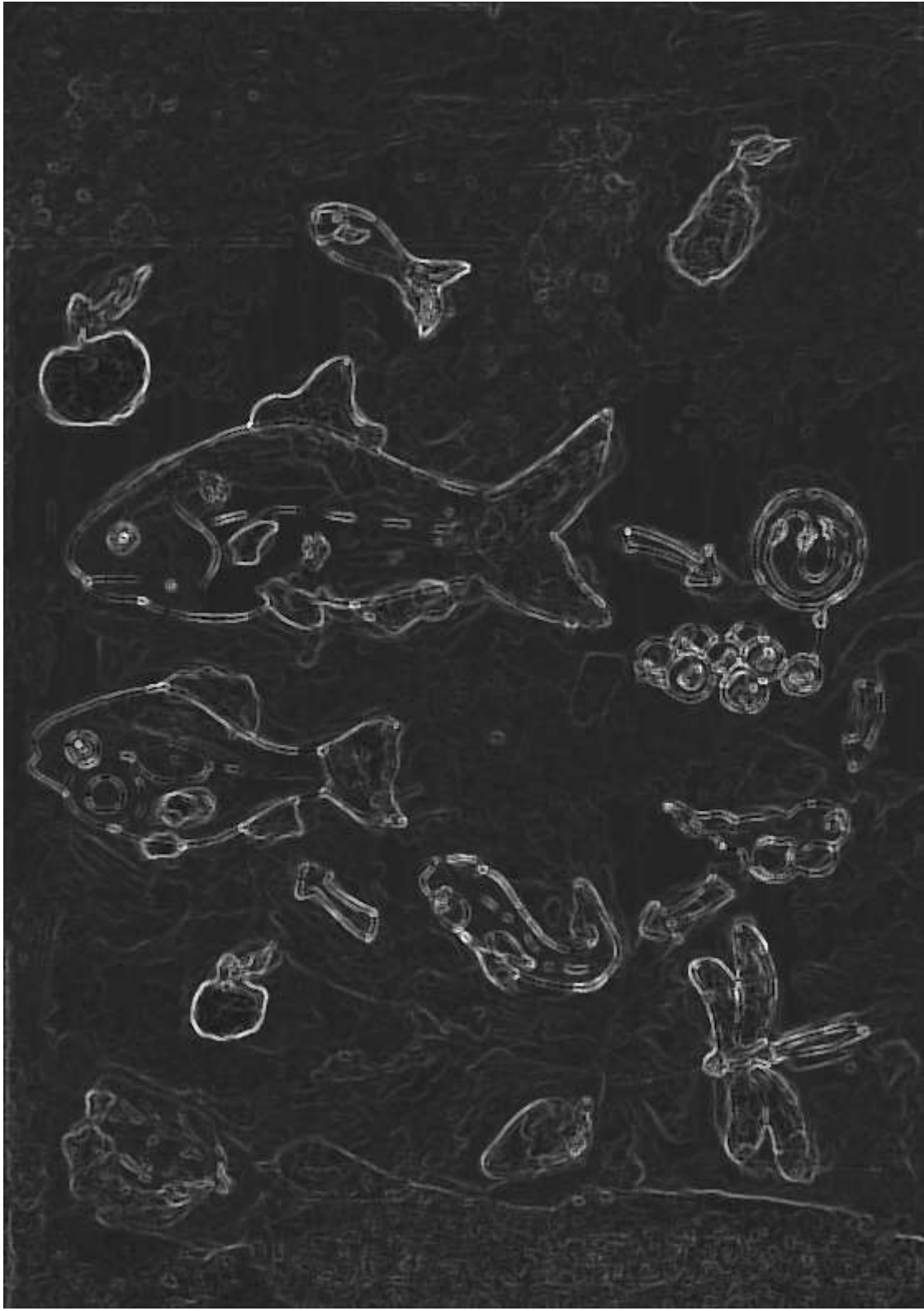
It is a creation of fish, a livestock and zootechnical activity

Techniques and procedures for pulsating and controlling reproduction of fish and other aquatic animals

Tanks are applied to tanks rivers and other spaces that have water as the main space

Aquaculture - the science that studies techniques of growing not only fish, but also crustaceans (such as shrimp or lobster), molluscs (oysters), algae and other organisms that live in aquatic environments; with fish farming being one of the branches of aquaculture.

THE SO DREAMED
AQUARIUM OF DUDU



January, tropical country, nothing better than enjoy the heat. The family of Mr. Carlapio was on vacation cooling off in a beautiful swimming pool at the Astral da Ilha, on Mel Island, located at the mouth of the Bay of Paranaguá in the state of Paraná.

All that beauty and calm made the family reflect on how to look at the sea and the fish, bringing peace to all. And even got into a discussion about how having aquariums at home was something that even improved the depression of those stressed out with the day to day work in the city. Rosa the wife comments - Carlapio, it would be not bad we have a beautiful aquarium at home, so you'd get less stressed from the bank, would not you? (Ironic)

The 10-year-old son got so excited, never even had a pet, and begged to his parents to have an aquarium at home.

Dudu - Dad, please !!!!! I swear I'll take care of it every day, I will not let any fish die, I already have many names for my fish.

During dinner at Toca do Abutre, a restaurant that they had frequented for years, Carlápíio surprised his son, who was so excited to win an aquarium, after analyzing, he tells the family that he will arrange one at home as soon as they return to Curitiba and that the son would be responsible for the care.

Dudu looks radiant - Ahhhh father! I cannot believe it! I'll take care of it, I want many fish, I want several plants, I want toys for the fish!!!! My friends from school will love my aquarium. I'll make them all jealous!

Two days later they return to Curitiba, sad to leave the Sun on their side and there was the city, raining as always. Arriving in the apartment downtown, the difficult decision was what fish they would put in the aquarium. Dudu was very excited, had already researched numerous fish on the Internet, and so showed his father.

They decided on what they found most beautiful and different: Golden, Pacu, Lambari, African Catfish, Piapara and Tambaqui.

Carlapiro - It's decided then Dudu. Tomorrow, we'll go to the store near here, and buy everything you need to assemble the aquarium, and your fish.

The father bought the 400-liter aquarium with all the appliances and installed it in the living room. Soon after, he went to an agricultural factory to buy the fish. Dudu could not stand the happiness, he could not wait to name his fish.

The clerk asked him:

"Do you want fish in what part of their life cycle?" Mr. Carlapiro did not understand bullshit and asked:

- What are the stages of the fish life cycle?

Excited, the attendant responds: Ovocyte / embryo, Larva, Post-larva, fingerling , Juvenile, Adult!

Carlápío tells him that he wants the Ovocytes, without understanding at all what he was asking for, but convinced that nothing would have gone wrong.

Dudu did not understand anything and only told his father to hurry with the purchase, since he wanted to assemble his aquarium soon.

"Sorry, but we only sell the fingerlings here!" The attendant said. Sheepishly, Carlápío accepted the clerk's suggestion, and took the fingerling anyway.

He came home with the fish fingerlings he bought and released in the aquarium, bought a special fish feed and even plants for aquarium ornaments.

Dudu arranged everything with great excitement. Dudu had his friends come every day to teach him a little more about the new fish he now had. They spent two months insisting every day that their friends visit their aquarium. The boys could no longer stand Dudu and his little fish.

This family liked to travel and had already planned a trip to Balneário Camboriú, on the coast of Santa Catarina, where they would spend the week-long holiday.

To not leave his aquarium without care they asked the neighbor Adervino to feed and take care of the fish. On the second day he fed the fish, Adervino noted that one of them had

a wound in the body regions (head, trunk and tail), but he did not even bother about it. He had no knowledge of fish. The neighbor liked to take some gourds, and on the second day he completely forgot to do the proper care, remembering there on the seventh day, the day the family was back on the road. Careless that Adervino. Arriving near the aquarium, he noticed that some fish were missing and despaired, thinking that they could have escaped from the aquarium! Adervino said - My goodness! Mr. Carlapio is going to kill me. Jesus Christ, he's going to kill me. As soon as the family arrived home and learned what had happened, the desperate father went to the clerk who sold him the fingerlings to try to understand what had happened.

The clerk then told her that fish have a variety of eating habits, including: Herbivorous / frugivorous - They feed on fruits and seeds, herbivores - Feed on plant-based foods and diets rich in fiber, bentofagos / iliophages / detritivores - Feed on benthic organisms and organic, carnivorous debris - Feed on insects, crustaceans, fish, amphibians and snakes, piscivorous - Feed on other fish. And in the case of the life cycle, in the embryo stage occurs the vitelogenesis, in the larva occurs the endogenous development and it consumes the vitelline sac, in the post larva occurs the filling of the swimming bladder and continues consuming the vitelline sac, in the phase of unleeding does not have a clear biological definition, in the juvenile it is already similar to the adult - it just does not have the capacity to reproduce and the adult who has the gonads ready for reproduction.

Attendant - Among the fry that you bought, we have the Gold that is carnivorous, the Pacu that is omnivorous, the Catfish that is omnivorous, the Piapara that is herbivorous ... I thought you would loose them in a tank and not in the aquarium! What's more, if there is a bruise, it draws others to eat it.

With low heads and seeing what the lack of information does, he realized that these fish are not well adapted in the aquarium, because of the care we have to take with the food, besides the size of the fish.

So he asked the attendant what fish he suggested to raise in a smaller aquarium, after all, he did not want to leave his son sad for the fish's death, and he then suggested the Beta. He arrived home and sold the remaining fish to his brother-in-law who had a tank and gave his son two betas that would be easier to care for and Dudu could continue to take care of the so-called aquarium. To the despair of the little friends!

Glossary

In this story he was approached about fish farming:

Life cycle stages:

Larvae (endogenous development, vitelline sac), post larvae (consumption of the yolk sac, filling of the swimming bladder), fingerling (no definite biological function), juvenile

(similar to the adult, but not yet ability to reproduce), adult (reproductive organs ready for reproduction).

Body Regions:

Head - from the mouth to the end of the operculum (structure that opens and closes on the sides of the head of the fish whose function is to protect the gills);

Trunk - from the operculum to the anus;

Tail - from the anus to the tip of the tail.

Eating habits

Plankton: fish that feed on plankton (aquatic organisms of microscopic size, can be plant-phytoplankton, zooplankton)

Herbivores: fish that eat food of plant origin

Frugivores: fish that eat fruits and seeds

Bentofagos / detritivos: fish that feed on insect larvae, larvae and eggs from molluscs and organic debris - algae, planktonic waste, feces from other fish.

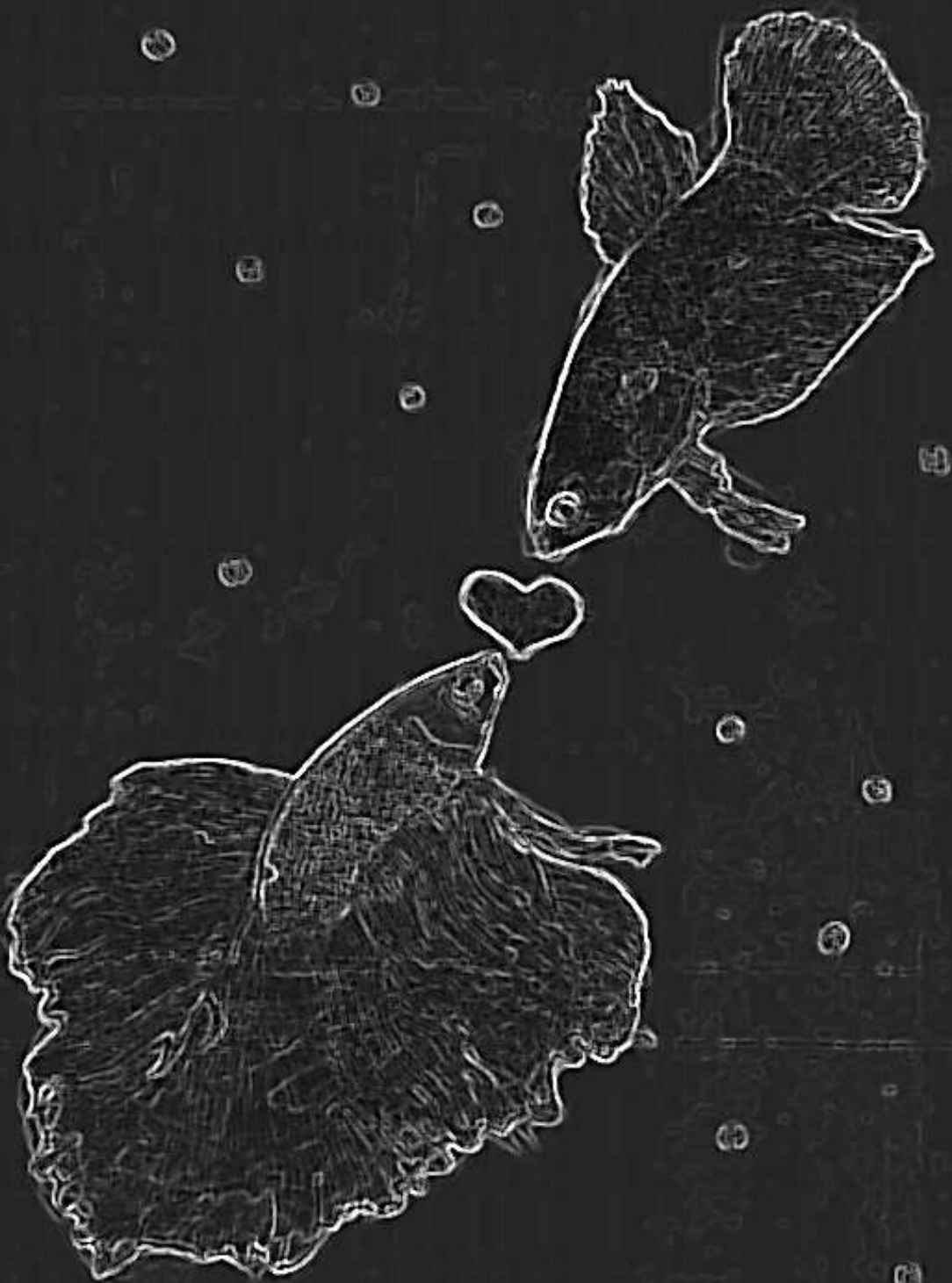
Omnivores: fish that eat food of plant and animal origin

Carnivores: fish that feed on other animals

Piscivorous: fish that feed on other fish.

NEIGHBORHOOD

PALHACILDA



Claudio was a very lonely beta ornamental fish in his aquarium and lived very happy and content with his space. In his neighborhood, he had a small aquarium with a beautiful little fish that was called Elisa, and Claudio had been watching her for a long time.

Claudio - Hey, hey ... How's your day being?

Elisa - Hello neighbor, it is being quiet and calm here in my aquarium, and yours?

Claudio - How beautiful! Having you to enjoy, clearly is being a beautiful day too.

Elisa, ashamed, jumped with joy, and in her eyes, she clearly saw how happy she was with the compliments of her neighbor Claudio.

Every day Claudio woke up, made his jump to wake up, and said good morning to Elisa.

Claudio - Hey, hey ... How's your day being?

Elisa - Hello neighbor, it is being quiet and calm here in my aquarium, and yours?

Claudio - How beautiful! With you so I can enjoy it, it's clearly a beautiful day too.

One fine day in the neighborhood of Palhacilda, Claudio felt an eagerness to see her every day and not be able to play in

the fresh water of his aquarium, and he proposed something with care and shame.

Claudio - Elisa, my dear neighbor, why do not we join our waters and play happily and only one aquarium?

Elisa, a little surprised by the proposal - Why, well ... But how fast in this proposal, would it work?

Claudio with passionate eyes - Well, now ... if we do not try, we'll never know, will we?

Elisa thoughtful but lively - You are right, I think we can take a chance, jump here in my aquarium, so we can get to know each other better and we can do jumping competitions.

Claudio tried, tried, tried ... Finally managed to make a nice jump to the aquarium of Elisa.

The days went by, Claudio and Elisa jumped, they laughed like two passionate fish. But they were both more competitive than they could imagine. Their jokes became serious contests, and Claudio and Elisa began to wonder in the aquarium of the fish. They knew that the fish of their species could not live together, this is a strong characteristic of betas.

Claudio - You can be the most beautiful fish in the neighborhood, but you need to train your heels a lot still.

Elisa - What an outrage! How dare you talk to me like that, I who won medals and more medals at school as the best jumper.

Claudio - But I can teach you to jump better yet, you just want to.

Elisa could no longer stand all Claudio's insults, they could not live together in the same aquarium, and she did not know how to tell him, as the story goes, betas fish live better alone in their space.

A few more days passed, and Elisa was prepared to ask Claudio to return to his aquarium.

Elisa - My dear, I wanted to say that I am happy to meet you that I have never had so much fun with other fish before but, as it is quoted, we betas fish can not live together in just one aquarium. You are my passion, but I believe you should return to your home, so we can be happier.

Claudio was sad but, understanding every situation - Elisa, I understand perfectly what you mean, and I also think we should each have their singing. I will return to my house with pain in my heart, but with the certainty that we will be better separated.

Claudio tried, tried, tried ... And made a huge leap to his aquarium.

Claudius and Elisa realized that happiness would only be constant, if each had its own corner, and so they could contemplate each one of their homes again and be happy forever.

Glossary:

Betta fish is an ornamental fish also known as Betta splendens or Siamese fighting fish is considered as the most beautiful freshwater fish. It is among the most common ornamental fish species because it requires less care, is incredibly hardy and cheap.

Betta fish (male and female) love to feed on live food such as shrimp larva, mosquito larva, Daphnia (water flea), etc. It's that kind of food they find in nature.

Betta Fish can be created in small but not tiny aquariums. They need to have room to open their tails without leaning against the glass.

There are a few appropriate aquarium companions, but finding compatible fish is difficult. Usually, they have problems even with the females of the species itself. They can be kept together for a while for reproduction, but the female should then be taken out of the tank.

You should never harbor two or more male bettas together. They are called fighting fish for a reason. Female bettas should be kept in groups of three or more, since females are also territorial and may want to establish dominance over others, so the odd numbers are always better. Male bettas can be housed with fish that have similar tropical water quality and temperature requirements. Fish Betas can imply with other fish that are colored or have long fins, such as Guppies or Mollies.

In fact, there are 65 species of fish classified as "Betta" and can be found in more than 25 different colors and patterns.

The most common type sold in Brazil is the Splendens, which are also called Siamese fighting fish or Japanese fighting fish.

Originating in Thailand (formerly known as "Siam"), Indonesia, Vietnam, Malaysia, and parts of China.

They can breathe air. They have an exclusive organ called the labyrinth that allows breathing air. So they can actually drown if they do not have access to the surface of the water.

It has several different tail shapes - the most common being the "tail veil." Other tail forms include the "half moon", "double tail", "short" and "crown tail."

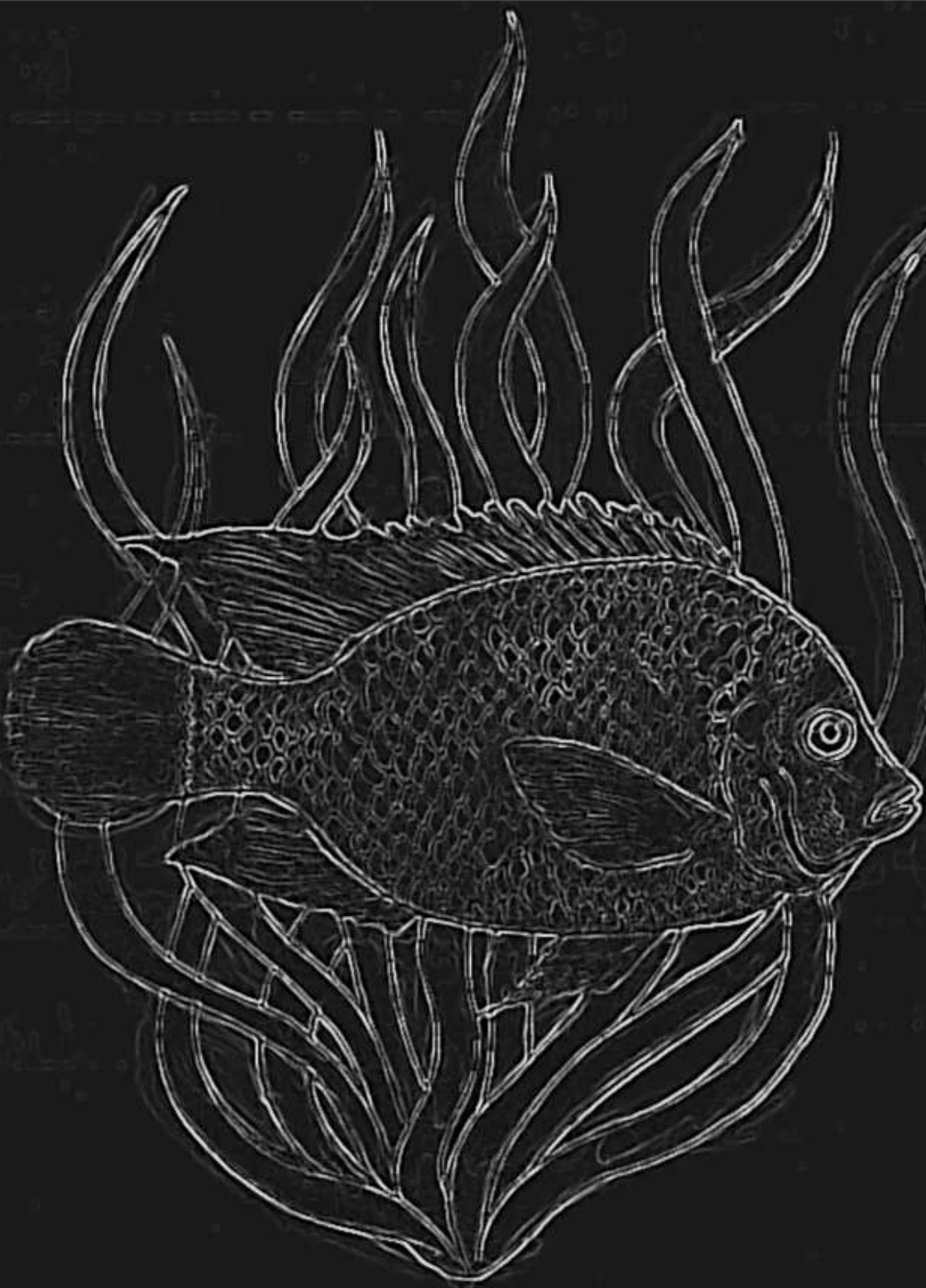
Usually live 2-3 years, but there are some cases of bettas with more than 10 years of age.

They can stay up to four days without food and up to four hours out.

It is the male that creates the fry (cubs), not the female.

They are very intelligent, you can train your betta fish to go through hoops, and even ring bells to ask for food.

TURNEY FAMILY



The Turner family was very well liked in the center of Bloomsbury/England. Romeu, the husband was one likeable gentleman, with long mustaches, a salient belly, a little bald, flabby and pleasant laugh. He was the neighbor who all wanted for close. Isla was the short wife, blond hair always with its twirled dress and shoes of a doll; she took care of spotless form of her house and her husband. She adored to prepare for her neighbors the Battenberg Cake, a cake made with dough of ló and stuffed with damson plum jelly, covered for a flavorful almond folder. Moreover, what made much success in the neighborhood was the Cornish Pasty, a delicious baked crayon traditional of England, that had the differential to stuff with filet of tilapia.

The couple had true passion for fish. In house, they had enormous aquariums for creation, in special for creation of Red Tilapia. A freshwater, however, adaptable to the salty waters. Romeu basically fed its creation of insects, fruits, some crustaceans and also of some seeds.

Romeu and Isla liked its creation of tilapia very, beyond growing very and quickly (60 cm, more common 40 cm and weigh 2,5 kilos approximately). Thus they could always have an excellent income with vendas of its crayons. They adapt in a temperature of 14 degrees the 33 degrees the tilapia easily are found in the whole world, many times considered until plagues. Then, it obtained fingerlings

of red tilapias in England. Moreover, it is a fish that has few thorns, firm texture and pleasant flavor to the palate of all.

Romeu was zealous in its creation, after this was attentive to the egg opening, the creation and there finally in its fattening. It was an example creator. Intent in the daily fattening of 5g, so that in the end of its cycle it arrived of 800g until 1kg, for its final consumption.

Every day, Romeu and Isla made the due cares with its aquarium.

Isla received its neighbors in house, was very praised. It every day received orders and more orders from its crayon of file of tilapia. But... behind of all this traditional family, a secret existed, that would not be hidden much longer.

Certain day, a neighbor, very good friend of Isla, called to make some orders of a small party that would make in its house.

Telephone touches.

Isla - Hello?

Gisele - Isla, all good?

Isla - Gisele, hello beloved, all good and you?

Gisele - All good also... How are the orders?

Isla - always full Ahhh... of work, I do not have nothing to complain.

Gisele - That good thing my friend, therefore, I called to still give more work hahaha to you.

Isla - Ah I imagine! I am thankful. You can tell me what you need.

Gisele - Then, I am very anxious, I will receive in my house the parents from my fiancé, and as the notice run fast, your pastries are famous around here, I would like to make an order, you know right? It's necessary to make an impression.

Isla- Clearly, my beloved. I can make, this week I am still able to get orders, tell me accurately the amount, the day and hour, that I will ask for Romeu to deliver it to your house.

Gisele – Thank you very much! I believe that 30 units for appetizers, will be ideal. You can pass me the number of your account for deposit? Ah clearly! For the friday, for around 20h.

Isla - 30 units, friday, 20h (emphasizing). Written down! I'll message you the number of the account.

Gisele - Ok! I will wait it for the account, and one more time thank you, Isla. Have a good night!

Isla – I am thankful, good night!

Isla disconnect the telephone, already it makes a linking for Romeu more than fast, but, it falls in the post office box, and it an urgent message leaves.

Isla - Romeu! Where you are? We need urgent the meat. Gisele our neighbor made an order for friday. Our supply has

ended. Call me back as soon as possible! - The telephone Disconnect.

Some hours later, Romeu arrives in house. Tired and with an enormous luggage. That scene already was routine.

Infuriated Isla says - My love! Already I told you not to enter from the front door.

Quickly catches the luggage, leads until the kitchen and asks - Already was made the cleanness of the meats? Did not hear my message ? Necessary to make the cleanness for the friday order.

Barely allowing Romeu to say something. She opened the packages of the luggage, and was placing on the sink of the kitchen.

Speaking alone - 3 days, 3 days for I temper it to be ideal.

In the following day... The couple had its routine. They woke up early, made their walk by the neighborhood, came back towards the house, took their coffee, and treated their aquarium.

Isla started her orders early, while Romeu already went for his routine activities of work, buying foods for the fish, products for cleanness, etc... Even without children, and many times this caused one whispers for the city, many found that they could have some problem, but, still nobody talked about these subjects with the couple.

The 3 days had passed, Isla woke up for the chemical preparation of the tilapia filet pastry.

She puts a good music for her inspiration, an album of Edit Piaf. Ahh, Isla adored Piaf!

Wears her cap, and sings - " Non, rien of rien, Non, je ne regrette rien"... While she thinks about the prescription in her head.

INGREDIENTS:

400 g of Filet of Tilapia

2 teeth of garlic

4 tomatoes without seeds (tomatoes could not lack, so enhanced the differentiated color of the pastry).

50 g of perforated olives

Olive oil

Salt and black pepper

200g of cheese and cream cheese

Mass for pastry

PREPARATION WAY:

Cut the Filet of Tilapia, the teeth of garlic and the tomatoes in reserves.

In a pan with oil golden the garlic, after that add the fish, the tomatoes and the pricked olives, temper with salt, pepper, reserve for 3 minutes

Voilà! - Isla speaks, to her pastries ready for delivery.

Romeu takes them to the neighbor's house.

Gisele - Romeu! Thanks for the order, my guests are already arriving, they will to taste this delight still hot.

Romeu - Ah Gisele! Thank you again for the trust, I hope that you all like. Have a good night!

Gisele – Thank you again, and send one hug for Isla.

Romeu comes back to his house and colloquy with Isla.

Romeu - Isla, I do not know until when we can endure this idea. Today coming back from the butcher, the police almost stopped me in the road with these luggage.

Isla – Cut it out man! Our business only tends to thrive, if so far everything is going well, we have nothing to worry about.

Meanwhile at Gisele's house, the parents of her fiancée are happy with the new features on the marriage, and comment on the miracle of Carlos' life, Gisele's fiancé. Carlos had suffered a terrible accident in its vacation in Switzerland. He climbed up to the Alps, and got stuck due to heavy snowfall. Many friends had not resisted. It took days for help to come, and it was necessary for Charles to feed on human flesh. He was treated

every day, could hardly sleep, and was the biggest trauma of his life.

Carlos' Mother - Gisele, I am very happy for the support that is giving to the Carlos, you do not know how much the accident in scaling in the Swiss Alps was traumatic for him.

Gisele - they are being difficult days, but I believe that we can surpass everything this, count on me.

Carlos, Gisele's fiancé, gives thanks on the dinner table, and comments on the terrible accident of months ago.

Carlos I am very grateful for your visit, my dear parents. This accident still disturbs me a lot, but, Gisele can always please me. This meeting brings me the strength to continue. Spend 7 days on those glaciers, with the bodies of my friends frozen, and as you know...

Gisele breaks off conversation, and says - My love, now it's okay! We do not need to remember this anymore, you're here and that's what matters now.

Gisele raises the goblets and asks for a toast for the life of all.

Gisele - A toast to life, and let's celebrate by eating these delicious pastries from my neighbor, I'm sure you'll love it!

Everyone toast and smile ... they will enjoy experiencing that delicacy.

Carlos in his first piece, has a lapse and faints.

Gisele and her in-laws despair, try to keep him awake and shout - CARLOS, CARLOS !!! WHAT'S HAPPENING...

Carlos can not breathe right and pale says: Gisele, these pastels, these pastries are not fish meat, Gisele!

And fainting without being able to finish the sentence.

Glossary:

Red Tilapia

Popular Name: Red Tilápia

Scientific Name: Sarotherodon

Family: Cichlidae

Most created and consumed fish in the world, in addition to being found in large scale in rivers, in fact, the word Tilapia refers to the various species of freshwater cichlid fish. They belong to the subfamily Pseudocrenilabrinae and to the genus Tilapia, the species being very similar to each other.

When you talk about Tilapia, people generally only think about Nile Tilapia, since it is the most created around the world. It is most commonly found both in the fish market and in the rivers, its scientific name is *oreochromis niloticus*.

The main feeding of Tilapia is insects, seeds, micro crustaceans, roots, plankton, algae or other small fish. This is due to the fact that this fish is omnivorous, herbivorous or phytoplanktonic. The reproduction of the Tilapia begins to happen from the six months, and it can spawn up to four times a year. The rate of spawning survivors is high because it protects offspring. It needs continuous selection in relation to color.

Crustaceans:

Kingdom: Animalia

Filo: Arthropoda

Subfilo: Crustacea

They are marine organisms such as lobsters, shrimps, barnacles, barnacles, armadillos, crabs, and crabs, but there are also freshwater crustaceans, such as water fleas and even land crustaceans such as billfish. There is a great variety of feeding habits in crustaceans, and may be suspended organic matter, carnivorous, herbivorous, saprophagous.

Alevinos: youngling of fish in larva phase.

DAM OF ILLUSIONS



Joana was a woman – with sharp curves, curly brown hair and green eyes - who lived with her parents and her two brothers in Bento Rodrigues – a small town with approximately 612 inhabitants, this family lived of subsistence and sale of food in a small establishment, fishing in the surrounding rivers, planted corn, beans . André was a man – light brown hair, blue eyes and short beard, a well-defined body by the gym – a typical businessman, he always had his nose up, being right in everything he did, dark suit and white shirt, he worked at Samarco Mineradora S / A located in the city of Mariana.

On a Friday, while André was analyzing the dam that served as a deposit of the generated waste, he remembered that he had forgotten the snack and lunch that day, which his maid left every day ready for him with the food produced there in the region, because he was very fond of the delicacies there. Since he was without food, he decided to go shopping himself. Getting to Bento Gonçalves in small establishments, he entered one called Mary & Eat and his face immediately came into contact with Joana's own ... He ordered an orange cake that was his favorite and also had lunch there without taking his eyes off the woman. So he decided that every day he would have lunch there, until one day they started talking and sneaking out together, without her knowing that he worked at Samarco (he was already known to date women like that, to look like a family man , promise everything better and be all correct, but in fact ...).

After having gained intimacy of each other, Joana began talking about Samarco and the deposit dams of the residues generated during the mineralization process:

- This company next door, no one understands right what they do, rumors that they ignore the reports that warn about construction failures and the maintenance of the dam, in addition to keeping the reservoir above the storage capacity..

At that moment André just stares at her, without giving an opinion on the subject.

The next day he did not come to lunch, neither in the day after, nor in the following day. Joana was very worried about him, because he always warned when he was not going to have lunch or go out with her.

Two weeks later, on November 5th, a tragedy happens! The dam that received the miner's waste breaks into a large, devastating muddy tsunami from the waste that decimated the Bento Gonçalves district, harvested lives, contaminated rivers and destroyed entire forests, these wastes reached the coast and sea in the region of Espírito Santo.

After lodging in another place because of this fact, Joana began to watch the news and only then she began to understand that André worked at Samarco, which was why he always made plans to live with her, but that it would have to be away from there, when she would ask where he worked, he would always change the subject and then kiss her, and when he talked about the company he would not speak for or against it.

Joana was very angry and resentful of him, it was then that she decided to go after him and say everything that she was feeling. She gathered all her savings, took a taxi and went where they always met in the late afternoon, a secret place near a forest in the nearby town, where he spoke that he could relax and feel inside of himself.

Arriving there, she found him alone reflecting on everything.. She already came screaming with him:

- You bastard!! Why you didn't tell me you worked there? That you just wanted to please me and nothing else? Do you know how many people you are affecting? My whole town was taken by the mud, I lost my uncles that I loved so much with all of this, and the survivors like me are all homeless! And the most amazing thing, aquatic biodiversity and water quality are affected. You know how I like and I am close to nature, did not you think beyond the company of the effects that this could have?

André just kept his head down listening and said nothing back. Joan spoke all her heart told her. Leaving there, Joana decided she would study, and more, she would study on that subject!

Even with difficulties, she went back to school and after a couple of years, she had some discoveries, such as:

- On the first day the dam broke, the animals – amphibians, mammals, and small animals – which were on the banks of the rivers were buried;

- The ichthyofauna, which is the group of fish species that inhabit a certain hydrographic region, such as the Doce river, had a high mortality rate because of the increase in water turbidity that occurred because of the sediments that make up the wastes, collating/closing the gills of fish that died from asphyxiation (decreased oxygen concentration in water and increased concentration of metals);

- The main environmental consequences in relation to the fish population were: fragmentation and destruction of habitats, water contamination, silting of rivers, alteration of water flow, impact on estuaries and mangroves in the mouth of the freshwater River, destruction of fish breeding areas and the nurseries of the ichthyofauna, loss of species, compromise of the structure and function of the ecosystems, compromise of the fish stock ...

- Water unfit for human and agricultural use.

Very happy to have returned to study and do research in the area she realized that there are many people to deceive you, who think only yes; but in reality it has a whole context that must be taken into account as well, as is the case with fish and water!

GLOSSARY

In this story we can observe how the disaster of the dam of Mariana affected the environment and also the fishes and

aquatic environment due to the contamination. A study of the U.S. Geological Survey shows that US fish are contaminated with mercury, all fish collected in 291 streams across the country, about 2/3 were above levels considered safe for consume.

Thus, we observe that in all places we have these situations; but we have to pay attention to the factors that lead to the death of fish that can show serious environmental problems in rivers or lakes.

There are many causes of fish death: depletion of oxygen is the main cause, because it is due to environmental factors or toxic substances in the water, causes a decrease of the dissolved oxygen; the increase in water temperature, toxic algae blooms, bacterial, viral and parasitic infections also have the potential to cause large fish deaths in an ecosystem (Meyer and Barclay, 1991).

Toxic substances: they are the ones that most attack the environmental balance, and can also cause a drastic temperature change or Ph change, depending on the chemical compound that contaminated the water, affects only the substrate, or phytoplankton, or zooplankton, other animal species such as amphibians and different species of fish and sizes, in fact it will affect all trophic levels of the food chain

Dams: over-saturation of gases occurs in the water, which depending on the level and factors such as exposure and temperature can cause embolism in the fish, the fish do not have

escape conditions and the passage through the turbines can cause their death as well.

Natural causes: it is the biggest cause of death of the fish, being the depletion of oxygen (its main cause is the anthropic action with the process of eutrophication - great release of organic nutrients in the water, like for example ration - that contaminates several trophic levels, there is the proliferation of uncontrolled aerobic bacteria and how they consume too much dissolved oxygen in the water, lack for the fish, that die, blooms (accelerated growth) of toxic algae, being some as some dinoflagellates and blue algae release toxins to compete for local and nutrients, thus with a high level of toxins dispersed in the water, becomes toxic to phyto and zooplankton, insects, fish, and animals that drink this water or feed on these animals, and other environmental stressors such as pathogens (infections bacterial, fungal and parasitic diseases).

Due to all these factors it becomes very important in fish farming, routine analyzes that involve water quality, such as: temperature, transparency (monitor the concentration of planktonic population (phytoplankton and zooplankton)), pH, dissolved oxygen and ammonia (its origin in the aquatic environment can be by the decomposition of the organic matter, by the excrement of the fish, death of microalgae, being the ideal below 0.05mg / L).



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