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# The Black Sea

## Environmental Education in Turkey

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# 1 Introduction

The Black Sea is located in south-eastern Europe and is connected to the Mediterranean Sea through the Bosphorus and ultimately to the Atlantic Ocean. Since we are preparing this project for the seminar “Environmental Education in Turkey” we chose this topic because of the importance of the Black Sea for Turkey but also because it is one of the most endangered ecosystems on earth. Furthermore we want to bring the topic closer to the students by doing group work, so the students can not only interact with each other but they are able to share their knowledge, ideas and viewpoints with the other group members. In the following figure (Fig. 1) you can see the most significant aspects of the Black Sea. With these aspects, we chose some interesting topics to lead the students through the individual facts of the Black Sea.

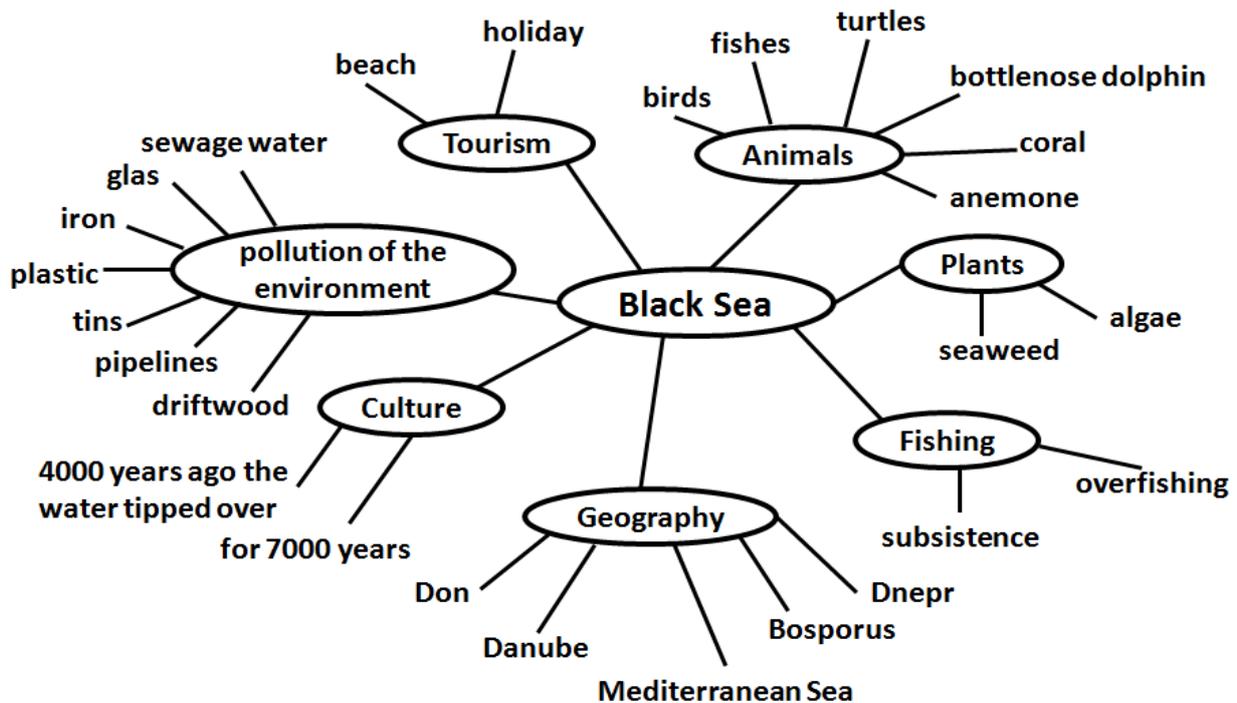


Figure 1: Mindmap of the Black Sea

# 2 Methods

We have constructed a total of 4 group-stations to split the class into groups of 4 (or 5) students. The stations are doubly available, so that 4-5 students can work at each station. Each group choose a station and then they follow the instructions at this. After they have finished a station, the group switch to the next one. The following chart (Tab. 1) contains the various stations with station name

and play time.

Station name	Set time [min]
Overview of the Black Sea	20
Marine Ecosystem	20
Pollution and Fishing	20
What lives in the Black Sea	10

Table 1: Set time at the various stations

## 2.1 Overview of the Black Sea

The game will take up to **20 minutes** to play for the students.

**Required material:** backgammon board (attached as a file, Fig.1), pawns and dice.

**Execution:** After the students are divided into groups of 4 (or 5), the students should each get a pawn in a different color. The backgammon board and the dice should be sitting on the table. The game can begin. The game rules are:

1. Each student is allowed to roll the dice and move its pawn the amount of boxes the dice shows. The dice should move on to the next students clockwise.
2. When encountered a river (“snake-like shape on the board”) the student is allowed to move upwards to the new box.
3. The first student who reaches the box “70” – the finish line – is the declared the winner.

**Didactics:** This game is working as an incentive for the students to want to explore the Black Sea. The topics were chosen based on giving an overview of general aspects. While playing the game the students will move their pawns over game boxes filled with information and pictures of the Black Sea. The topics that were chosen include general ideas, the size, feeder rivers, ports, the history and environmental issues.

## 2.2 Marine Ecosystem

This station will take up to **20 minutes** to finish it for the students.

**Required material:** 2 comics (attached as a file), prepared paper for each student (attached as a file), colored pencils

**Execution:** The station is divided into **2 parts**. The first part contains a comic which describes the life in the Black Sea. The students read the comic and think about the meaning of each scene. Accompanying this, an observant gives some particulate notes and directs the students through the story line for a better understanding. As a last resort, the comic has an open end. At this point, it's the responsibility of the student to paint the last scene of the comic.

### **Description:**

#### **1. Comic**

The comic is divided into nine stages. It tells the story about Harry the herring from the North Sea which is visiting his friend Berti the bass who lives in the Black Sea.

At the first picture you can see how Harry and Berti meet and greet. In connection to Harry's visit, he asks Berti to show him around so that he can see how Berti lives.

The following three pictures intended to represent the biodiversity of the Black Sea. First, Berti shows Harry the surrounding area and tells about how many fishes you can find here. At next, the two friends sight a dolphin. Harry is surprised about that because he never saw anything like it. The drawn dolphin stands for the bottle-nose dolphins which can be found in Black Sea. On the next picture you can see how those two fishes discover a uniquely anemone. Harry is glad to see something that he knows from his homeland. Moreover he's wondering about the anemone looks like. It shows that are species which can be found everywhere but they can be distinguished in their appearance and behavior.

The next two pictures show some significant features in the Black Sea. At first, Harry and Berti reach a submarine pipeline. Harry is confused about what he sees and asks Berti about the sense of this object. Berti knows nothing about the pipeline but he tells to Harry that some creepy black water flows through the tube. The hint of picture is to give an insight in economic usage how they can be found in the Black Sea. At second, they swim before a deep abyss and Harry makes an anxious impression. Berti informs him that the Black Sea has a depth about 2.000 meters. This picture shows a general information about the Black Sea and it gives an insight about the morphological nature.

Next, Harry and Berti meet Stan the stingray which complains about his situation that he can't find something to eat. Stan tells that the jellyfish steal his food. This picture describes a generally situation in several seas around the world. The jellyfish-population increased in the last ten years. The reason is the progress of global warming. A big problem is that higher jellyfish-population can drastically disturb a ecosystem and that's a problem for other species like Stan the stingray to live. The story continues with a proposal of Berti. He tells that he knows a place how they can live in peace an harmony and that he can lead the other two to that.

In the next situation, they meet Eddi the eel. Eddis home is on a dump under water. He's very unhappy about his situation because he was distributed from his last home. Berti tells him about the plans from the other and he invites Eddi to follow them. The picture illustrates with the increasing waste a mean problem in many seas and oceans. In combination with the declining habitats because of ecological changes and anthropogenic influence you can understand the situation of Eddi. Finally shows the last picture how the four fishes set out for the journey to find the place Berti talked about.

## **2. Painting**

The second part begins where the comic ends. At the last picture you could see how Berti and the other are still at the journey. At last, the story has a open end as mentioned. Now it's the task of the students to paint the last scene of the comic with their own imagination. In order to save work, the students receive a prepared paper where they can find the four fishes and they can finish it with some colored pencil.

**Didactics:** This station acts about the marine ecosystem and it gives an insight into some significant aspects of the Black Sea. The students learn about important features like biodiversity in fauna and flora and they get information about some special species which can be found in the Black Sea. In addition, they learn about some of the problems that the Black Sea has.

With the comic, the students get a little overview about the live under water. Furthermore the students should animated to understand the ecology of the sea something better. Eventually the second part is a little test to see how the students imagine a functionally ecosystem for which the peaceful and harmonic place in the story line stands.

## 2.3 Pollution and Fishing

This station will take up to **20 minutes** to play for the students.

**Required material:** 2 memory-games (attached as a file)

**Execution:** This station consists of a self designed Memory with 15 pairs dealing with the pollution of the environment and fishing in the Black Sea. There are two identical Memories that the students can play in groups of two or three.

The game is played with the standard rules. The cards get turned over. In case they don't match, they are to be turned back over so the picture is not shown and it is the next ones turn. If they match he keeps the pair and continues turning cards. At the end the player with the highest amount of pairs gets as many points as players taking part in the game. The second one gets one point less and so on. But the game is not finished yet.

Now, the second part of the game starts. It is the expansion of the Memory that aims to teach the the students about pollution of the environment and fishing in the Black Sea.

For the second part there is a chart fixed with colored tape. The students have to sort their pairs in the chart. Every round one pair per student, either in the green side or the red side of the chart. For every right pair one point is awarded.

The player with the highest amount of points wins the game.

The work will be in groups of two or three. The original groups of four to six are well splitted.

**Didactics:** This station aims to teach the students about risks of the environment. The Memory shows a picture how it should be and how it is actually. The chart shows clearly to the students what are the differences.

The pollution by plastic or other garbage becomes more and more a danger for every creature in the Black Sea. Therefore it is important to protect our environment and to show clearly to the young generation how important the clearness of the sea for every living thing in it. Beside fishing is a threat because we fish too much in the ocean and big animals dies in fishing nets.

## 2.4 What lives in the Black Sea?

This station will take about **10 minutes** to play for the students.

**Required material:** A3 image of a seascape, pictures with information about the image (attached as a file), prepared page with answers

**Execution:** On this station, the students should allocate what you can find in the Black Sea and what you can't find.

In addition they receive a A3 image of a vacantly seascape and several small images with marine animals and waste. The students allocate which marine animals live actually in the Black Sea and which live in the oceans and other waters. Speculation and discussions are desired at the same time.

There short information on the back of the images about the pictured animals so that the classification should be a little bit easier. For a final self-control, the students can use the prepared page with answers.

Besides the animals, there are also pictures of waste which of course doesn't belongs into Black Sea. There are also short information on the back of the images about marine pollution and why it's pretty dangerous for the environment. The marine pollution serves to the sensitization of the subject, but it shouldn't takes to long.

**Didactics:** The aim is that the students encounter with marine animals in the Black Sea and they learn something about those.

## 3 Summary

In a time of environmental pollution it's important to be informed and educated about their own environment. And it is more important to educate and inform children about these matters. It is the next generation which stands in a strong responsibility for nature and earth. Our intention is to inform children in a joyful and interesting way about problems and facts in their own surrounding world.

The black sea is near by; the children can build a personal relation to the topic and get involved in the discussed themes. By playing games, like the backgammon game, they get information's and facts and can start to think critical about pipelines and history and also political problems about the

Black Sea.

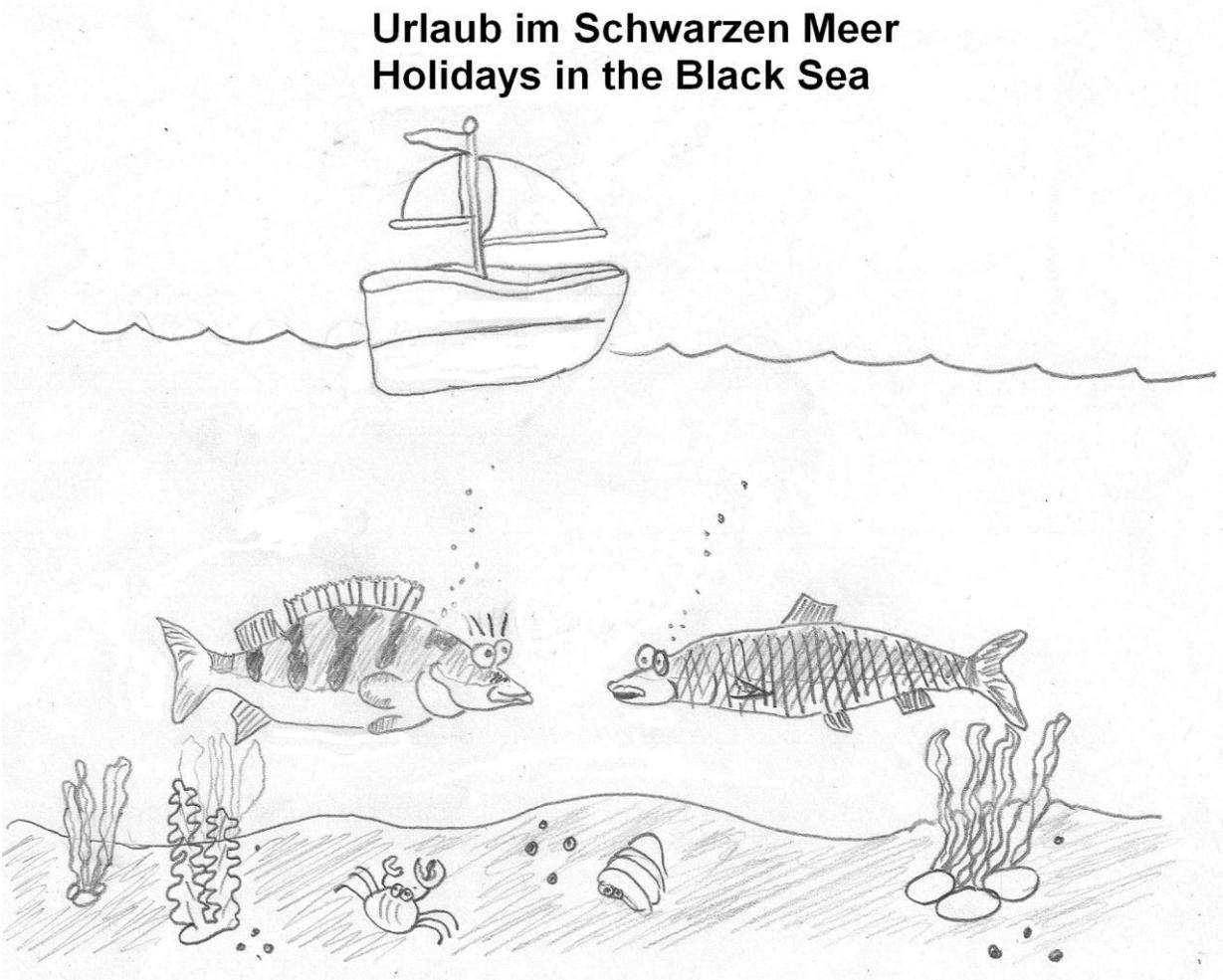
The group work strengthens their social empathy. In this way, they learn to discuss and act on their own response, so they get a feeling of being respected and to be important for the development in environmental problems.

The memory game is more or less a game to prove the new knowledge of the students. It helps to memorize new information's and is also a funny game for the students.

With a work group like in the station "what lives in the Black Sea" the students get in a discussion and speculation. The method of determine on their own educates their competence in arguing. The students will memorize their faults and their right decisions easier, when they learn them by doing some speculations.

**5 Annex**

**Comic:**



*Figure 2: Comic - Cover*

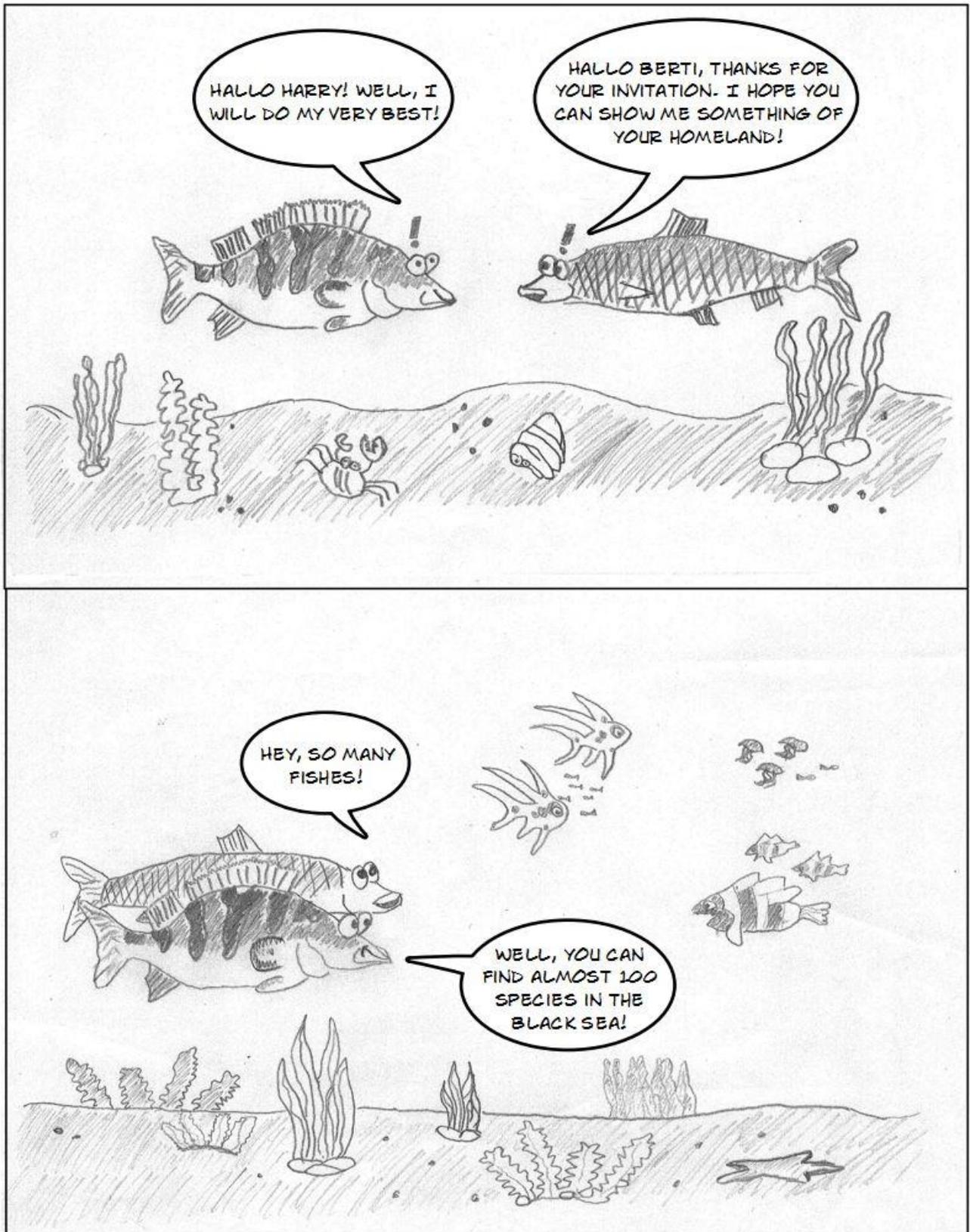


Figure 3: Comic - First Page

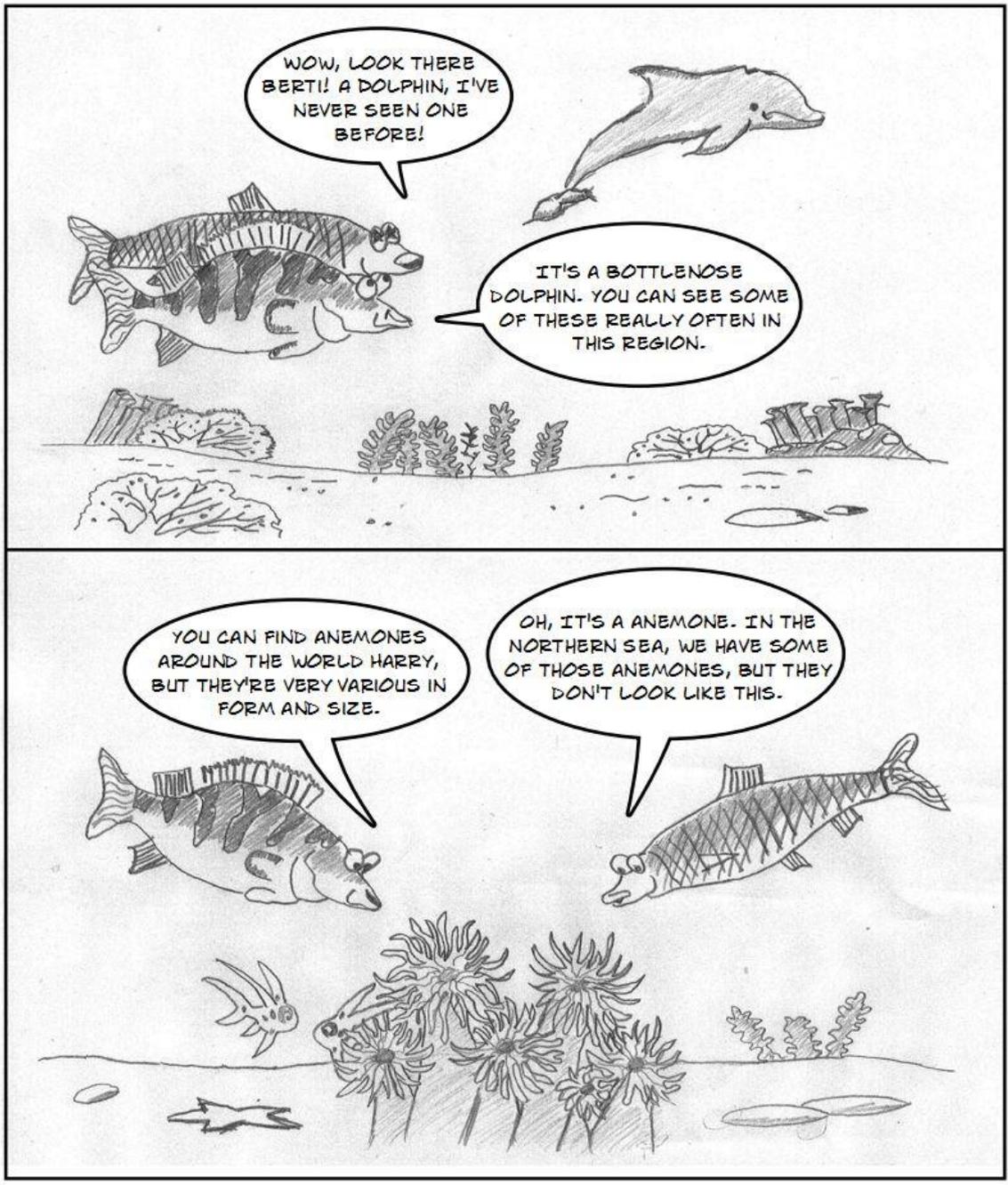


Figure 4: Comic - Second Page

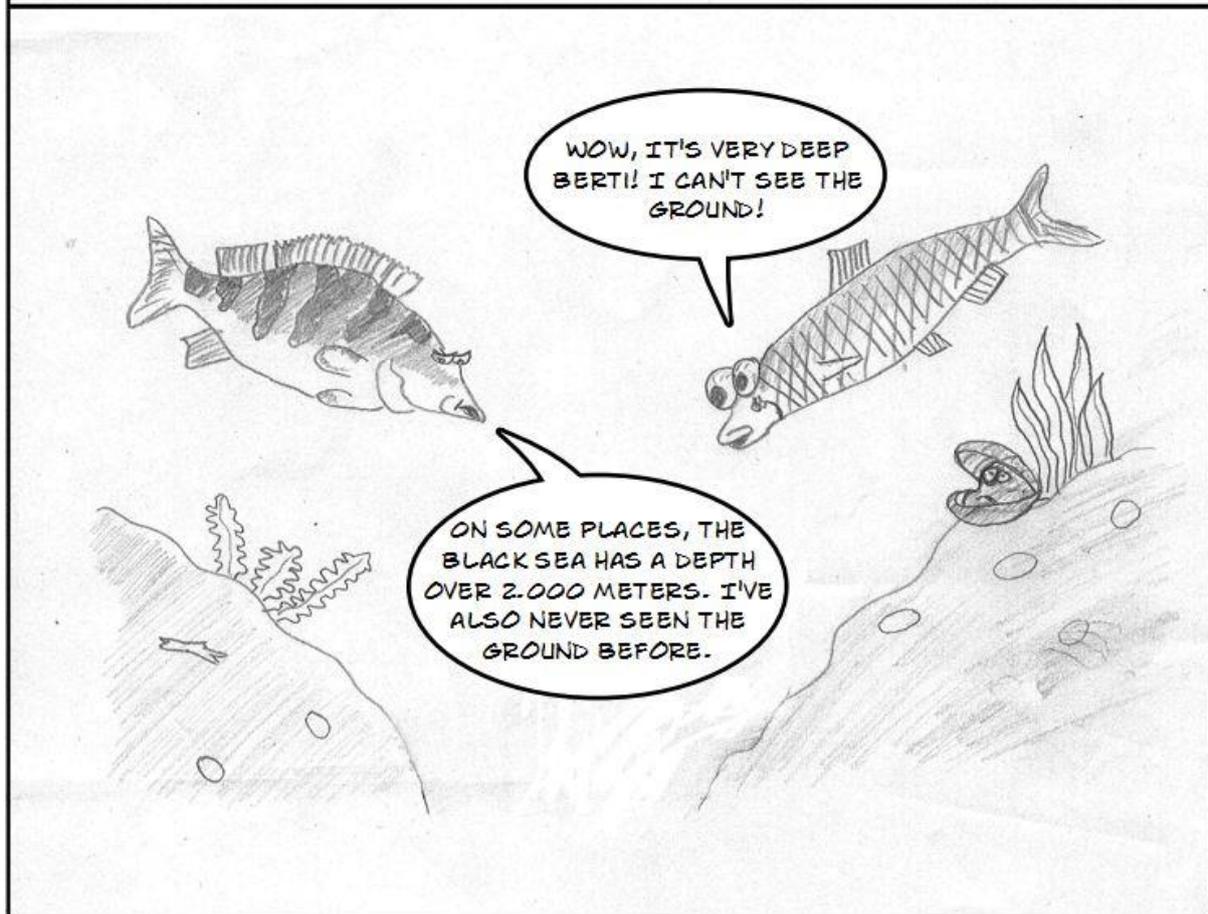
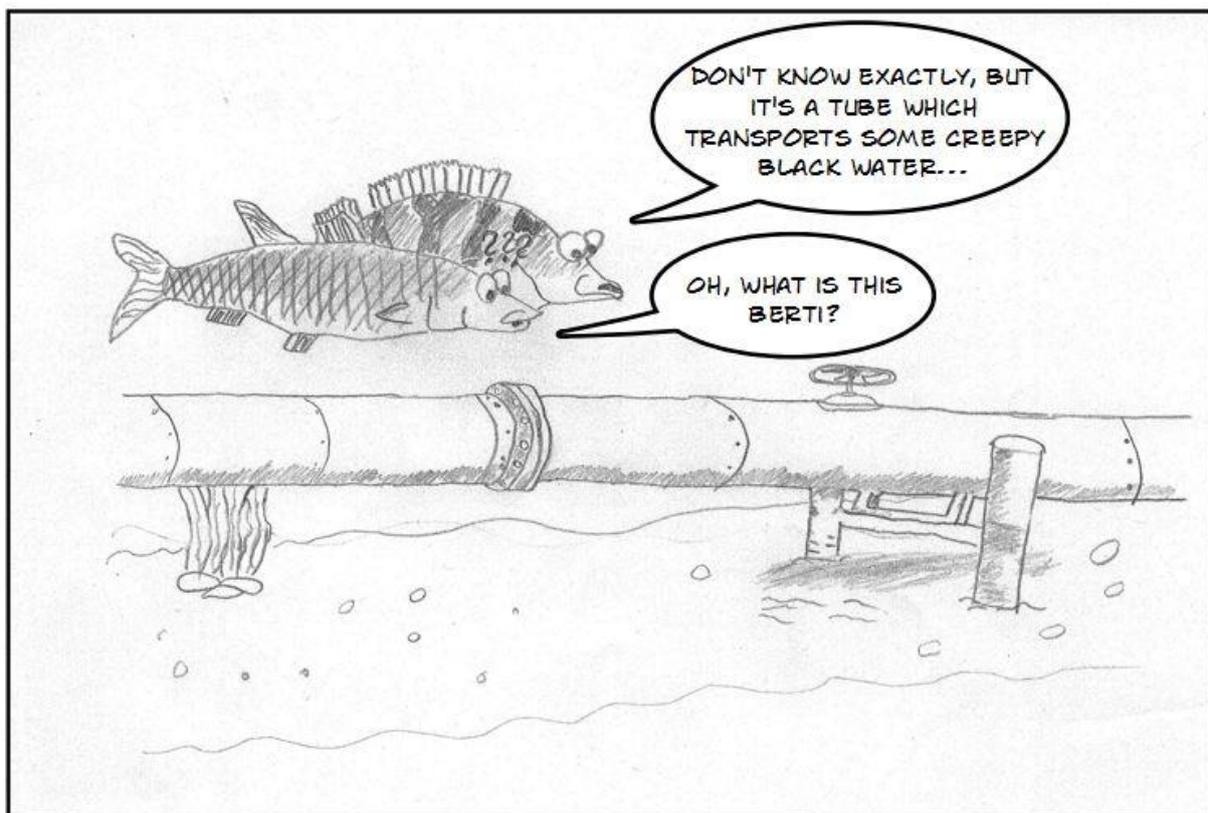


Figure 5: Comic - Third Page

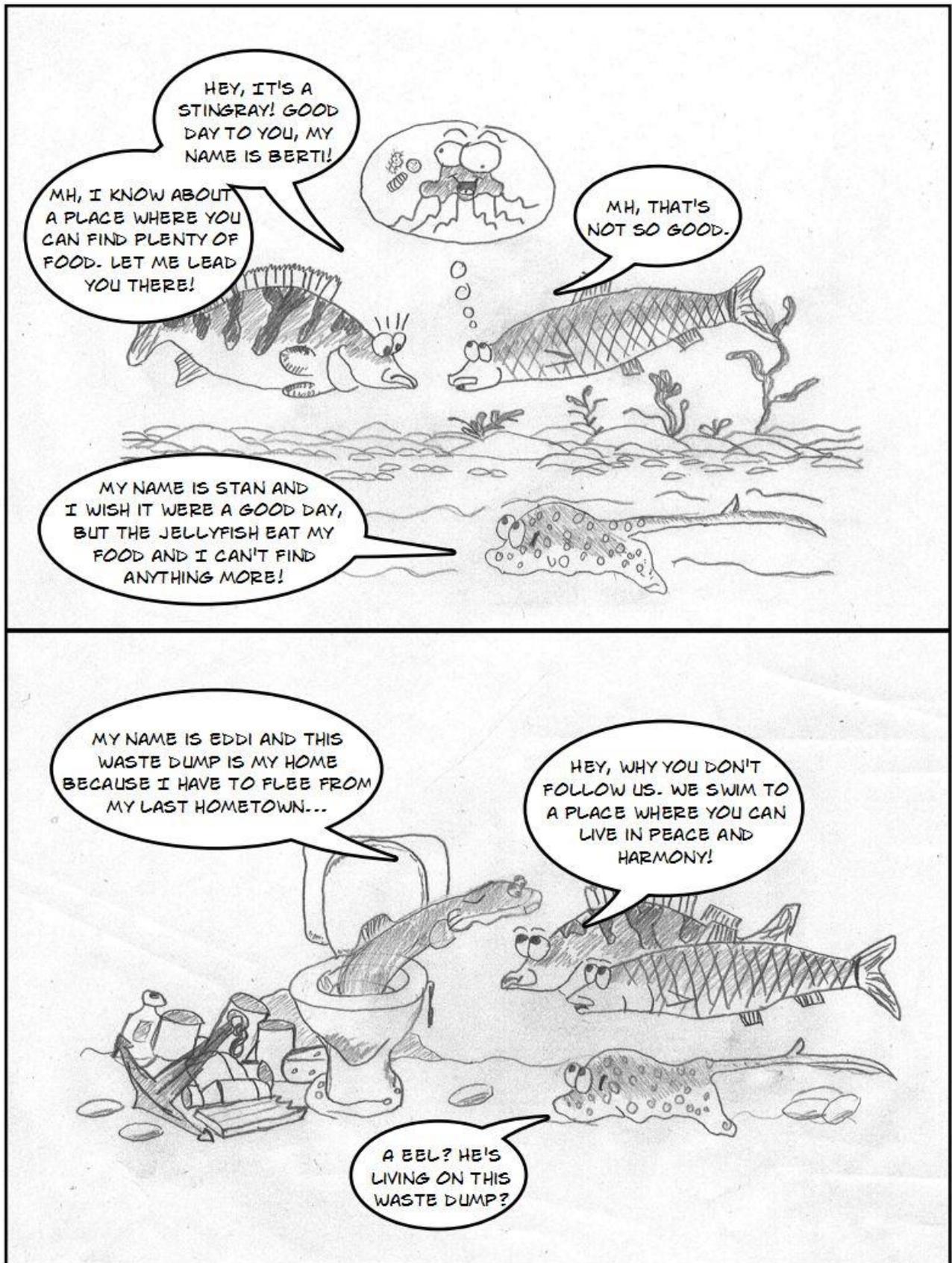


Figure 6: Comic - Fourth Page

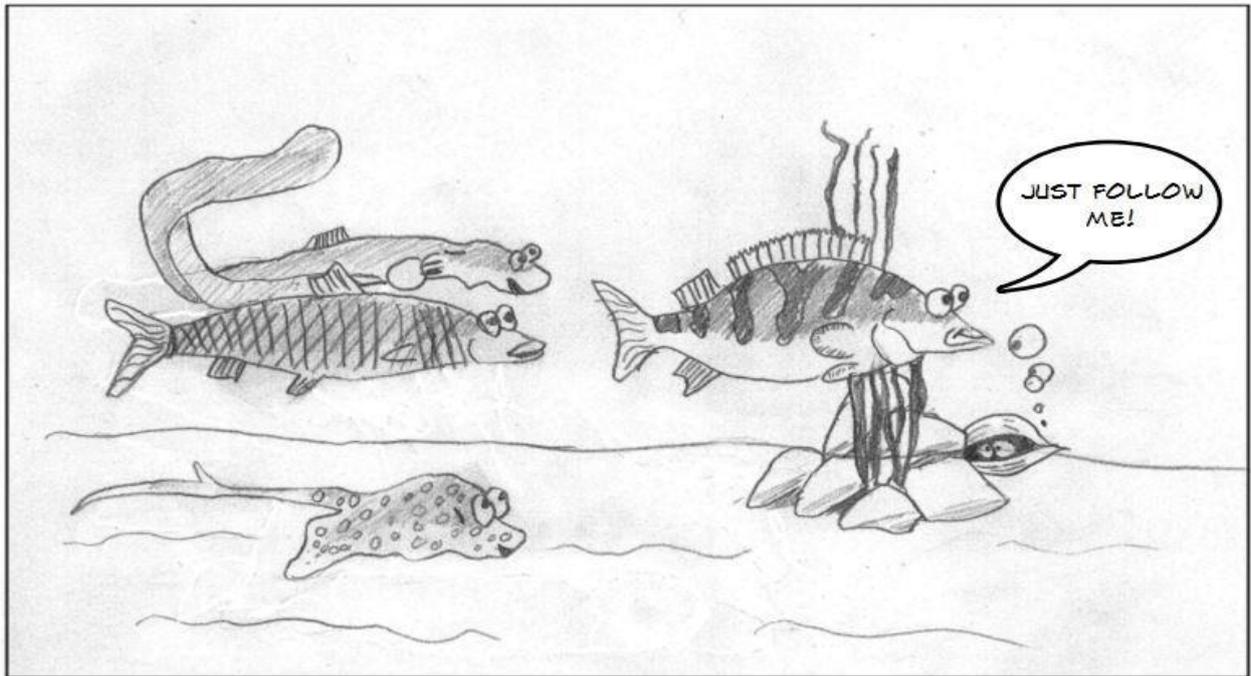
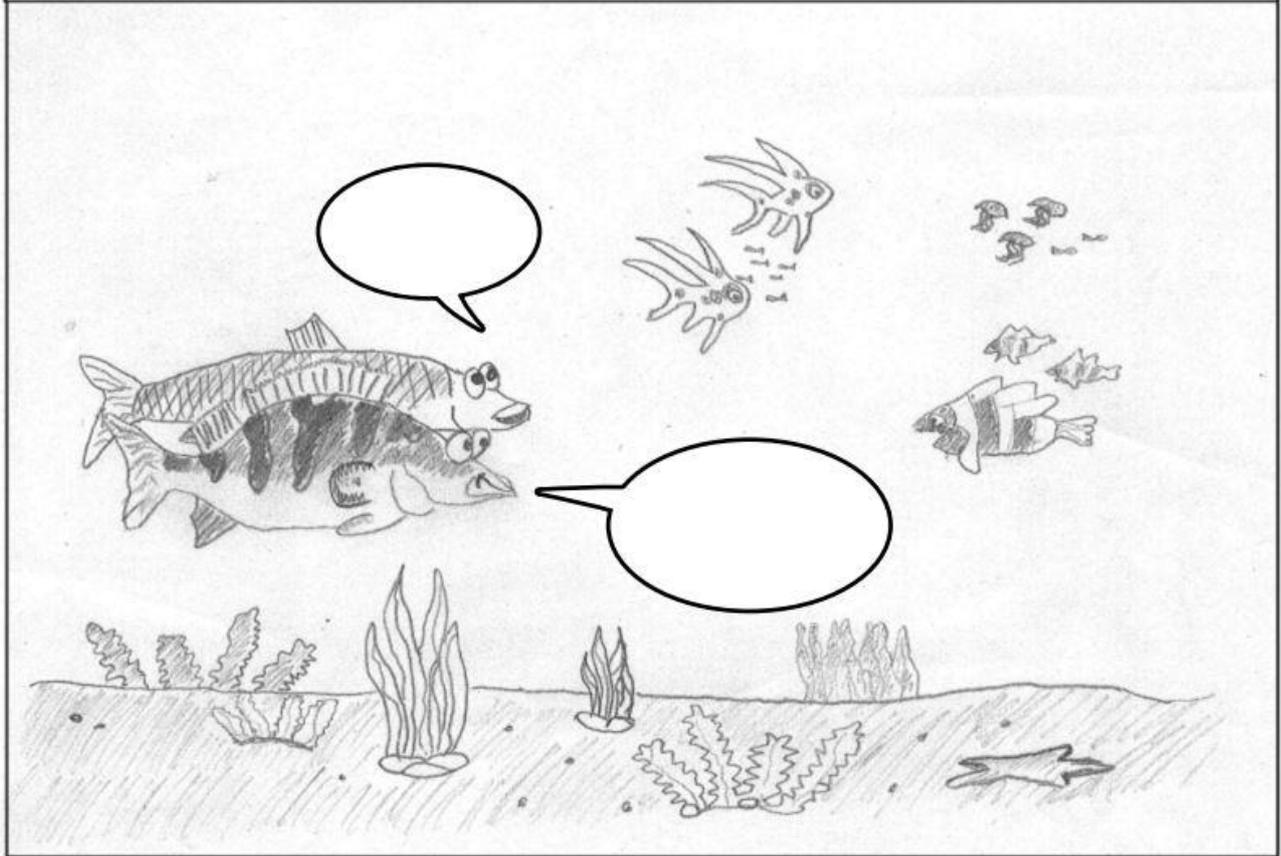
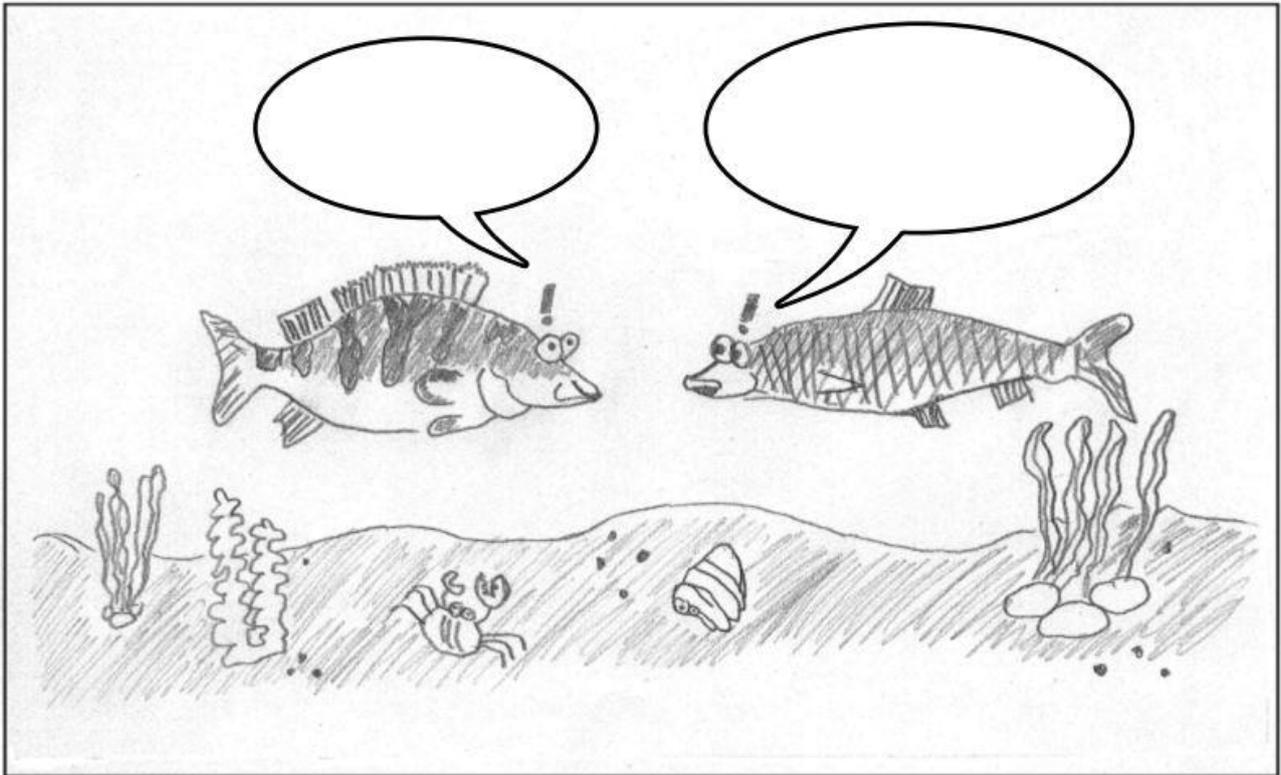
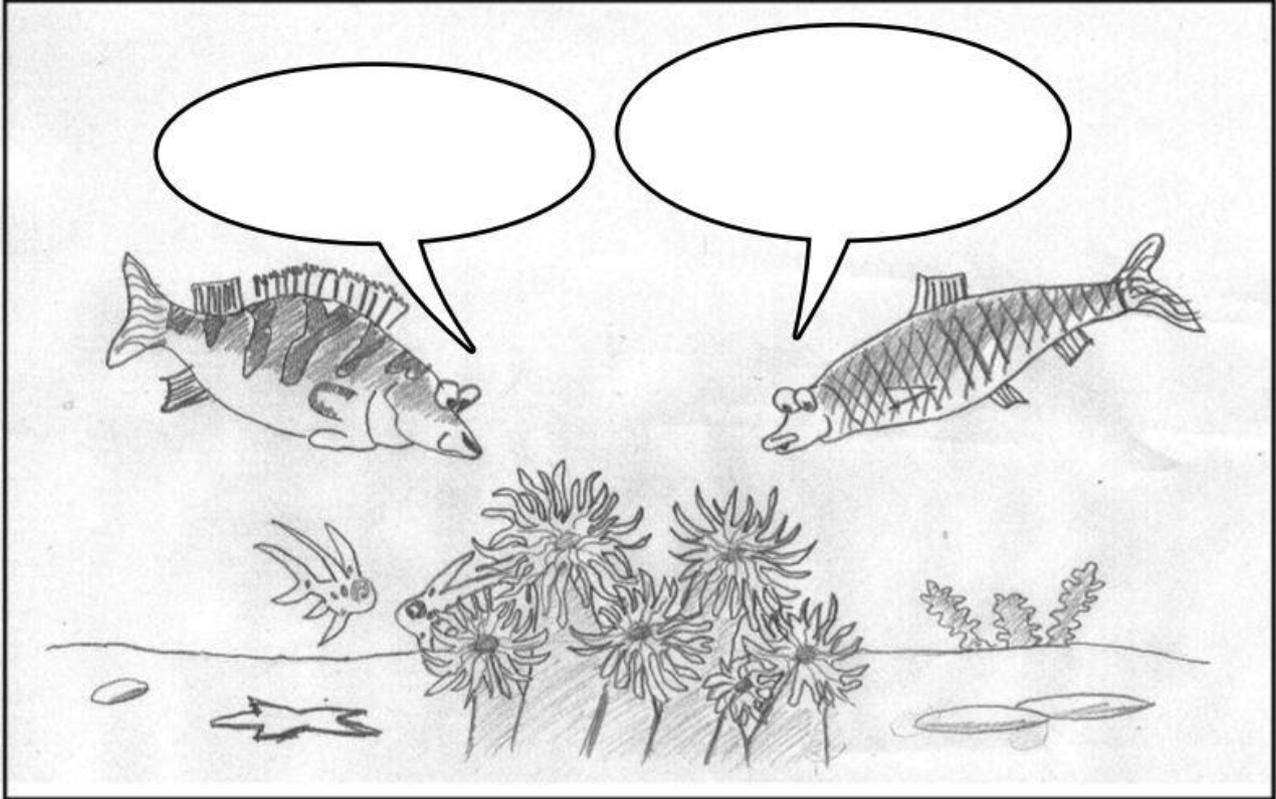
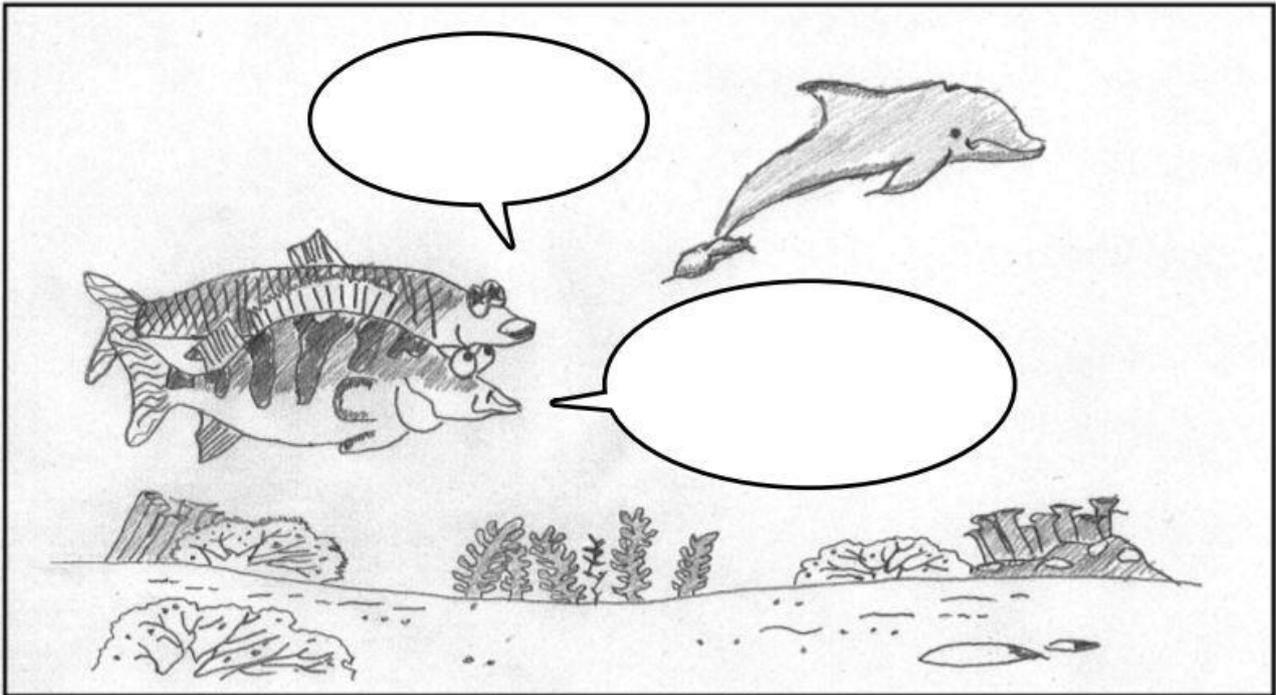
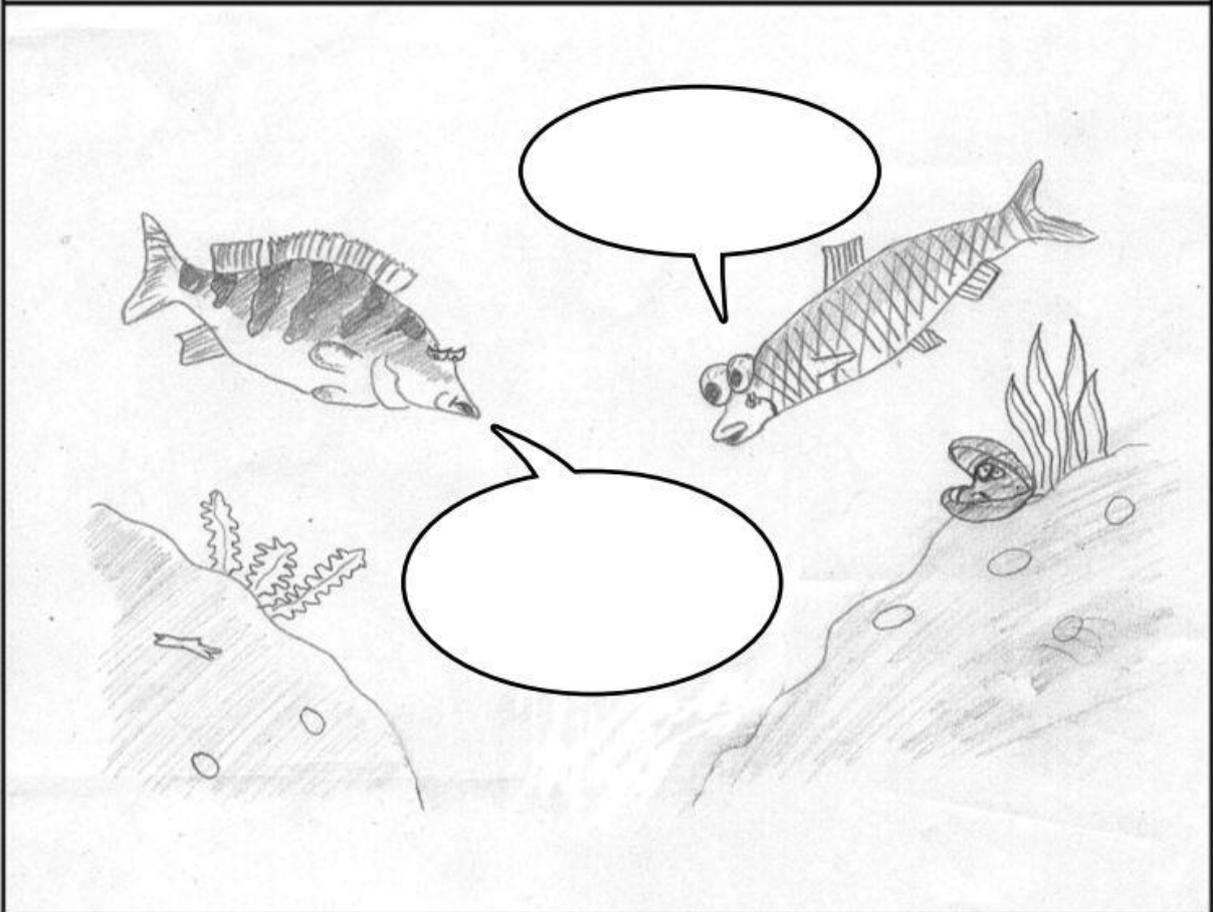
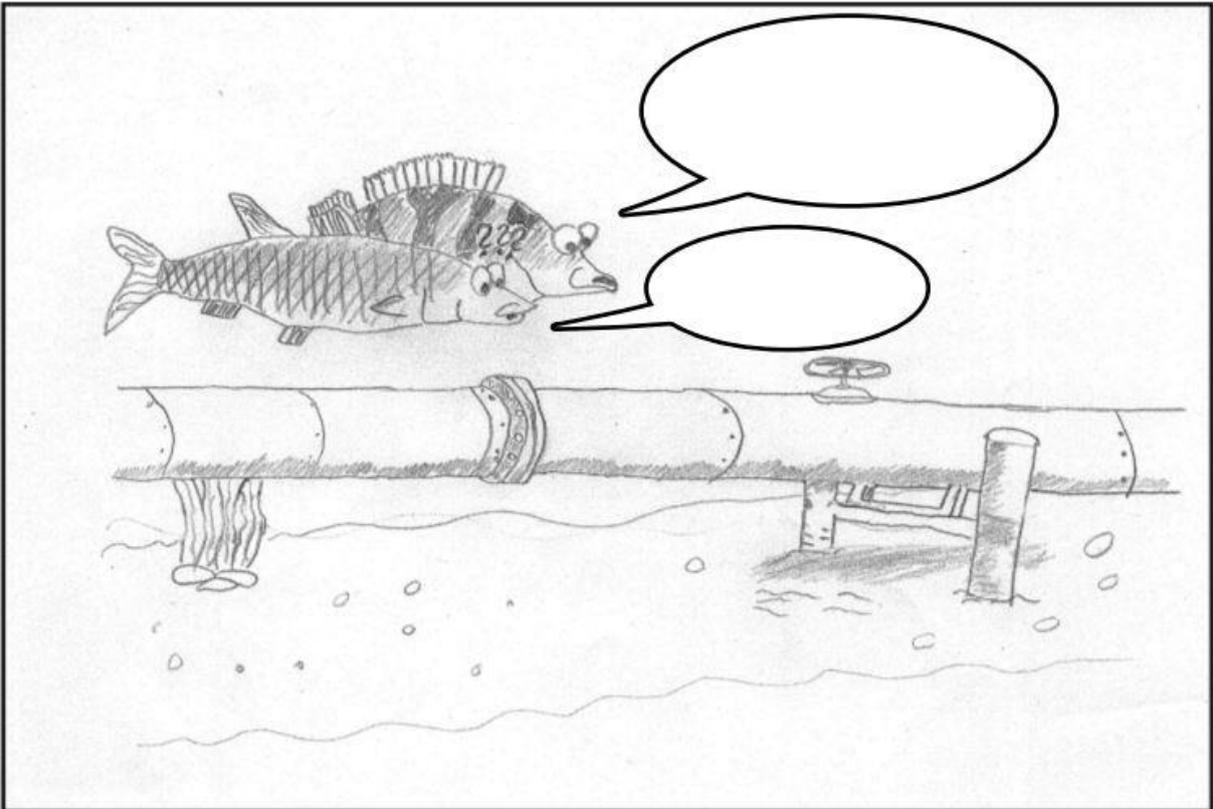
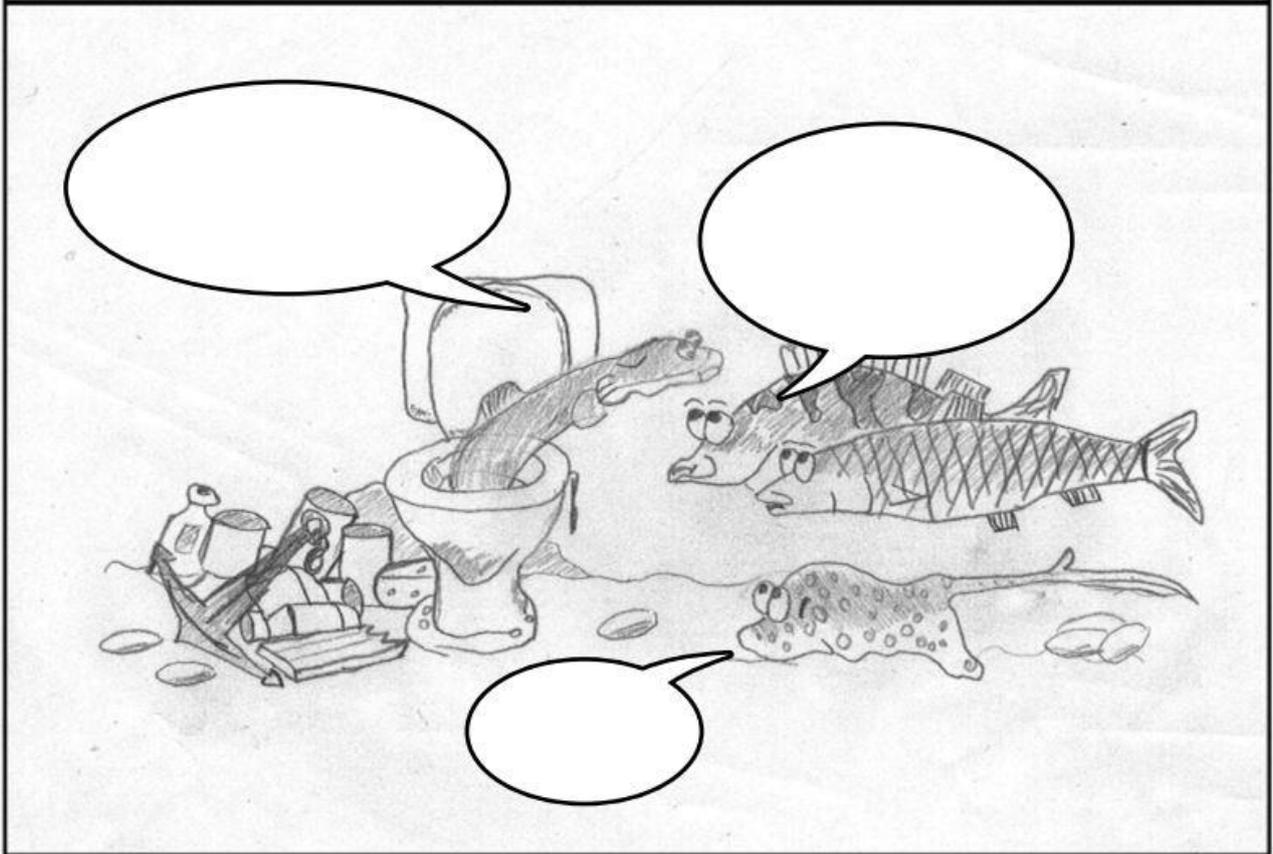
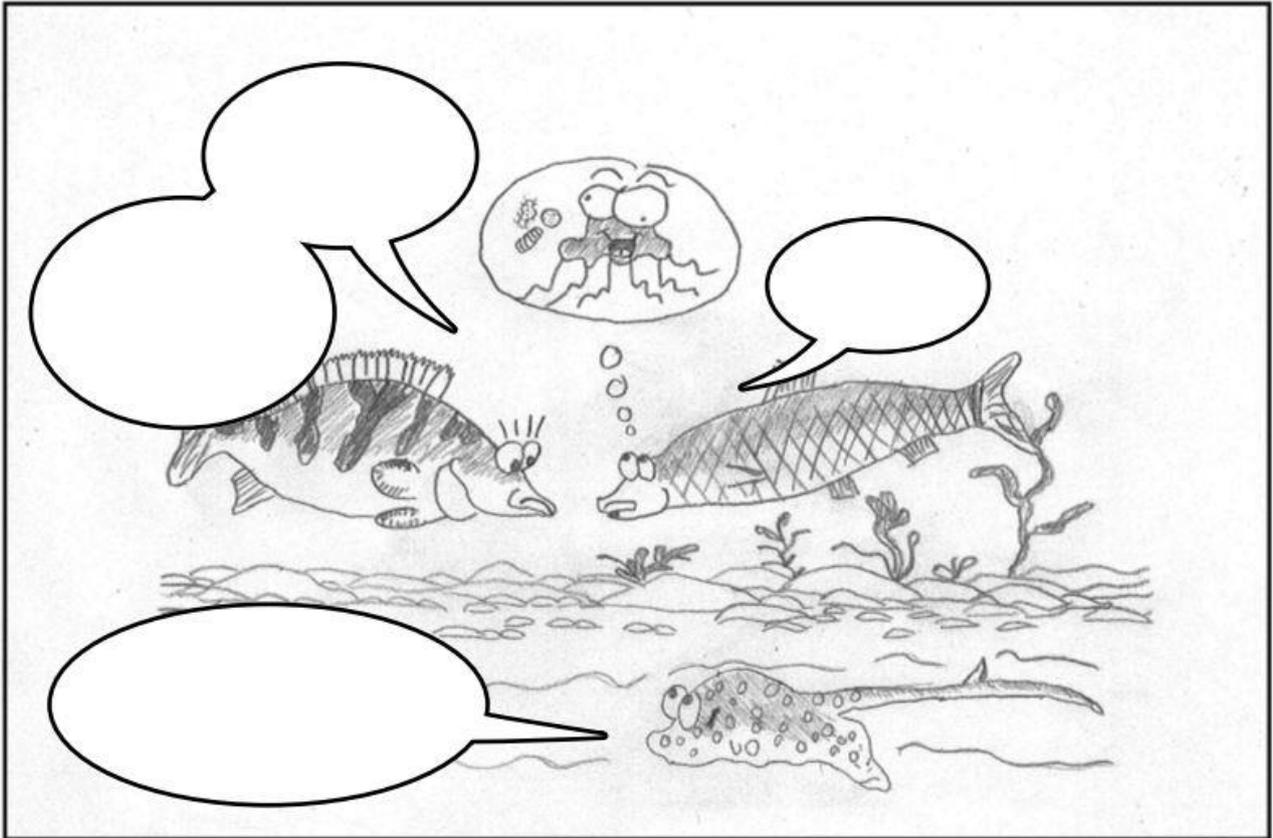


Figure 7: Comic - Fifth Page









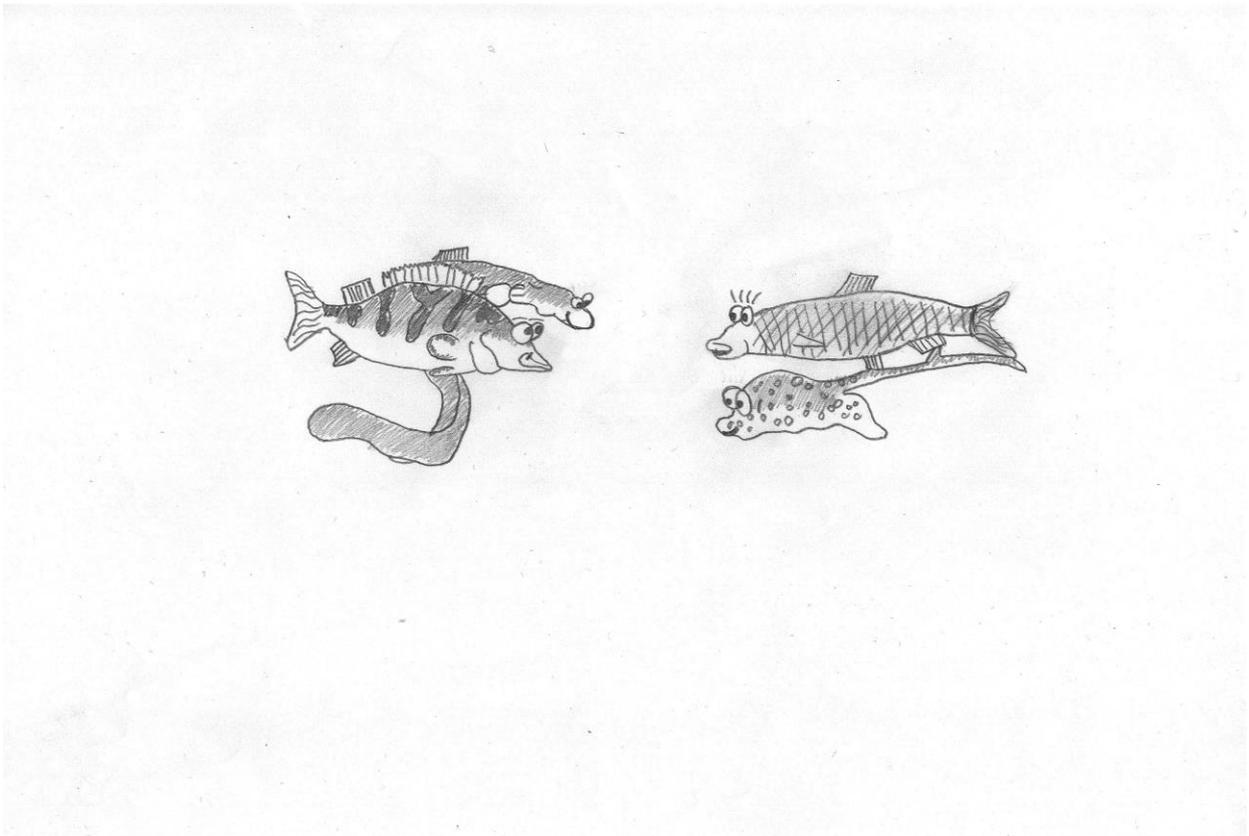
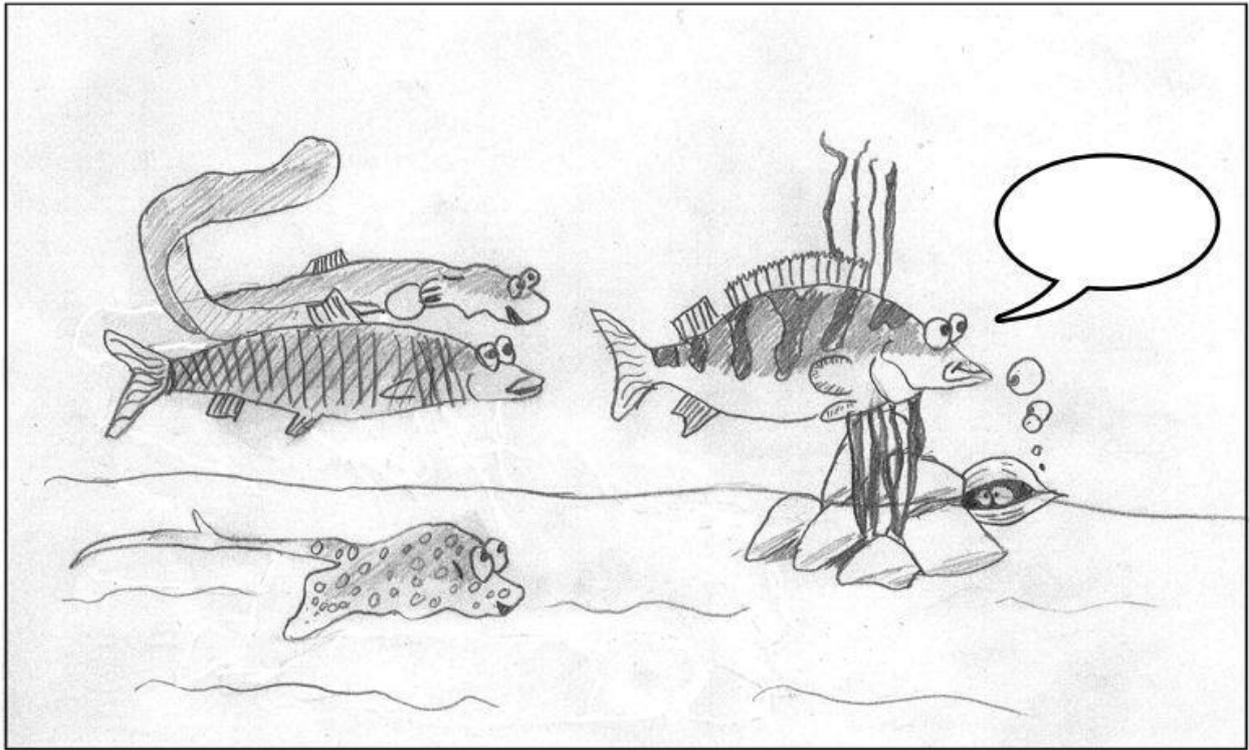


Figure 8: Comic - painting model